

The City College

Undergraduate Bulletin

2005–2007

Table of Contents

Policy on Non-Discrimination and Sexual Harrassment	4
A Message From the President	5
Directory.....	6
Academic Programs and Area Specializations	7
The College of Liberal Arts and Science	
General Information	10
Academic Departments and Programs	
American Studies Program	11
Anthropology	13
Art	17
Asian Studies Program	26
Biology	29
Black Studies Program	35
Chemistry	38
Comparative Literature Program	44
Earth and Atmospheric Science	46
Economics	51
English	57
English as a Second Language Courses	63
Foreign Languages and Literatures	64
History	74
History and Philosophy of Science and Technology Program	80
International Studies Program	82
Italian Studies Program	87
Jewish Studies Program	88
Labor Studies Program.....	91
Latin American and Latino Studies Program	93
Mathematics	96
Media and Communication Arts	102
Music	111
Philosophy	120
Physics	124
Political Science	130
Pre-Law Program	135
Premedical Studies Program	137
Psychology.....	139
Public Policy and Public Affairs Program	144
Sociology.....	145
SEEK Counseling and Student Support Services/SEEK Program	149
Theatre and Speech	151
Women’s Studies Program	155
Center for Worker Education	
General Information	158
B.A. in Interdisciplinary Arts and Sciences	158
B.S. in Early Childhood Education	158
School of Architecture, Urban Design and Landscape Architecture	
General Information	164
Architecture, Urban Design and Landscape Architecture	164

The School of Education	
General Information	173
Childhood Education	181
Secondary Education	185
The School of Engineering	
General Information	190
Biomedical Engineering	206
Chemical Engineering.....	210
Civil Engineering.....	215
Computer Engineering	221
Computer Science	224
Electrical Engineering	230
Mechanical Engineering	236
The Sophie Davis School of Biomedical Education	
General Information	246
B.S./M.D. Program.....	246
Physician Assistant Program	247
The City College of New York	
General Information	252
Accreditation	252
The Campus	252
Academic Offerings	255
Student Life	255
The Right to Privacy	256
Admissions.....	257
Campus Visits	257
Freshman Admissions.....	257
Advanced Placement	259
Transfer Students	259
International Students.....	259
Readmission to City College	260
Special Categories for Admission	260
Senior Citizens	260
Visitors from Other Colleges or Universities.....	260
Health Statement and Immunization Requirement	261
Tuition and Fees	263
Financial Aid	265
Academic Services	267
Honors Programs.....	268
Student Affairs and Student Services	271
Academic Regulations	274
Degree Requirements at The City College	279
CLAS Core Curriculum.....	282
Core Course Descriptions	283
Appendix A	288
Appendix B	289
Appendix C	305
Appendix D	306
Appendix E	307
Appendix F	308
Appendix G	309
Appendix H	310
Appendix I	314
Index	316
Directions to the City College Campus	320

Policies on Non-Discrimination and Sexual Harassment

The City College prohibits discrimination on the basis of age, gender, sexual orientation, transgender, disability, genetic predisposition or carrier status, alienage or citizenship, religion, race, color, nationality or ethnic origin, or veteran, military or marital status in its student admissions, employment, access to programs, and administration of educational policies. Questions, concerns, or complaints based on any of the above may be directed to the Office of Affirmative Action, Administration 200 (212-650-7331). In addition, the specific form of gender discrimination, "sexual harassment," is prohibited by the policies of the Board of Trustees of The City University of New York. Student complaints alleging sexual harassment should be directed to the Sexual Harassment Awareness and Intake Coordinator (see Appendix B, and the *Sexual Harassment* brochure for the name of the current Coordinator and a list of Committee members who may be contacted). Brochures are available in the Affirmative Action Office, the Office of Human Resources, the Office of the Vice President for Student Affairs and at the NAC Information Desk.

Important Notice of Possible Changes

The City University of New York reserves the right, because of changing conditions, to make modifications of any nature in the academic programs and requirements of the University and its constituent colleges without advance notice. Tuition and fees set forth in this publication (or website) are similarly subject to change by the Board of Trustees of The City University of New York. The University regrets any inconvenience this may cause.

A Message From the President

Welcome to The City College of New York! You are about to embark on a great adventure – and the people and ideas that you meet along the way will help you prepare for the future that you choose.

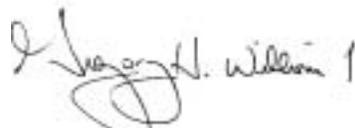
At the heart of your journey is the excellent education you will receive here at City College. At CCNY you will be taught by intensely committed faculty, whose internationally recognized achievements in fields as diverse as molecular biology, film and video production, creative writing, computer "morphing" and psychology, to name just a few, will be part of your classes. You may find yourself working alongside world-renowned scholars in search of a cure for cancer, or on a "dig" in Central Park, looking for an early African-American village, or submitting a plan for the revitalization of downtown. Whatever you choose to study, you will be studying with the best.

Use this Bulletin to begin to familiarize yourself with our undergraduate majors and areas of specialization. Each one will prepare you to become a leader in an increasingly complex and global world, whether you are thinking about going on to graduate school or moving directly into the workforce. Perhaps you have already chosen a career and know exactly what you want to study. Or perhaps you want to explore as many different academic options as you can. CCNY's rich curriculum offers you the depth and breadth to find your own path.

Of course, college equals more than classes, and life at City is as varied and exciting as our student body. Bring your talents and energy to your undergraduate student government, to our varsity and intramural sports programs – or to the 90-odd student clubs. Whatever your passion, City probably has a club to match it; if we don't, you can always start one!

I look forward to welcoming you personally to The City College.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory H. Williams". The signature is written in a cursive style with a large, stylized initial "G".

GREGORY WILLIAMS
President

Directory

Mail Address:

The City College/CUNY
 Convent Avenue at 138th Street
 New York, N.Y. 10031
 Telephone: (212) 650-7000
 www.ccnyc.cuny.edu

School and Division Offices

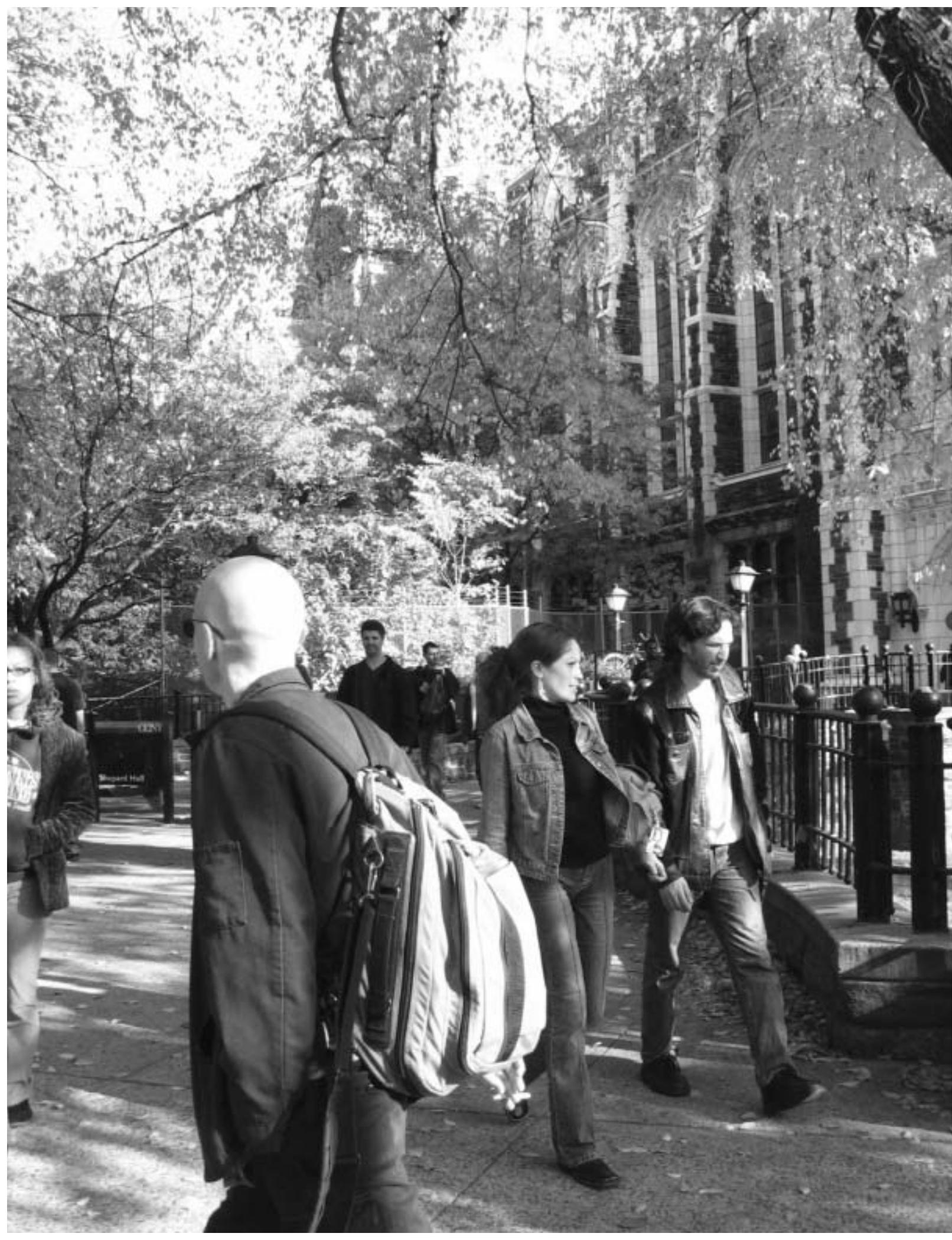
Architecture (School of)	Shepard 103	212-650-7118
Biomedical Education (Sophie Davis School of)	Harris 107	212-650-5275
Education (School of)	NAC 3/203	212-650-7262
Engineering (School of)		
Undergraduate	Steinman 209	212-650-8020
Graduate	Steinman 152	212-650-8030
Liberal Arts and Science (College of)		
Humanities and Arts (Division of)	NAC 5/225	212-650-8166
Science (Division of)	Marshak 1320	212-650-6849
Social Science (Division of)	NAC 6/141	212-650-8156
Worker Education (Center for)	99 Hudson St.	212-925-6625

Other Important Numbers

Academic Standards	NAC 5/216	212-650-8113
Admissions	Administration 101	212-650-6977
Bookstore	NAC 1/103	212-650-7109
Bursar	Administration 103	212-650-7218
Career Center	NAC 1/116	212-650-5326
Student Disability Services	Baskerville 26	212-650-5913
Financial Aid	Administration 104	212-650-5819
Finley Student Center	NAC 1/210	212-650-5002
Honors Center	NAC 6/293	212-650-6917
Information Center	NAC Lobby	212-650-5338
Intercollegiate Athletics	Marshak 20	212-650-8228
International Student Services	NAC 1/107	212-650-8106
Intramural Recreation	Marshak 27	212-650-7556
Library (Main)	NAC Second Floor	212-650-7271
Architecture Library	Shepard 408	212-650-8766
Music Library	Shepard 160	212-650-7174
Science/Engineering Library	Marshak 29A	212-650-8242
Lost and Found	NAC 4/201	212-650-6911
Ombudsperson	NAC 1/106	212-650-8179
Registrar	Administration 102	212-650-7850
Security	NAC 4/201	212-650-6911
Student Affairs	Administration 206	212-650-5426
Student Services	Wingate 107	212-650-5370
Student Government		
Undergraduate Student Government	NAC 1/111	212-650-8175
Graduate Student Council	NAC 1/113	212-650-5319
Wellness and Counseling Center	Marshak 15	212-650-8222

Academic Programs and Area Specializations

Advertising and Public Relations	102	Jewish Studies	88
American Studies	11	Journalism	103
Anthropology	13	Labor Studies	91
Applied Mathematics	96	Latin American and Latino Studies	93
Arabic	67	Liberal Arts (Adult)	158
Architecture	164	Linguistics	70
Art Education	17	Literature	57
Art History.....	17	Management and Administration ..	51
Asian Languages	67	Mathematics.....	96
Asian Studies	26	Mechanical Engineering	236
Bilingual Childhood Education	181	Media and Communication Arts ..	102
Biochemistry	39	Medical Studies.....	246
Biology	29	Music	111
Biomedical Engineering	206	Music Education	112
Black Studies	35	Painting and Drawing.....	19
Ceramic Design	19	Philosophy	120
Chemical Engineering	210	Photography.....	19
Chemistry	38	Physician Assistant	247
Childhood Education	181	Physics	124
Civil Engineering	215	Political Science	130
Classical Studies	66	Portuguese.....	70
Comparative Literature.....	44	Predental Studies	137
Computer Engineering	221	Pre-Law	135
Computer Science	224	Premedical Studies.....	137
Creative Writing	57	Printmaking	19
Early Childhood Education.....	158	Psychology.....	139
Earth and Atmospheric Sciences....	46	Public Policy and Public Affairs ..	144
Economics	51	Publishing	57
Education.....	173	Recording Studio Technology.....	118
Electrical Engineering	230	Romance Languages.....	65
Electronic Design and Multimedia	19	Sculpture.....	19
Engineering	190	Secondary Education	185
English as a Second Language.....	63	Sociology.....	145
English Literature	57	Sonic Arts Technology	118
Film and Video Production	102	Spanish	65
Foreign Languages and Literatures	64	Speech	151
French.....	65	Studio Art	20
Hebrew	69	Theatre and Speech	151
History	74	Women's Studies	155
History and Philosophy of Science and Technology	80	Worker Education.....	158
International Studies.....	82		
Italian	65		
Italian Studies	87		



The College of Liberal Arts and Science

The College of Liberal Arts and Science

GENERAL INFORMATION

The aims of College of Liberal Arts and Sciences coursework are several: first, to develop the students of the College as broadly cultivated and intelligent citizens of the world in which they live; secondly, to impart to the students of the College a critical cast of mind that is agile in its reception of new ideas, and accustomed to the mastery of new skills; thirdly, to train students so that each may be able to perform some particular function in the community in a worthy and ethical manner. In attaining these goals, students fulfill requirements in a broad range of categories, such as art, literature, foreign language, social science, mathematics, and natural science.

ACADEMIC STANDARDS

The attainment of the high academic standards The City College requires entails more than the maintenance of a 2.00 G.P.A., a minimal expectation. Diligent attendance of classes, on-time arrival for each scheduled session, careful preparation for class, and timely completion of coursework are all significant factors in ensuring academic success.

UNDERGRADUATE MAJORS, DEGREES OFFERED

The College of Liberal Arts and Science (CLAS) offers courses of study leading respectively to the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and to the combined B.A./M.A. within its divisions:

- **Humanities and Arts**
- **Science**
- **Social Science**

Undergraduate majors are offered in more than thirty-five fields. Advisors in the office of each academic Dean assist students in making their initial choices of majors and in reconsidering chosen fields of study. Some departments offer B.A./M.A. programs (see the City College *Graduate Bulletin*), and the faculty participate extensively in CUNY Ph.D. programs, whether based on the CCNY campus or at the Graduate School and University Center in midtown Manhattan.

DEGREE REQUIREMENTS

The degree requirements in the College of Liberal Arts and Science include:

1. The minimum number of credits required for the degree is 120.
2. Students must attain a C or better average (minimum GPA of 2.00) for all coursework taken at City College.
3. Students must also have a C or better average (minimum GPA of 2.00) in their major.
4. Students must complete either a total of 84 credits or the final 32 credits at City College.
5. At least 60% of the credits for the major must be completed at City College.
6. Completion of all College and CUNY proficiencies.
7. All fees and fines must be paid prior to graduation.

Transfer Students

1. All valid liberal arts credits are transferable and will be credited toward degree requirements.
2. B.S. students should consult with

their divisional Dean or departmental advisor for the appropriate sequence of science courses.

THE OFFICE OF ACADEMIC STANDARDS (OAS)

The Office of Academic Standards (OAS) convenes and coordinates the activities of the Committee on Course and Standing of the College of Liberal Arts and Science. The committee acts on student appeals for late course withdrawals (after the deadline), requests for Core substitutions, reinstatement, dismissal for those students with a G.P.A. below 2.00, and all other matters related to violations of academic standards. The committee consists of eleven members of the faculty elected by the Faculty Council. The Director of Academic Standards serves as the non-voting chair of the committee.

The Director of Academic Standards also serves as the College-wide Academic Integrity Official and is the first source to refer to regarding any issue of academic dishonesty.

All student appeals brought to the committee must be submitted in writing with appropriate supporting documents. Faculty who wish to support a student appeal may submit a letter of support. Advisers may assist students in preparing their appeals. Neither students nor faculty appear before the committee in person; all appeals are presented to the committee by the chair. Decisions of the committee are communicated in writing to students by the Director.

The Director may act for the committee or advise appropriate action.

American Studies Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Gordon Thompson, Director • Program Office: NAC 6/215A • Tel: 212-650-6365

GENERAL INFORMATION

The City College offers the following degree in American Studies:

B.A.

PROGRAMS AND OBJECTIVES

The American Studies Program offers students an opportunity to develop a deep appreciation of the various cultures that make up America's vast panorama of races, ethnicities and regionalisms.

The B.A. is designed to enable the student to acquire a broad perspective of the vast American cultural landscape with special emphasis on New York City and its contributions to America's exciting and diverse urban cultures. Methodological practice particular to the study of American culture will be offered so that students will come to understand as never before its internal variations as well as what is exceptional about the character of the American nation. Analysis of the popular and fine arts, social and cultural institutions, and material artifacts of a diverse and changing nation and its people will ensure that the study of American culture remains truly interdisciplinary and multicultural. The Program combines historical, sociological and literary insights with a variety of multimedia approaches such as photography and film to ensure that American Studies scholars remain well informed of the contemporary manifestations and future possibilities of the American nation.

Students are advised to take courses from a variety of disciplines, including

English, History, Political Science, Anthropology, Sociology, Music, Art and others from throughout the City College offerings. This will enable the student to pursue a graduate career in these fields as well as in urban public policy.

REQUIREMENTS FOR MAJORS

Students majoring in American Studies must complete the following:

Required Courses*

<i>American Studies:</i>	
20100: American Studies I	3
20200: American Studies II	3
A 40000-level course in an appropriate discipline	3
An Independent Study course in an appropriate discipline	3

Elective Courses

Topics in American History	6
Representative American Literature (30000-40000 level)	6
Other appropriate Social Sciences and Humanities courses	9

Total Credits **33**

*Students must have at least a 2.60 GPA in the prerequisite courses to major in American Studies.

ADDITIONAL REQUIREMENTS

All American Studies majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)	
English 11000: Freshman Composition (3 cr.)	
English 21000 or equivalent: Second Level Writing Course (3 cr.)	
Core Curriculum for the intended degree	
Speech 11100 (3 cr.) or pass the Speech Proficiency test.	

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.
For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

PLAN OF STUDY

The student is advised to choose an area of concentration by selecting a cluster of courses relevant to a specific theme. This process enables the student to build up a concentration of knowledge about a subject that will lead to a thesis in the senior year. To make the study fully interdisciplinary and multicultural, the student is encouraged to select courses from at least three areas or disciplines.

ELECTIVE COURSES

Architecture

21200: The Built Environment of New York City

Art

28000: Postwar Art in the U.S. and Europe
28900: New York as an Art Center
29200: Women and Art in New York City

Anthropology

- 20100: Cross-Cultural Perspectives
 22800: Anthropology of Urban Areas
 24800: Field Work Methods in Cultural Anthropology
 24800: Field Work Methods in Cultural Anthropology
 25400: American Cultural Patterns
 27300: Black English: Structure and Use

English

- 36000: Representative Writers of the United States: Early American Literature
 36100: Representative Writers of the United States: The Nineteenth Century
 36200: Representative Writers of the United States: The Twentieth Century
 36201: Twentieth Century American Poetry
 36202: American Literature Since World War II
 37001: African-American Literature in America: A Historical Survey
 37004: African-American Fiction

History

- 33100: Early America: From Settlement to Great Awakening
 33200: The Era of the American Revolution
 33000: The New Nation: Slave and Free, 1783–1877
 33400: The Era of the Civil War and Reconstruction: 1840–1877
 33500: The Response to Industrialization to 1917
 33600: The United States in the Twentieth Century
 36200: Immigration and Ethnicity in American Life
 36400: The History of American Labor
 26500: African-American History from Emancipation to the Present
 36600: The American Women's Movement
 36700: American Urban History
 36800: A Social History of American Architecture
 37000: The American Legal Tradition
 37100: History of American Foreign Relations
 37200: Progressivism and Radicalism in 20th Century America
 37500: The Mass Media in Recent American History

- 38000: The Writing of American History
 38600: The American Health Care System

Latin-American and Latino Studies

- 12100: Puerto-Rican Heritage: Pre-Columbian to 1898
 12200: Puerto-Rican Heritage: 1898 to Present
 12600: Hispanics in the United States: Migration and Adjustment

Music

- 24500: Jazz History I: From the Beginning to WW II
 27104: Latin Popular Music
 34500: Jazz History II: From WW II to the Present

Political Science

- 20800: American Political Thought I: 1620–1865
 20900: American Political Thought II: 1865–Present
 21000: Urban Politics
 21100: New York Politics
 21200: Constitutional Law I: The Federal System
 21300: Constitutional Law II: Individual Liberties
 21600: Political Parties and Interest Groups
 21700: Mass Media and Politics
 22000: The Judiciary
 22100: The Congress
 22200: The Presidency
 22300: United States Foreign Policy

Sociology

- 25100: Urban Sociology
 25200: Ethnic Minority Groups
 22700: Ethnic Families in the United States
 29000: Immigration

ADVISEMENT

Before declaring the major, the student should consult with the director and prepare a brief statement of purpose. Together with the director, each student will explore the courses available to begin formulating an individual plan of study.

English 11000, WHUM 10100 or 10200, and WCIV 10100 or 10200 are prerequisites for the following courses:

20100: American Studies I

An introduction to the field of American Studies through a variety of primary texts (literature, painting, music, films and photographs, orations, legal documents) and through interdisciplinary readings that focus on methodological, critical, and historical issues. 3 HR./WK., 3 CR.

20200: American Studies II

The second of the two required core courses in American Studies builds upon the skills developed in American Studies I through its consideration of urban theory, urban social investigation, urban history, and urban literature. It gives special emphasis to the cultural and social history of New York City (in the context of other urban cultures) from the 18th century to the present. 3 HR./WK., 3 CR.

ADVANCED COURSES

In addition to the electives described above, students will take a senior seminar (40000 level) in American Studies, offered by the English Department or the History department. In an Independent Study (31000) with an American Studies faculty member, the student will write a substantial research paper on a topic related to the individual plan of study.

FACULTY

The faculty of the program includes those professors who teach the introductory American Studies courses and those whose departmental courses may be credited to the major.

Department of Anthropology

(DIVISION OF SOCIAL SCIENCE)

Professor Arthur K. Spears, Chair • Department Office: NAC 7/112 • Tel: 212-650-7350

GENERAL INFORMATION

The City College offers the following undergraduate degree in Anthropology:

B.A.

PROGRAMS AND OBJECTIVES

Anthropology, the study of humankind, seeks to produce useful generalizations about people and their behavior and to arrive at the fullest possible understanding of human diversity.

Anthropologists test hypotheses largely through fieldwork. The program at City College is designed to offer students background in the four fields of the discipline:

Archaeology
Sociocultural Anthropology
Anthropological Linguistics
Physical Anthropology

SECONDARY SCHOOL TEACHING

An approved program of courses provides training in both subject matter and teaching methods that prepares the student for New York State certification. Graduates will be eligible to teach in NYS schools. For more information, please consult the Department of Education section of this *Bulletin*.

REQUIREMENTS FOR MAJORS

Students majoring in Anthropology must complete the following:

Required Courses

Anthropology:
 20000: Archaeology 3

20100: Cross-Cultural Perspectives 3
 20200: Languages and Dialects in Cross-Cultural Perspective 3
 20300: Human Origins 3
 One 30000-level course 3

Elective Courses

Additional credits 15

Total Credits 30

Appropriate electives in the respective sub-disciplines may be substituted for Anthropology 20000, 20100 or 20300.

As many as 6 of the 15 elective credits may be related courses outside the Department of Anthropology, e.g. courses in Asian Studies, Biology, Black Studies, History or Sociology. These courses must be chosen in consultation with a departmental advisor.

Advanced students with good grade point averages may enroll in graduate courses on the recommendation of a faculty member and the Dean of the Division of Social Science.

ADDITIONAL REQUIREMENTS

All Anthropology majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to the *Bulletin*.

REQUIREMENTS FOR MINORS

See Chair or Faculty Advisor.

ADVISEMENT

General Advisors

Students seeking information on Anthropology courses or the major should contact the Anthropology Department Office, NAC 7/112, where they will be directed to a faculty member in the appropriate subfield of Anthropology.

Honors Advisor

Professor Arthur Spears

FACILITIES AND ACTIVITIES

Darkroom Facilities

For information about the Darkroom inquire in the Departmental Office.

The Anthropology Society

The Anthropology Society is an ongoing student organization that sponsors programs of anthropological interest.

AWARDS

The Ward Medal

The College gives the Ward Medal annually to the graduating senior demonstrating the greatest proficiency in the field of Anthropology.

COURSE DESCRIPTIONS

The general prerequisite for elective courses is either Anthropology 10100 or sophomore standing, or permission of the instructor. Other prerequisites may be listed under certain courses.

CORE COURSES

10100: General Anthropology

Humankind from its beginnings in Africa to the present. Course focuses on human biological and cultural evolution through prehistoric times, identification of cultural bias in attempts to understand the human past and present, and exploration of the fallacies of racial and cultural superiority. Topics include the development of social stratification, cultural definitions of reality, language and thought, alternative ways of generating cooperation and handling conflict, culture change and "modernization." 3 HR./WK.; 3 CR.

10101: General Anthropology—Honors

For students enrolled in the Freshman Honors Program: an alternative version of the introductory course designed to provide greater student participation, more writing, and student-instructor interaction. 4 HR./WK.; 4 CR.

INTRODUCTORY COURSES

13300-13600: Tutorials in Anthropological Research Laboratory
See "Anthropological Research Laboratory" at the end of the Anthropology course listings.

20000: Archaeology

The basic aims and methods of archaeological field work and interpretation, with emphasis on the interrelationship of archaeology to general anthropology. Strategies involving the reconstruction of culture, history, past life ways, and processual and post-processual studies will be reviewed against a background survey of world prehistory. 3 HR./WK.; 3 CR.

20100: Cross-Cultural Perspectives

Human universals and differences in family life, economics, politics and religion in

societies around the world. Insights about American life and about how the world's peoples are interdependent. Emphasis on major controversies and issues about gender relations, economic development, inequality, violence and aggression, religion, healing and cultural identity. (W) 3 HR./WK.; 3 CR.

20200: Languages and Dialects in Cross-Cultural Perspective

A survey of the origin, evolution, structure, and social use of languages and dialects. Topics included are multilingualism, speech events and genres, language and education, language and thought, child language acquisition, creole languages, varieties of Spanish, and African-American English. 3 HR./WK.; 3 CR.

20300: Human Origins

An introduction to human diversity, the relationship of humans to other animals, the fossil record, non-human behavior, genetics, and forensics. 3 HR./WK.; 3 CR.

21002: Writing for the Social Sciences

To develop the skills necessary for writing in the social sciences through the methods and techniques used in Anthropology. The focus of the course is on ethnography (a primarily descriptive account of a single cultural scene). Students will explore the steps used to create an ethnography, including reviewing previous research, formulating hypotheses based on this review, gathering data through fieldwork, and writing a research paper on the results. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

ADVANCED COURSES

Archaeology

20500: Historical Archaeology

Archaeological investigations of complex, historic civilizations. Disciplines such as Classical, Medieval, and Islamic archaeology will be discussed, but emphasis will be on the study of sites, and remains left by the expansion of Europe into the Americas, Africa, Asia, and Oceania before the industrial revolution. (W) 3 HR./WK.; 3 CR.

20501: Historical Archaeology Field School

Basic field experience in the creation of a research design, the excavation of selected sites, the recovery and classifying of artifacts, and laboratory analysis. Excavations will be conducted in the New York metropolitan area on local historic sites and will concentrate on the pre-industrial period. (W) 6 HR./WK., LAB. AND EXCAVATION; 5 CR.

21500: The Origins of Civilization and the State

The background and development of urban society in the Old World from the Neolithic period. Life in the early cities of Africa, Asia and the Mediterranean, as revealed by archaeological data. The nature of and reasons for similarities and differences. (W) 3 HR./WK., 3 CR.

32100: Theory and Method in Archaeology

An intensive contemporary and historical review of the various theoretical positions and strategies in archaeological research. The impact of the various perspectives in general anthropological theory as well as that of such individuals as W.W. Taylor and L. Binford, with a special emphasis on "Processual Archaeology." (W) 3 HR./WK.; 3 CR.

Sociocultural Anthropology

22500: Class, Ethnicity and Gender

Interrelationship of social organization with economical, political, and religious structures in selected societies chosen to represent various levels of integration in different parts of the world. Modern issues facing increasingly heterogeneous urban societies. (W) 3 HR./WK.; 3 CR.

22600: Culture, Personality, and Behavior

Anthropological approaches to the study of the interaction between cultural and psychological phenomena in different societies and ethnic groups. Topics include child rearing patterns; perception and logic; socialization patterns and the learning process; formal education and its interface with cultural concepts of class, status, knowledge, and power; maintenance and change of cultural and ethnic identity; adult personality and national character; trance and possession states; mental illness. (W) 3 HR./WK.; 3 CR.

22800: Anthropology of Urban Areas

Anthropological perspectives on the understanding of the urban experience. Urbanization and urbanism from an international perspective. The forces that shape people's lives in the metropolis. Topics will include the role of ethnicity, race, class, poverty and culture in urban life. Emphasis on urban institutions, ethnicity, race and class in New York City. (W) 3 HR./WK.; 3 CR.

22900: Cultural Change and Modernization

The impact of Western colonial systems on the politics and cultures of the Third World. The growth of new nations and national institutions in Africa, Asia and Latin America. (W) 3 HR./WK.; 3 CR.

23100: Anthropology of Law

The comparison of legal institutions and practices and of cultural concepts of danger and crime, conformity and conflict, and dispute management and settlement in non-Western societies and in the urban United States. Topics include law and social change; ordeals and verbal dueling; the relationship of legal practices to class, status and power with emphasis on the position of marginal groups and individuals; American family law; and American Indian law. (W) 3 HR./WK.; 3 CR.

23200: Witchcraft, Magic and Religion

The relationship between social behavior and ideas about supernatural forces. Topics include the origin and role of religion in society; comparison of types of supernatural beings, powers, and religious practitioners; the practice of witchcraft and magic in different societies and ethnic groups; the interpretation of ritual symbols and mythology. (W) 3 HR./WK.; 3 CR.

23600: Sex, Marriage, and Family in Cross-Cultural Perspective

Courting, mating and sexual patterns, psychocultural dynamics of marriage forms, rituals and mores, parenting patterns, and the impact of separation and divorce cross-culturally. (W) 3 HR./WK.; 3 CR.

24000-24700: Special Area Studies

A group of courses devoted to the study of the cultures and societies of major world areas. Economic patterns, social structures, political organization and religious life. Relation of traditional cultures to contemporary politics. (W)

24000: Peoples of Africa

Traditional and modern African cultures viewed on their own terms; African roots of all humanity; the nature of pre-colonial societies; legacy of slavery and colonialism. Special topics include apartheid, African arts and music, African descendants in the Americas, alternate healing systems, and communal religion and trance. (W) 3 HR./WK.; 3 CR.

24200: Peoples of the Caribbean

This course examines the cultural formation of the Caribbean and the diversity of contemporary Caribbean societies. Both the colonial and post-colonial experience of the Afro-Caribbean and the Hispanic Caribbean will be explored. Among the topics to be discussed will be family, religion, rural and urban life, race, color and class, and international migration. (W) 3 HR./WK.; 3 CR.

24300: Peoples of Latin America

Review of the pre-conquest civilizations of Middle and South America provides a historical basis for considering contemporary

cultures and societies of the western hemisphere south of the U.S. border. Varieties of adaptation in horticultural villages of the Amazon, peasant cultivators of highland Andes and Mexico, and urban dwellers will be compared using recent ethnographies. Migration of Hispanics from Latin America to the U.S. will be addressed. (W) 3 HR./WK.; 3 CR.

24600: Peoples of the Middle East

3 HR./WK.; 3 CR.

24800: Field Work Methods in Cultural Anthropology

First hand experience with cultural diversity in New York City, with emphasis on direct observation in various neighborhoods and institutional settings. Problems of gathering and analyzing qualitative and quantitative data, framing research questions, and the ethics of research in culturally unfamiliar settings. (W) 3 HR./WK.; 3 CR.

24900: Visual Anthropology

Selected world cultures and societies as viewed through the camera lens. Comparisons are drawn between visual and printed records, different styles of filmmaking, and changing cultural patterns. The evolution of anthropology as a discipline. Selected film topics include patterns of work, ritual, the construction of gender roles, and child socialization. (W) 3 HR./WK.; 3 CR.

25400: American Cultural Patterns

Anthropological perspectives on contemporary United States culture: ethnic and class variations; effect of mass communication on cultural expression; impact of business and commercial enterprise on the development of culture. Critiques of American culture from national and foreign sources. (W) 3 HR./WK.; 3 CR.

25500: Anthropology of Health and Healing

The cultural and ecological aspects of human disease, the evolution of humanity and its ills, and the study of healing on a cross-cultural basis. (W) 3 HR./WK.; 3 CR.

25600: Women in Cross-Cultural Perspective

Comparative study of women's social roles around the world and through history. The sexual division of labor and evolution of humanity. Family forms and sex roles in hunting-gathering and horticultural society. The forms and origins of patriarchy. Women and family in Third World and industrial nations today. Prereq.: Anth 10100, Women's Studies 10000, sophomore standing, or instructor's permission. 3 HR./WK.; 3 CR.

27200: Television & Film: Anthropological Perspectives on the Mass Media

How television and film reflect the socio-cultural environment in which they are produced. The emphasis is on the analysis of signs (language, nonverbal communication, and symbolism) in order to understand the ideological context of these media. (W) 3 HR./WK.; 3 CR.

33000: Contemporary Culture Theory

The theories underlying the analysis of archaeological and cultural data and differing explanations for cultural regularities: evolutionary, ecological, symbolic, Marxist, structuralist, political, and ethical issues and anthropological theory. Prereq.: Anth. 20100 and two additional elective courses in Anthropology or instructor's permission. (W) 3 HR./WK.; 3 CR.

33100: History of Anthropological Theory

History of the field of Anthropology. Nineteenth century evolutionary theories, and early 20th century historical particularism and structural functionalism. The personality and culture school. Colonialism and politics of anthropological theory. Prereq.: 20100 and at least two electives in Anthropology, or instructor's permission. (W) 3 HR./WK.; 3 CR.

35000: Race and Racism

An examination of the idea of race from biological, sociocultural, and historical standpoints, particularly as it arose in support of the development of western European colonialism and imperialism. Also investigated will be the role of race/racism via-a-vis socioeconomic inequality, gender, class, ethnicity, and sexuality. (W) 3 HR./WK.; 3 CR.

Anthropological Linguistics**26500: Language and Society**

Various regional and social class dialects are considered along with bilingualism and contact languages such as Haitian French Creole. Focuses on how behavior is affected by value judgments about dialect differences and how language is used to operate in different social contexts, including the classroom, workplace, neighborhood, and in multicultural situations generally. (W) 3 HR./WK.; 3 CR.

27300: Black English: Structure and Use

The grammatical structure of Black American English and how it is used in Black culture and the educational system. (W) 3 HR./WK.; 3 CR.

27500: Creole Sociolinguistics

The origin, history, and grammar of Haitian (French Creole) and related languages such as St. Lucian, Jamaican (Patois), and Guyanese. Topics include the use of Creole in education, Creole orthography, and the relationship of Creole languages to their European language lexifiers. (W) 3 HR./WK.; PLUS CONF.; 3 CR.

Physical Anthropology**28500: Human Heredity, Race and Intelligence**

Environmental, cultural, and genetic interaction in human diversity and evolution. Topics: detecting inherited traits by pedigree, twins, population, chromosome and genetic code methods. Race, intelligence, sex roles, retardation, schizophrenia. Importance of culture and genetics in inherited diseases (sickle-cell trait, lactase deficiency), aggression and war. (W) 3 HR./WK.; 3 CR.

29000: Dynamics of Human Ecology

Interactions of environmental, cultural, and biological factors in human adaptation. Topics: proxemics, privacy; personal space, territory, crowding, population problems; kinesics (gestures); pollution, food, energy crises, aggression and war causes. (W) 3 HR./WK.; 3 CR.

29500: Bio-Cultural Anthropology

Environmental, social, nutritional, and political factors in human biological and cultural diversity. Topic areas: nature vs. nurture in sociobiology controversy; deprivation and poverty; stress; sex roles, mental illness, victims and victimization. (W) 3 HR./WK.; 3 CR.

INDEPENDENT STUDY AND SELECTED TOPICS**13300-13600: Anthropological****Research Laboratory**

The Anthropological Research Laboratory offers students an opportunity to do independent research in any of the four fields of anthropology or in applied anthropology, and to have individual advisement in the collection, analysis, and summarizing of data. A project is chosen in cooperation with a faculty member with whom the student meets in one hour conferences each week. In addition the student is expected to devote three hours a week for each credit taken, to be spent in reading and/or data collection, analysis, and writing a report. One or 2 credits of ARL can be taken in conjunction with an Anthropology course in which a student is enrolled, enabling the student to do extra work on a

project or term paper connected with that course. Coreq: any other Anthropology or related course. For detailed information contact the Department of Anthropology (NAC 7/108). 1-3 CR. WITH A MAXIMUM OF 6 CR. ALLOWED FOR THE SERIES

Note: No more than six credits in any one department and no more than nine credits total will be permitted in the following courses: Anthropology 13300-13600, Asian Studies 20402, Black Studies 20000-20400, Psychology 23300-23600, Sociology 23300-23600.

30100-30400: Honors I-IV

Approval of Dean and department Honors Supervisor required. Apply in NAC 4/144 no later than December 10 in the Fall term or May 1 in the Spring term. VARIABLE CR., USUALLY 3 CR./SEM.

31000: Independent Study

An opportunity for an individual or small group to develop a research project or explore some topic in depth through directed readings with a faculty member chosen by the student(s). Research project: a problem will be developed (over several semesters, if necessary) leading to the completion of a research paper based on either library or field data. Tutorial: content of readings will be determined by all the participants, and weekly sessions will provide tutorial style discussion. Students are required to make arrangements for each course well in advance of the registration period. Prereq.: junior or senior standing and permission of instructor. 2-3 CR. EACH COURSE WITH A MAXIMUM OF 6 CREDITS TO BE DETERMINED BEFORE REGISTRATION BY THE INSTRUCTOR WITH THE APPROVAL OF THE DEPARTMENT CHAIR.

31100-32000: Selected Topics

Departmental and interdepartmental cooperative courses of advanced study in selected subjects. Prereq.: junior or senior standing, and permission of the department. HRS. AND CR. FLEXIBLE BUT USUALLY 3 HR./WK.; 3 CR.

FACULTY**Carol Laderman, Professor**

B.A., Hunter College, M.A.; M.Phil., Columbia Univ., Ph.D.

M. A. Samad-Matias, Lecturer

B.A., Hunter College; M.A., New York Univ.

Diane Sank, Professor

B.S., Long Island Univ.; M.S., Univ. of Illinois; Ph.D., Columbia Univ.

Arthur K. Spears, Professor and Chair

B.A., Univ. of Kansas; M.A., Johns Hopkins (International Relations); M.A., Northwestern Univ. (Linguistics); Ph.D., Univ. of California (San Diego)

Diana Wall, Professor

B.A., The City College; M.A., New York Univ., Ph.D.

PROFESSOR EMERITUS**June Nash**

Department of Art

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Colin Chase, Chair • Department Office: Compton-Goethals 109 • Tel: 212-650-7420

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Art:

B.A.

B.F.A. in Electronic Design & Multimedia

PROGRAMS AND OBJECTIVES

Study in New York City offers an unparalleled opportunity to absorb not only the range and excitement of the current art scene, but also the riches of the past, through cultural resources of exceptional quality. The programs of the Art Department provide both the general student and the pre-professional with a solid foundation in studio art and art history, as well as advanced work in several specialized fields. Formal course work is reinforced with visits to museums, galleries, and artists' studios; guest lectures and critiques; and exhibitions in the Art Department Gallery.

B.A. PROGRAM OPTIONS

Studio Art

For studio art students, general instruction in the theory and practice of the visual arts is provided along with training that may include concentration in one or more of the following areas of specialization: drawing and painting, electronic design and multimedia, printmaking, photography, sculpture or ceramic design. This option is both broad and focused, allowing students to build their skills in one or more areas of specialization after receiving foundation training in design. Studio art students also take art history courses.

Art History

Art history students take introductory survey courses that are multicultural in focus. Advanced courses provide a grounding in historical and current Western and non-Western visual culture traditions. Special topic courses are often linked to current museum exhibitions and professional internships are open to qualified students. This option prepares students for career paths in museums and galleries, art publishing, auction houses, art appraisal, teaching art history, archaeology, and other art related fields. Art history students also take studio art courses.

Teaching Art K-12

The option designed for students specialized in teaching Art K-12 has three components: general instruction in the theory and practice of visual arts; introductory survey courses in Art History that are multicultural in focus; education courses which focus on the nature of learning and methods of teaching. The option prepares students to pursue careers as art educators, artists in residence and teaching artists in schools, museums, cultural centers and independent organizations that serve students of all ages. Students are required to take the LAST, ATS-W and CST exams, attend required seminars and be fingerprinted. The option enables students to qualify for "Initial" Certification from the New York State Department of Education.

B.F.A. IN ELECTRONIC DESIGN AND MULTIMEDIA

The B.F.A. in Electronic Design & Multimedia is a professional specialization in design for print and interactive

media which integrates a variety of digital media into all stages of design and production.

It emphasizes a foundation in the principles of basic design as the prerequisite to intensive studio practice in design and imaging for a variety of visual communications media. The program builds skills in typography, design and imaging and visual problem-solving completely integrated into digital technology. Using the industry standards in hardware and software, students gain practice in both concept and production. Students are encouraged to gain practical experience through internships and freelance projects. CCNY students have entree to the resources of New York City's vast publishing and multimedia industries through industry partnerships.

Prerequisites for Admission

Students seeking admission must present a portfolio for review by the admissions committee. The portfolio should demonstrate aptitude; finished, professional work is not a criterion. The committee is looking for raw ability, talent and motivation. Students lacking a portfolio may enter the College in the B.A. program, and may apply to the B.F.A. after completing level 10000 and 20000 courses in the major. These students will submit a portfolio of work from those classes and be evaluated by the program's instructors.

B.F.A. Program Requirements

The B.F.A. Program in Electronic Design and Multimedia requires a total of 78 credits in the major, plus the College Core for the B.F.A. of 36 credits, with 6 additional credits in Liberal Arts electives making up the total of 120 credits toward the degree.

Graduation Requirements

Students will be required to mount a display of their thesis project and prepare an oral as well as visual presentation of their work, defending their thesis project to program faculty and invited outside critics. Additionally, students may be required to complete an internship in an area related to their major concentration.

REQUIREMENTS FOR MAJORS

Courses required for all majors:

10000: Introduction to the Visual Arts of the World	(3 credit core)	
10100: 2-Dimensional Design		3
21000: Writing about Art	(3 credit core)	

B.A. Option Requirements

Studio Art Option

One course from the following 2-Dimensional Group:		3
10200: Introduction to Drawing		
10300: Introduction to Printmaking		
10400: Introduction to Photography		
10500: Introduction to Painting		

One course from the following 3-Dimensional Group:		3
10600: Introduction to Sculpture		
10700: Introduction to Ceramic Design		
10800: Introduction to Wood Design		
10900: 3-Dimensional Design		

Four courses in Art History at the 20000 level or above, selected from at least three of the six subject groups, in consultation with program advisor.

Studio Electives		21
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Total credits 39

Art History Option

One course from the following 2-Dimensional Group:		3
10200: Introduction to Drawing		
10300: Introduction to Printmaking		
10400: Introduction to Photography		
10500: Introduction to Painting		

One course from the following 3-Dimensional Group:		3
10600: Introduction to Sculpture		
10700: Introduction to Ceramic Design		
10800: Introduction to Wood Design		
10900: 3-Dimensional Design		

Art History electives including at least one from each of the four groups 24

Studio Electives 6

21090: Research Methods 3

Total credits 39

B.A. Teaching Art K-12 Option

Major requirements are listed below. For a description of education courses see the Department of Education section of this Bulletin. Required art courses (42 cr.) fulfills the NY State Subject Matter Specialization requirement

Studio Art:

10100: 2-Dimensional Design 3

One course from the following 2-Dimensional Group: 3

10200: Introduction to Drawing		
10300: Introduction to Printmaking		
10400: Introduction to Photography		
10500: Introduction to Painting		

One course from the following 3-Dimensional Group: 3

10600: Introduction to Sculpture		
10700: Introduction to Ceramic Design		
10800: Introduction to Wood Design		
10900: 3-Dimensional Design		

Any five additional Studio Art courses, at least one of which must be 20000-level, and one must be 30000-level 15

Art History:

21062: History of Art I: Ancient through Medieval		3
21064: History of Art II: Renaissance through Modern		3

Any two additional Art History courses at the 20000-level or above, at least one of which must be non-Western 6

Education Courses:

10155: Art in Elementary Education		3
20155: Art in Secondary Education		3

Total credits 42

B.F.A. in Electronic Design and Multimedia Requirements

10200: Introduction to Drawing 3

One course from the following 3-Dimensional Group: 3

10600: Introduction to Sculpture		
10700: Introduction to Ceramic Design		
10800: Introduction to Wood Design		
10900: 3-Dimensional Design		

Studio Art:

10400: Introduction to Photography		3
10500: Introduction to Painting		3
21034: History of Modern Design		3
29500: Typography I		3
29510: Graphic Design Concepts		3
29520: Illustration		3
29526: Computer Imaging and Illustration		3
39510: Electronic Design I		3
39512: Print Production		3
39540: Design for the World Wide Web I		3
39550: Multimedia Design I		3
39560: Digital Video		3
39590: Seminar in Critical Issues in Design, Technology and New Media		3
49510: Electronic Design II		3
49590: Electronic Design Portfolio		3
49598: Senior Thesis		6

Any five studio electives at the 20000 level or above 15

Any three Art History courses at the 2000 level or above from at least three of the six distinct art history groups 9

Total B.F.A. credits 75

HONORS AND RESEARCH

Qualified students may be approved for honors work in studio projects (Art 31591-31593) or art historical research (Art 31094-31096).

ADDITIONAL REQUIREMENTS

All Art majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)		
English 11000: Freshman Composition (3 cr.)		
Art 21000, English 21000 or equivalent: Second Level Writing Course (3 cr.)		
Core Curriculum for the intended degree		
Speech 11100 (3 cr.) or pass the Speech Proficiency test.		

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

ADVISEMENT

Students intending to major in Art should confer with the chair of the department for assignment to an advisor, who will help them plan an option in elective work.

Art Education

Professor James, 212-650-7433

Art History

Professor Indyck, 212-650-5163

Professor Leader, 212-650-7413

Professor Preston, 212-650-7431

Professor Senie, 212-650-7430

Ceramic Design

Professor Netzer, 212-650-7435

Electronic Design and Multimedia

Professor Albee, 212-650-7411

Professor Burns, 212-650-7402

Professor Saltz, 212-650-7408

Professor Weintraub, 212-650-7410

Painting and Drawing

Professor Fuentes, 212-650-7414

Photography

Professor Albee, 212-650-7411

Professor Habegger, 212-650-7426

Printmaking

Professor Itami, 212-650-7425

Sculpture

Professor Chase, 212-650-7432

FACILITIES**Art Gallery**

The Art Department's gallery space displays work of undergraduates, graduate students and professional artists, and specially curated exhibitions. Approximately 2000 sq. ft. in size, the gallery accommodates two- and three-dimensional art.

Ceramic Design

The facilities include a large open work area with 18 pottery wheels and a slab roller, extruder, and a kiln room with three electric kilns. There is a plaster studio where students learn mold-making. Various clay bodies are used for utilitarian, sculptural and architectural ceramics, with equal emphasis on clay's multicultural traditions, e.g., Egyptian paste, majolica, raku.

Electronic Design and Multimedia

The electronic design studio incorporates two general purpose computer labs, two specialized digital media labs, a print center and a design studio classroom, facilitating interaction between traditional and digital design production. The computer labs include: a multi-purpose lab for design, publishing and illustration; a multimedia lab for animation, interactive multimedia and web design; and two specialized labs focusing on digital video, 3-Dimensional animation and digital media integration. The electronic design studio is equipped with industry-standard computers configured for design and multimedia and running current graphics and multimedia software. With an open studio policy for currently enrolled students, the lab is available over 60 hrs./wk. under the supervision of the lab manager, faculty and lab assistants. This facility mirrors the real-world graphics environments found in industry in order to better prepare students for positions in the field.

Painting and Drawing

The painting and drawing rooms are equipped with architectural-quality drafting tables and large easels. A studio area is set aside for work in encaustic and water-based media, and for the study of painting methods, materials and techniques. Each studio has wall space for critiques and large-scale projects. Model platforms, mat cutters, props and tools for the construction of painting supports are available. The Slide Library maintains a collection of slides of student work for reference.

Photography

The facility houses a large, group black/white darkroom, a color darkroom and processing lab, private darkrooms, a studio, a process camera room, and a mounting/finishing area. Equipment includes Beseler and Omega enlargers, a Colenta processor and a NuArc process camera. The David and Lenore Levy Collection of Contemporary Photography is available for student and faculty use.

Printmaking

The studio is equipped for the teaching of intaglio, lithography, relief processes including woodcut and linocut, collagraph, carborundum aquatint, water-based silk-screen, photo-printmaking in etching, silkscreen and lithography, and combinations of all the print media. There are three etching, one relief and two lithography presses, a 62" x 62" NuArc plate maker with a deep well blanket, plate cutter, large hot plate, aquatint box, large aluminum bed for lithographic plates, lithographic stones in a full range of sizes, queen size drying rack, numerous rollers of various durometers and dimensions, hydrobooth and hydroblaster for silk screen and a large copy camera to facilitate the production of oversized images. The integration of equipment for photographic processes with conventional printmaking equipment allows for the full range of printmaking experiences.

Sculpture

Metal fabrication using mig welding, plasma cutting, plaster, stone, clay and wood carving, wood assemblage and construction are some of the techniques used to produce traditional and non-traditional three-dimensional art. Performance art and intermedia fabrications are designed and executed in an adjacent facility. A basic wood design shop with table saw, joiner, surfacer and band saws handles is available.

Slide Library

Consisting of over 120,000 slides of works from prehistoric times to the present, the collection includes painting, sculpture and architecture of the

Americas, Africa, Asia, and Europe, as well as ceramics, ivories, metalwork, manuscripts, printmaking, photography, textiles, interior design and comparative materials.

DEPARTMENT ACTIVITIES

Art Department

The Department sponsors exhibitions, guest lectures and appearances by visiting artists throughout the academic year. Student exhibitions are organized each year in the Art Gallery.

Student Art Societies

Student organizations include art history, electronic design and multimedia and photography. These groups are open to all students and generally promote and stimulate various forms of art at the College.

AWARDS AND SCHOLARSHIPS

The Art Department grants the following annual awards, including:

The Albert P. D'Andrea Award

For excellence in art and scholarship.

The George William Eggers Art Alumni Achievement Award

For excellence in a specific field of art.

The Holly T. Popper Art Scholarship

For an outstanding graduating female City College art major to study in an M.F.A. program in the Art Department.

The James R. Steers Prize

For general excellence in art.

The Therese McCabe Ralston Connor Awards

For art majors with promise of outstanding achievement.

Seymour Peck Scholarships and Creative Awards in the Arts

To outstanding undergraduate and graduate majors in the arts.

COURSE DESCRIPTIONS

STUDIO ART

Art 21000 (or equivalent) is a pre-or co-requisite for all 20000 level studio courses.

Students are required to furnish their own supplies and materials for all studio courses. Many studio courses charge a lab fee to cover the cost of materials. Please check the schedule of classes before registering.

Introductory Courses

10000: Introduction to the Visual Arts of the World

Concepts underlying content, formal structure and historical development of the visual arts; art as a global phenomenon from prehistory to the present; relationship of art to the natural world, the built environment, political and other human institutions, and the realm of spirituality. 3 HR./WK.; 3 CR.

10100: 2-Dimensional Design

Introduction to the principles of two-dimensional concepts to explore visual vocabulary in design. Particular emphasis is made on representational and abstract aspects of composition to describe shape, structure, and space. Other design issues focus on the application of pictorial elements through pattern, texture, rhythm, balance, gravity, line, and the illusion of three-dimensional effects on two dimensional surfaces. Color principles, the interaction of color, color phenomena, and the function of color in design are closely examined. 3 HR./WK.; 3 CR.

10900: 3-Dimensional Design

An introductory course that involves process and problems of creating three-dimensional forms. Concentration on concepts of spatial organization. Particular emphasis on the exploration of various materials, fabrication methods, and techniques using a variety of tools and light machinery. Focus on the formation and analysis of ideas for their interpretation as three-dimensional constructions. 3 HR./WK.; 3 CR.

21000: Writing About Art

Practice in the styles and forms of expository writing required in the arts. Readings that acquaint students with standards of good writing about the arts. Prereq.: English 11000 and Art 10000 or equivalent. 3 HR./WK.; 3 CR.

Drawing

10200: Introduction to Drawing

Drawing emphasizing fundamentals of visual perception, representation, abstraction, and pictorial organization. Introduction to the practice and articulation of elements of drawing involving composition, armature, structure, form, volume, line, texture, value, and space. Observation and specific problems stress experimentation with a variety of drawing materials including dry and aqueous media. Various papers and drawing surfaces are also examined during the course. 3 HR./WK.; 3 CR.

22000: Intermediate Drawing

Continuation of introductory drawing through exploration of various dry and aqueous media in black and white. Emphasis on formal concerns, drawing devices, process and expressive drawing to develop a personal visual language. Prereq.: Art 10200. 3 HR./WK.; 3 CR.

32000: Figure Drawing

Drawing from the live model as a means to understand line, shape, form, proportion and foreshortening in the figure. Emphasis on principles of anatomy to examine bone structure and muscles. Drawing the figure includes both short poses to investigate gesture and the dynamics of the pose, and long poses with focus on creating a finished drawing by incorporating light, space and compositional devices. Experimentation with various dry and wet drawing techniques. Prereq.: Art 10200. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

Printmaking

10300: Introduction to Printmaking

Art and technique of intaglio (etching, drypoint, aquatint, soft ground, sugar lift), relief printing (woodcut, lino-cut), stone lithography and combinations of these techniques and processes. Prereq.: Art 10100 or 10200. 3 HR./WK.; 3 CR.

23000: Projects in Printmaking

Advanced work in various printmaking processes, methods and techniques. The use of photo, digital, and hand-derived imagery to produce work in photo-silkscreen, photo-lithography and photo-etching, as well as intaglio, lithography, relief printing, collagraph, silkscreen and monotype printing. Specific course content will vary semester by semester and be announced beforehand. Prereq.: Art 10300, 10400 or permission of the instructor. This course may be taken as many as four times for credit. 3 HR./WK.; 3 CR.

Photography

10400: Introduction to Photography

Principles and fundamentals of photography as an art form. 3 HR./WK.; 3 CR.

24000: Photography II

Emphasis on the craft of photography. Problems leading to the mastery of technical skills regarding camera usage, exposure, film processing, printing and finishing. Prereq.: Art 10400. 3 HR./WK.; 3 CR.

24010: Color Photography

Practical experience in basic techniques as well as exploration of creative directions in the field of color photography. Prereq.: Art 10400. 3 HR./WK.; 3 CR.

24020: Photojournalism

The making of still photographs for use in visual communications media. The function, scope and influence of photojournalism in contemporary society. Prereq.: Art 10400. 3 HR./WK.; 3 CR.

24030: Documentary Photography

Visual recording, by means of still photographs, of people and the products of their society. Prereq.: Art 10400. 3 HR./WK.; 3 CR.

24050: Genres in Photography

A generic approach providing practical experience with specific content in photography: portraiture, still life, reportage, landscape and nature. Relationship of design, technique, and content. Prereq.: Art 10400. 3 HR./WK.; 3 CR.

34000: Photo Portfolio and Projects

Advanced and individualized projects in any area of photography. Portfolio development for students specializing in photography. Group and individual critiques and reviews as well as readings and discussions to develop and hone one's artistic vision, and to promote passionate and sustained involvement in photography as a communication medium of personal, social and cultural significance. Prereq.: Art 20400, 24010. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

34040: Alternative Processes in Photography

Introduction to unconventional photographic processes. Exploration of historic and new methods and materials that allow extension of photographic imagery beyond the standard black and white silverprint. Experimentation with hand-made emulsions and papers, incorporation of photographic imagery into new and varied contexts such as drawings, paintings and books. Prereq.: Art 24000, 24010 or permission of the instructor. 3 HR./WK.; 3 CR.

34060: Studio Photography and Lighting

Emphasis on developing a studio sensibility. Exploration of various lighting systems such as tungsten and quartz, studio and portable flash, natural light, and mixed sources. We will address the artistic and technical problems associated with portraiture, still life, and product photography. Use of hand-held meters, flash meters, lighting accessories, filters, and an introduction to the view camera. Prereq.: Art 20400, 24010 and permission of the instructor. 3 HR./WK.; 3 CR.

34070: Large Format Photography

An introduction to the large format view camera as used in fine art and commercial photography. A studio course covering fundamental camera movements, perspective controls and optics selection, applied lighting set-ups, metering and exposure calculation procedures, and specialized film processing and printing skills. Students will get hands-on experience with the 4x5 inch camera, while fostering a studio sensibility through the development of skills and techniques unique to large format photography. The course will introduce students to another way of seeing by exploring the special properties inherent in large format, while working in a professional, studio environment. Prereq.: Art 24000. 3 HR./WK.; 3 CR.

Painting

10500: Introduction to Painting

The medium of oil painting as related to visual perception and composition. Exploration of traditional and non-traditional approaches to painting. Emphasis on materials, color mixing, and technical implications in the process of painting. Prereq.: Art 10200. 3 HR./WK.; 3 CR.

25000: Projects in Painting

Exploration of problems in painting in representational and nonrepresentational approaches. Emphasis on painting from direct observation, personal concepts and solutions to assigned projects. The course focuses on formal concerns including color mixing, value, color interaction, composition and problems of pictorial space. Studies and medium size paintings will investigate the overlapping relationships of painting and drawing. Experimentation with materials, techniques and various alternatives in the handling of paint. Prereq.: Art 10500. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

35000: Watercolor

Continued experience with aqueous media, both transparent and opaque, including

applications to other areas of artistic expression. Prereq.: Art 10100. 3 HR./WK.; 3 CR.

Sculpture

10600: Introduction to Sculpture

The problems of sculpture as related to visual perception and composition. 3 HR./WK.; 3 CR.

10800: Introduction to Wood Design

Introduction to woodworking. Basic construction techniques and the proper use of hand and power tools. 3 HR./WK.; 3 CR.

26000: Projects in Sculpture

The principles of visual communication and expression in sculpture. The sculptural idea will be taken through the necessary paces from doodle to final presentation. The course aims to provide an environment that encourages students to explore these ideas through research, process and materials. The students will be exposed to historical and contemporary precedence in art making and are taught to think independently to gain an understanding of a wide range of sculptural concerns. The course will revolve around traditional and contemporary methods of fabrication such as welding, carving, and construction as well as the use of alternative materials such as concrete, polystyrene, etc. Prereq.: Art 10600. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

28000: Projects in Wood Design

Continuation of Introduction to Wood Design. Emphasis on development and construction of more sophisticated designs. Advanced woodworking techniques. Prereq.: Art 10800. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

Ceramic Design

10700: Introduction to Ceramic Design

Principles of ceramics as an art form, introducing handbuilding methods such as slab, coil, and pinching to create ceramic forms. 3 HR./WK.; 3 CR.

10710: Architectural Ceramics

Architectural ceramics is the use of clay to make structural and decorative elements for the built environment. This course is an introduction to basic skills and techniques of ceramics—pinchpot, coil, and slab as taught through the prism of architectural tiles and decorative units. There are field and museum trips to see firsthand the rich multicultural history of ceramic tile and ornament. Provides students with hands-on experience making single and multiple forms. Learn how to make and

use plaster press molds, plaster slipcasting molds, and the extruder. Form making, kiln firing and glazing are covered in this alternate way of exploring the special plastic properties of clay. 3 HR./WK.; 3 CR.

27000: Projects in Ceramic Design

A course that introduces throwing on the potter's wheel, glazing and kiln firing. Slide presentations, films, demonstrations and critiques, with emphasis on individual projects and the development of a personal approach to clay. Students are expected to participate in kiln loading and firing of their work. Prereq.: Art 10700. This course may be taken as many as 4 times for credit. 3 HR./WK.; 3 CR.

37000: Clay and Glazes

The study of the raw materials used in the ceramic process to formulate clay bodies and glazes. A lecture and laboratory course which will give students the basic knowledge necessary to mix their own glazes and clay bodies. Prereq.: Art 27000. 3 HR./WK.; 3 CR.

Electronic Design and Multimedia

29500: Typography I

Type as abstract structure and its relation to problems of graphic communication. Application of typographic design in the creation of posters, brochures, magazine and book design, print ads and packaging. Prereq.: Art 10100. 3 HR./WK.; 3 CR.

29510: Graphic Design Concepts

Exploring the relationship of image and type in graphic design, with emphasis on developing conceptual and visualization skills. Design and imaging using traditional tools and technology in projects ranging from the development of graphic icons to the design of promotional materials. Prereq.: Art 10100. 3 HR./WK.; 3 CR.

29520: Illustration

Aspects of contemporary illustration in various media. Projects in editorial (book, magazine), advertising (product, technical), and promotional (poster) illustration. Prereq.: Art 10200. 3 HR./WK.; 3 CR.

29526: Computer Imaging and Illustration

Electronic illustration and image processing with an overview of approaches from painting to montage. Exploring imaging techniques through the use of masks, channels, filters and special effects. Issues of color management, color correction, resolution, and printing. Individual scheduled lab time. Prereq.: Art 29510. 3 HR./WK.; 3 CR.

29530: Digital Photography I

Introduction to digital photographic practices. Technical concerns and aesthetic issues of digital image capture and digital photo manipulation and output/display. Exploration of contemporary digital photography and student concept development through the digital photographic process. Prereq.: Art 10400 or permission of the instructor. 3 HR./WK.; 3 CR.

39500: Typography II

A continuation of Typography I. This course will focus more closely on the expert usage of type in all forms of graphic design. Students will learn to create powerful graphic statements using the diverse properties of typographic expression. Emphasis on communication systems, cohesive identity packages, logo development and publication design with orderly, logical and aesthetically appropriate typographic usage. Various projects will explore enhancing comprehension through intelligent use of typographic levels of emphasis. Prereq.: Art 29520. 3 HR./3 CR.

39510: Electronic Design I

Design for print media with special focus on page layout, integration of text and graphic illustration, and corporate identity systems. Use of the computer as a design and production tool, with an introduction to vector and raster-based software for design and illustration. No programming; required lab time. Prereq.: Art 29510 or permission of the instructor. 3 HR./WK.; 3 CR.

39512: Print Production

Investigation of print production for graphic design, from concept to execution. Development of concepts from initial visualization to comprehensives to mechanicals for black and white and color printing. Exploration of systems for page layout (such as the grid system) and other approaches to the design of visual information. Overview of special techniques in printing including embossing, die-cuts and paper selection. Prereq.: Art 29510. 3 HR./WK.; 3 CR.

39530: Digital Photography II

This course builds on the concepts and skills learned in Art 29530. A further examination of conceptual and technical concerns surrounding digital photography. Prereq.: Art 29530. 3 HR./WK.; 3 CR.

39540: Design for the World Wide Web I

Interface design, information structuring and interactivity for the World Wide Web. Sites will be examined from the perspective

of design, utility and interactivity. Development of HTML documents and images, design and prototype testing of a logical hierarchical information structure. Students will work individually and in teams, and develop an actual site. Individually scheduled lab time. Prereq.: Art 29526 or permission of the instructor. 3 HR./WK.; 3 CR.

39542: Web Animation

This course explores tools and techniques for animation and the design of interactive experience for the Web. Exploration of traditional animation techniques (frame-by-frame animation and tweening) and the development of code-based animation and interactivity. Projects in visual communication for the Web incorporating text, audio, and moving images controlled via Actionscript. Prereq.: Art 29526, 39540, and 39550. 3 HR./WK.; 3 CR.

39550: Multimedia Design I

Introduction to creative and production techniques of media integration and multimedia. Topics include sprite and frame based animation, screen and interface design, and interactive system design. Special emphasis will be placed on working with sound, animation and video in both linear and non-linear formats. Basic elements of scripting and programming for developing interactive projects will also be covered. Individually scheduled lab time. Prereq.: Art 29526 or 29538. 3 HR./WK.; 3 CR.

39560: Digital Video

This course provides an introduction to digital motion graphics and desktop video on the Macintosh. We will survey a variety of imaging techniques through the history of video as an art form, and learn how to apply these modes of visual thinking to our own projects. This course will provide practical experience in design and production of Quicktime-based digital video and motion graphics using a variety of software, especially Adobe After Effects. Prereq.: Art 29526 or 29538. or permission of the instructor. 3 HR./WK.; 3 CR.

39570: 3-Dimensional Computer Imaging and Animation I: Foundation

This course provides students with a solid foundation in both the creative and technical aspects of 3-Dimensional image creation on the computer. Topics include 3-Dimensional modeling, animating, lighting, shading, texturing, camera composition and rendering techniques. Both still image and animation will be covered. In addition to discussing a range of 3-Dimensional software programs, this course will explore the role of 2-Dimensional

drawing and painting programs in the creation of 3-Dimensional image environments. The role of 3-Dimensional imaging in film, design, multimedia art, and electronic gaming will also be discussed. Prereq.: Art 29526 or permission of the instructor. 3 HR./WK.; 3 CR.

49510: Electronic Design II

Continuation of Electronic Design I. Investigation of contemporary design styles and exploration of issues in typography and information design through advanced projects in publication design and graphic illustration. Individually scheduled lab time. Prereq.: Art 39510 or permission of the instructor. 3 HR./WK., 3 CR.

49518: Design & Publishing Projects

An advanced exploration of the creative and production process for print media, organized around a semester-long group collaboration. The chosen project, executed in consultation with a guest designer, will explore the intersection of original text and image. It will proceed from research through imaging and printing, and result in a single issue publication or other printed matter. Interdisciplinary collaborations will be encouraged. Prereq.: Art 39512 or 49510 or permission of the instructor. 3 HR./WK.; 3 CR.

49540: Design for the World Wide Web II

This course provides students who already have a solid foundation in web design an opportunity to extend their web skills to include scripting and interactivity, audio, video and animation over the web and sophisticated data handling and processing. In addition, the course will look at other multimedia environments on the Internet, such as the Palace, video conferencing, and audio tools. Prereq.: Art 39540 or permission of the instructor. 3 HR./WK.; 3 CR.

49550: Multimedia Design II

This course provides students who already have a solid foundation in multimedia design an opportunity to extend their skills in scripting and interactivity, controlling digital audio and video, and creating finished CD-ROMs. The course will focus on the development of a fully integrated and mastered CD-ROM of students' projects. Prereq.: Art 39550 or permission of the instructor. 3 HR./WK., 3 CR.

49558: Multimedia Projects

This course is an advanced exploration of the creation process for interactive multimedia, organized around a semester-long group collaboration. This chosen project, produced in collaboration with a guest artist/designer, will explore the intersec-

tions of sound, image, animation, and interactivity. The project will proceed from research through design and production, up to integration, programming, and distribution of a CD-ROM, web site, or other multimedia form. Interdisciplinary collaborations will be encouraged. Prereq.: Art 29526 or 29528 or permission of the instructor. 3 HR./WK.; 3 CR.

49570: 3-Dimensional Computer Imaging and Animation II: Animation and Visual Effects

This advanced course builds upon the skills learned in 3-Dimensional Computer Imaging and Animation I. The class will focus on animation techniques and applying visual effects to scenes using dynamics. Topics include traditional and procedural animation, creating visual effects using particle systems and emitters, creating dynamic environments using physics-based properties, camera rigging and advanced rendering techniques. Importing and exporting relevant file formats will also be explored. Prereq.: Art 39570 or permission of the instructor. 3 HR./WK.; 3 CR.

49590: Electronic Design Portfolio

Advanced projects and portfolio evaluation for students planning a career in graphic design or illustration. Exploration of graphic presentation techniques to create highly finished comps; introduction to the business of graphic design, career resources and business practices. Portfolio preparation for the student's area of specialization; practical experience in making portfolio presentations; creation of self-promotion materials. Prereq.: Art 29526, 39512, and 49510 or permission of the instructor. 3 HR./WK.; 3 CR.

49598: Senior Thesis

Advanced design seminar in which students develop a sustained individual project in a major area of concentration (print, Internet, multimedia). This semester-long project is designed to encourage extended development and the synthesis of communication skills and related design disciplines. Additionally, collateral promotion and presentation materials will be created to support the project. The final requirement for graduation, the thesis project will be presented in an exhibition and in oral presentation to faculty and invited critics. Prereq.: completion of all major requirements for the BFA. 6 HR./WK.; 6 CR.

Advanced Courses in Studio Art

31501-31510: Selected Topics in Studio Art

Advanced study in selected subjects outside of the regular curriculum. Course

announcements will be made in the preceding semester. 3 HR./WK.; 3 CR.

32098-39598: Internships and Fieldwork

Credit is available to advanced students for internships and fieldwork in cooperation with commercial and industrial firms, museums and galleries, and governmental agencies. Students can register for specialized internships based on the area of study. Permission of instructor and chair required. 3 CR. EACH. NO MORE THAN 6 CREDITS ACCEPTED.

32099-39599: Independent Study in Studio Art

Independent study in art under staff guidance. Three previous courses (or equivalent) in area of study chosen and permission of instructor and Chair required for admission. 3 CR. EACH. NO MORE THAN 9 CR. ACCEPTED.

31591-31593: Honors I-III in Studio Art

Critical Issues in Studio Art

21510: Art and Protest

This course offers the opportunity to reflect upon the relationship between art and activism by applying, in students' own creative work, critical tools and methods generated by contemporary theory and social history. While art is often perceived as unrelated to and independent of politics and social history, this course will examine how these underlying contexts affect aesthetics. Many artists have resisted traditional and conventional approaches to art in order to inform us of the existence of other perspectives, histories and voices. Through creative projects and the exposure to other artists' works, readings and films, this course will explore the realities within which images are made. Some of many questions for contemplation and discussion include: What is taste and how is it acquired? Who is responsible for the writing of our history? What is the relationship between money and art history? To what extent do artists simply parrot traditional values in their work? What outlets are available for activist artists? Have alternative aesthetics and radical activities challenged the writing of mainstream representation? How can artists define a political/activist position, and what responsibility do they bear in making images? Prereq.: Art 10000, 21000, and at least two studio art courses. 3 HR./WK.; 3 CR.

39590: Critical Issues in Design, Technology and New Media

Seminar exploring the visual language of image and typography and its function in mass communications; the syntax of video, audio and interactive works; and the aesthetic and social challenges raised in design for print, time-based media and telecommunications. The seminar will provide students with a thorough grounding in technology-related issues through selected readings and discussion. Prereq.: Art 21034 or related 20000-level Art History course. 3 HR./WK.; 3 CR.

TEACHING ART K-12**10155: Art in Elementary Education**

Drawing, painting and design with materials basic to the art experiences of children. 3 HR./WK.; 3 CR.

20155: Art in Secondary Education

Experience in drawing, painting, design and crafts related to art in the junior and senior high schools; projects suitable for classroom use related to curriculum needs. Prereq.: Art 10155. 3 HR./WK.; 3 CR.

ART HISTORY**Elective Courses**

Art 10000 is a prerequisite and Art 21000 (or equivalent) is a pre- or corequisite to all elective art history courses.

Group I: Ancient Art**21012: Egyptian Art and Architecture**

Painting, sculpture, architecture and decorative arts of Egypt from predynastic times through the Ptolemaic period. (W) 3 HR./WK.; 3 CR.

21014: Greek and Roman Art

Art of the Classical civilizations: Greece from the Geometric period through the Hellenistic era; the Etruscan contribution: Rome from the Republican period through late Imperial times. (W) 3 HR./WK.; 3 CR.

Group II: European Medieval, Renaissance, and Baroque Art**21022: Romanesque and Gothic Art**

Art of the later Middle Ages: architecture, sculpture, manuscripts, stained glass; emphasis on French cathedrals, regional schools in emerging national states, and Byzantine influence on the West. (W) 3 HR./WK.; 3 CR.

21024: Italian Renaissance Art and Architecture

An overview of the painting, sculpture, and architecture created in Italy during the fourteenth, fifteenth, and sixteenth centuries. Discussion will focus on the needs and ambitions of private, civic, and ecclesiastical patrons as well as the creative responses of individual artists from Giotto to Michelangelo. (W) 3 HR./WK.; 3 CR.

21025: Northern Renaissance Art

An overview of painting, sculpture, and printmaking created in Northern Europe during the fourteenth, fifteenth, and sixteenth centuries. Trace the development of naturalism and humanism in France, Germany, and the Netherlands as well as the dialogue between Northern Europe and Italy during the Renaissance. Discussion will explore the needs and ambitions of private, civic, and ecclesiastical patrons as well as the creative responses of individual artists from Van Eyck to Bruegel. (W) 3 HR./WK.; 3 CR.

21026: Baroque and Rococo Art in Europe

Seventeenth and eighteenth century art in Italy, France, Spain, and Holland. Artists include Bernini, Poussin, Caravaggio, Artemisia, Gentileschi, Velazquez, Rubens, Rembrandt and Vermeer. (W) 3 HR./WK.; 3 CR.

Group III: Modern and Contemporary Art**21030: Nineteenth Century Art in Europe**

The art of western Europe, primarily France, including Romanticism, Realism, Impressionism and Post-Impressionism. (W) 3 HR./WK.; 3 CR.

21032: American Art 1776-1900

Art of the United States from colonial times to the late 19th century; consideration of European influences and regional contributions in the development of American architecture, sculpture and painting. (W) 3 HR./WK.; 3 CR.

21034: History of Modern Design

Historical and cultural influences and technical developments in the design of objects for use. (W) 3 HR./WK.; 3 CR.

21036: Early Modern Art in Europe and the U.S.

The development of early modern art styles in France, Germany, Italy, Russia, and the U.S. including Fauvism, Cubism, Futurism, Constructivism, Expressionism, Dada and Surrealism. (W) 3 HR./WK.; 3 CR.

21038: Postwar Art in the U.S. and Europe

Art from 1945 through 1980 in the U.S. and Europe, including Abstract Expressionism, Pop art, Minimal art, Conceptual art, the development of earth-works and public art, feminist and other issue-based art. (W) 3 HR./WK.; 3 CR.

31030: Modern Art in Latin America

An overview of the various currents of modernism that developed in Latin America from 1900 to 1945. Emphasis will be placed on the artistic production of certain countries, such as Mexico, Brazil, Argentina, Cuba, and Uruguay. (W) 3 HR./WK.; 3 CR.

31032: Contemporary Art in Latin America

Artistic manifestations in post-World War II Latin America, including the work of diaspora artists and Latino/a artists in the United States. (W) 3 HR./WK.; 3 CR.

31034: History of Photography

The aesthetic, historical and technical development of still photography viewed as a major medium of artistic expression in the nineteenth and twentieth centuries. (W) 3 HR./WK.; 3 CR.

31038: Art Since 1980

This course explores art since 1980 both in a historical context and in terms of contemporary criticism. Frequent gallery visits and conversations with artists, curators, gallery assistants. (W) Prereq. Art 21038. 3 HR./WK.; 3 CR.

Group IV: Art of Africa and the Americas**21043: Ancient Art of Meso-America, the Andes, and the Caribbean**

A survey of sculpture, architecture, the town plan, and crafts in select pre-European cultures of the Caribbean Basin, the Andes and Meso-America, including the Taino, the Inca, and the Aztec. (W) 3 HR./WK.; 3 CR.

21044: Art of Native North America

A survey of select artistic traditions of native North American Indian art including Aleut and Inuit. Emphasis on artistic context as a synthesis of regional and cultural-historical phenomena. (W) 3 HR./WK.; 3 CR.

21046: Art of West Africa: From the Bissagos to the Cameroon Grasslands

A survey of traditions that generate the interface of visual and performance arts, place and architecture among the Akan, Bamana, Bamilike, Baule, Dan, Dogon, Edo, Fon, Moshi, Senufo, Yoruba, and their

neighbors. The archaeology of the valleys of the Niger is included. (W) 3 HR./WK.; 3 CR.

21047: Art of Central Africa: Central, East and Southern Africa from Gabon to Mozambique

Arts of chiefdoms and kingdoms of the equatorial forests and savannas from Equatorial Guinea to Mozambique. An interdisciplinary survey of traditions that generate the interface of visual and performance arts, place and architecture. Arts of the Chokwe, Fan, Konde, Kongo, Kuba, Kwele, Luba/Hemba, Nyamwezi, Mangbetu, Ndebele, Pende, Saremo, Songye, Tabwa, Zulu, and their neighbors. The archaeology of Zimbabwe and the East African coast. (W) 3 HR./WK.; 3 CR.

Group V: Art of Asia

21052: Islamic Art

Architecture and decorative arts of the Islamic world, including Syria, Egypt, Persia, Turkey, Spain and northern India. (W) 3 HR./WK.; 3 CR.

21053: Art of India and Southeast Asia

Art of India, Southeast Asia and Indonesia, Buddhist, Jain and Hindu Art in India; Buddhist and Hindu art in Southeast Asia and Indonesia. (W) 3 HR./WK.; 3 CR.

21054: Art of China, Japan, and Korea

The art and architecture of China, Japan, and Korea from prehistoric times to the nineteenth century. Prereq.: permission of the instructor. (W) 3 HR./WK.; 3 CR.

Group VI: Trans-historical Studies

21062: History of Art I: Ancient through Medieval

A chronological survey of world art and architecture from prehistoric times through the early Renaissance. Analysis of visual expression in terms of style and content in historical and cultural context. Prereq.: Eng 11000, Art 10000 and Art 21000. (W) 3 HR./WK.; 3 CR.

21064: History of Art II: Renaissance through Modern

A chronological survey of world art and architecture from the early Renaissance to the present. Analysis of visual expression in terms of style and content in historical and cultural context. Prereq.: Eng 11000 and Art 10000 and Art 21000. (W) 3 HR./WK.; 3 CR.

21066: Women in World Art

Survey of imagery of women in world art, including such topics as woman as object

of veneration, mother, ruler, creator, worker, educator, patron, sexual object and victim. History of work by and status of women artists, including issues of biology, education, training, and social, economic and political pressures in a variety of times and cultures. (W) 3 HR./WK.; 3 CR.

21069: Art Criticism

A study of historical and contemporary theories and methodology. Critical analysis and evaluation of original works of art. Student reports, papers and discussion. (W) 3 HR./WK.; 3 CR.

21090: Research Methods in Art History

Techniques of art historical scholarship; use of bibliographical materials, iconographic and stylistic analyses; oral presentations; writing of a research paper. Required for all art history majors. (W) 3 HR./WK.; 3 CR.

Advanced Courses in Art History

31098: Internship in Art History

Credit is available to art history students for internships and fieldwork in cooperation with commercial and industrial firms, museums, galleries, and governmental agencies.

31099: Independent Study in Art History

Individual research in selected problems under faculty guidance. Advance application and permission of instructor and Chair required for admission. 3 CR. MAY NOT BE TAKEN MORE THAN 3 TIMES.

31011-31020: Selected Topics in Art History

Advanced study in selected subjects outside of the regular curriculum. Course announcements will be made in the preceding semester.

31094-31096: Honors I-III in Art History

Approval of Dean and Department Honors Supervisor required. Apply in NAC 5/225 no later than December 10 in the fall term or May 1 in the spring term. USUALLY 3 CR./SEM.

FACULTY

Becca Albee, Assistant Professor

B.A., Evergreen State College; M.F.A., Univ. of North Carolina Chapel Hill

David Burns, Assistant Professor

A.A.S., Parsons School of Design; B.A., Univ. of South Florida; M.F.A., Parsons School of Design

Colin Chase, Associate Professor and Chair

A.A.S., Fashion Institute of Technology; B.F.A., Cooper Union; M.F.A., Univ. of Michigan

Leopoldo Fuentes, Assistant Professor

B.F.A., California State Univ. (Los Angeles); M.F.A., Northwestern Univ.

Bruce Habegger, Assistant Professor

B.A., CUNY; M.A., The City College

Ellen Handy, Associate Professor

B.A., Barnard College; Ph.D., Princeton Univ.

Anna Indych, Assistant Professor

B.A., New York Univ, M.A., Ph.D.

Michi Itami, Professor

B.A., Univ. of California (Los Angeles);

M.A., Univ. of California (Berkeley)

Catti James, Associate Professor

B.F.A., Boston Univ.; M.A. Columbia Univ.

Anne Leader, Assistant Professor

B.A., Emory Univ.; M.A., New York Univ., Ph.D.

Sylvia Netzer, Professor

B.A., The City College; M.F.A., Columbia Univ.

George N. Preston, Professor

B.A., The City College; M.A. Columbia Univ., Ph.D.

Ina Saltz, Associate Professor

B.F.A., The Cooper Union

Harriet F. Senie, Professor

B.A., Brandeis Univ.; M.A., Hunter College; Ph.D., New York Univ.

Annette Weintraub, Professor

B.F.A., Cooper Union; M.F.A., Univ. of Pennsylvania

PROFESSORS EMERITI

Robert E. Borgatta

Sherman Drexler

Madeleine Gekiere

Irving Kaufman

Jacob Landy

Jay Milder

Seong Moy

Juan Nickford

Elizabeth O'Connor

Joan Webster Price

Annie Shaver-Crandell

William Spinka

Stanley Wyatt

Asian Studies Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Barbara Brooks, Acting Director • Department Office: NAC 5/218 • Tel: 212-650-6375

GENERAL INFORMATION

The City College offers the following undergraduate degree in Area Studies:

B.A.

PROGRAMS AND OBJECTIVES

The Program in Asian Studies offers three interdisciplinary specializations:

Area studies covering culture, history, and institutions of Asia.

Ethnic studies of Asians in America.

Literary studies involving Asian literature and languages.

REQUIREMENTS FOR MAJORS

Students are required to take a total of 30 credits related to Asia and Asian Studies subjects including at least one three-credit course in each of the civilizations of China, India and Japan. A course (3 credits) on South East Asia may be used to replace any one of the three civilizations. Also, at least 24 credits must be above the 20000 level. Students are further required to take at least one Independent Study course. Students who are proficient in Asian languages may use their language ability to fulfill requirements of up to six credits.

ADDITIONAL REQUIREMENTS

All Asian Studies majors must complete the following courses:

New Student Seminar unless exempt
(0 cr.)

English 11000: Freshman Composition
(3 cr.)

English 21000 or equivalent: Second Level Writing Course (3 cr.)

Core Curriculum for the intended degree

Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

REQUIREMENTS FOR MINORS

Students are required to take a total of 15 credits of courses related to Asian subjects. Of those credits, at least 9 must be above the 20000 level. Students who are proficient in Asian languages may use their language ability to fulfill requirements of up to six credits.

ADVISEMENT

Professor Thomas H. C. Lee

PROGRAM ACTIVITIES

The Program maintains a close relationship with various Asian, especially East Asian, studies organizations throughout the metropolitan New York area. It has received grant support from the Freeman Foundation, the Japan Foundation, the Himalaya Foundation, and the Chaing Ching-kuo Foundation (Taiwan). It coordinates various research activities, and supports exchange or study-abroad activities in Japan, China, and Taiwan. The Program also advises Asian student organizations such as the Asian Cultural Union, the International Indian Society, the Association for Vietnamese Students, and the Chinese Christian Fellowship. These groups regularly organize activities including the annual Cherry Blossom Festival and Asian Night.

AWARDS, MEDALS AND PRIZES

Outstanding Asian Studies Major Award

**Asian Studies Major Scholarship
Study Abroad in Asia Scholarship
Asian Studies Fellow**

COURSE DESCRIPTIONS

Courses on Asian and Asian-American subjects offered at The City College are listed below and are accepted toward fulfilling the program's requirements. Students may also take courses offered at other CUNY campuses with permission of the program director. Courses taken abroad during an exchange program may also be accepted with permission.

INTRODUCTORY COURSES

10100: Asian Cultures and Peoples

The major factors that have shaped the Asian countries and peoples; geography, civilization, migration, and settlements of ethnic groups; philosophies, religions, historical events, leaders, and modern political and socioeconomic institutions. 3 HR./WK.; 3 CR.

10200: Asian Literature in English Translation

Selected masterpieces of Asian literature. Lectures and classroom discussions, supplemented with audiovisual aids. 3 HR./WK.; 3 CR.

20100: Asians in America

The processes of assimilation, adaption, competition, conflict and adjustment of Asian minorities in the United States from the mid-19th century to the present. 3 HR./WK.; 3 CR.

20200: Contemporary Asia

The cultural tradition of Asia in general and of China and Japan in particular. The peoples and their psychological, educational, social, artistic, political and economic behavior. 3 HR./WK.; 3 CR.

ADVANCED ELECTIVE COURSES

20402-20404: Asian American Communities II: Practicum on Asian American Communities

Participation in community work. Students select a cooperating agency or organization and work in one of its programs. (W) 2-6 CR.

20500: Contemporary China

Historical events, political, cultural and socio-economic conditions, and foreign relations of the People's Republic of China since 1949. Analysis of the Cultural Revolution; economic growth of the People's Republic; relations with the U.S. and the former Soviet Union; Communist leadership to the present. (W) 3 HR./WK.; 3 CR.

20700: Asian Women

The position and role of Asian women in historical, political and psychological contexts. Traditional stereotypes; role in Asian history; Asian women in America; relationship to white and Third World women; alternatives to women's liberation. (W) 3 HR./WK.; 3 CR.

20800: Asians and American Law and Politics

A comparison of the legal and political background of the East and West. American law and politics as they affect the lives of Asian minorities. Sample cases, familiarization with various legal proceedings and governmental institutions. (W) 3 HR./WK.; 3 CR.

21400: Chinese Experience in America

The struggle for survival, acceptance, and full participation in American life from Gold Rush days to the present. 3 HR./WK.; 3 CR.

30700: Asian American Communities I: Analysis of Asian American Communities

Empirical and theoretical analysis of community processes affecting Asian Americans, using New York's Asian communities (e.g., Chinatown) as models. Power structures, communications networks, role conflicts, and community change. (W) 3 HR./WK.; 3 CR.

33100: Chinese Literature from the Early Period to 1919 (in English)

Historical review of literary development from the ancient to the modern period. Selections of masterpieces in poetry, prose, drama and fiction, in original versions or English translation, for reading and discussion. Reading knowledge of Chinese not required. (W) 3 HR./WK.; 3 CR.

33200: Modern Chinese Literature (in English)

Leading authors and masterpieces since the May 4th Movement in 1919. Works from the Mainland, Taiwan, Hong Kong, Singapore and the West selected for reading and review. Reading knowledge of Chinese not required. (W) 3 HR./WK.; 3 CR.

INDEPENDENT STUDIES AND TOPICAL STUDIES COURSES

30100-30300: Honors I-III

Individual reading and research or individual field study project on a topic or area under the guidance of a faculty member to complete a thesis or report on a project at the end of the three-term sequence. Approval of Dean and program director required. Apply in NAC 5/225 no later than December 10 in the Fall term or May 1 in the Spring term. VARIABLE CR.

31001-31004: Independent Study

For students with special cultural, literary, or linguistic interests who wish to pursue independent study and research. For juniors and seniors only. Program approval required. (W) 1-4 CR.

31100-32000: Selected Topics in Asian Studies

Courses in the past three years have included:

China and the World (History)
Religious, Communal and Ethnic Conflicts in Modern India (History)
Images of Asian Women through Film and Literature (Asian Studies)
Chinese Family, Marriage and Kinship (Asian Studies)
Memory, Identity and Historical Images (Asian Studies)
Advanced Readings in Chinese Historical Writings (Asian Studies)
Vietnam and the Cold War (Political Science)
Asian Economic Development (Economics)
Asian Cities (History)
Asian-American Relations (History)
Student Movements, Education and Chinese Intellectuals (Asian Studies)
Science and Technology in Chinese History (History)

ASIAN LANGUAGES

Asian Languages are administered in the Department of Foreign Languages and Literatures. All Asian languages are offered at elementary and intermediate levels. No credit will be given for taking only the first part of any level of language courses.

Chinese

12100: Elementary Chinese (Mandarin) I

Modern vernacular Chinese based on the speech of Beijing. Essentials of sound patterns, grammar and vocabulary. Practice in speaking, reading and dictation. 4 HR./WK.; 3 CR.

12200: Elementary Chinese (Mandarin) II

Further practice in modern vernacular Chinese based on the speech of Beijing. Essentials of sound patterns, grammar and vocabulary. Practice in speaking, reading and dictation. Prereq.: Chinese 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Chinese

An intensive one-semester Chinese course at the intermediate level. This course will continue to develop communicative competence through the study of grammar and new vocabulary. Using communication oriented activities, this course will help students to be better able to speak naturally and spontaneously. Reading and writing will be stressed through regular assignments to be handed in for review. Additionally, content-appropriate cultural information will be presented to promote the students' understanding of the Chinese-speaking world. Prereq.: Chinese 12200 or placement exam. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Hindi**12100: Elementary Hindi I**

An intensive course in the spoken and written language. In addition to classroom hours, students will be expected to do some work in the language laboratory. 4 HR./WK.; 3 CR.

12200: Elementary Hindi II

Further practice in oral and written skills. In addition to classroom hours, students will be expected to do some work in the language laboratory. Prereq.: Hindi 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Hindi

An intensive one-semester Hindi course at the intermediate level. This course will review the grammar of the Hindi language, enhance vocabulary, increase fluency in reading and writing, and will include literary and cultural content. The four basic skills of listening, speaking, reading comprehension and writing will be further developed through class discussions, writing exercises and the use of multimedia and the Internet. Prereq.: Hindi 12100 and Hindi 12200 or placement exam. Recommended for the students who have completed two semesters of Elementary Hindi with a grade of A or B. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Japanese**12100: Elementary Japanese I**

An intensive course in the spoken and written language. In addition to classroom hours, students will be expected to do some work in the language laboratory. 4 HR./WK.; 3 CR.

12200: Elementary Japanese II

Further practice in oral and written skills. In addition to classroom hours, students will be expected to do some work in the language laboratory. Prereq: Japanese 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Japanese

An intensive one-semester Japanese course at the intermediate level. This course will review the grammar of the Japanese language, enhance vocabulary, and will include literary and cultural readings. It will further develop listening, speaking, reading comprehension and writing skills through class discussions and the use of multimedia and the Internet. Prereq.: Japanese 12100 and 12200 or placement exam. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

COURSES FROM OTHER DEPARTMENTS

Students are encouraged to take appropriate courses in other departments with the permission of their advisors. Some courses that may be of interest are listed below.

Art 28500: Art of China, Japan, and Korea**English 38001: Oriental Literature I
English 38002: Oriental Literature II****Political Science 34100: Political Systems in Asia****Political Science 34200:
International Relations in Asia****History 25100: Traditional Civilization of China****History 25300: Modern China****History 25400: Traditional Civilization of Japan****History 25500: Modern Japan****History 26300: Traditional Civilization of India****History 26400: History of Modern India****PROFESSORS EMERITI**

**Diana L. Kao
Betty Lee Sung
Te-kong Tong**

FACULTY

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the major.

Department of Biology

(DIVISION OF SCIENCE)

Professor Jane Gallagher, Chair • Department Office: Marshak 526 • Tel: 212-650-6800

GENERAL INFORMATION

The City College offers the following undergraduate degree in Biology:

B.S.

PROGRAMS AND OBJECTIVES

The Department of Biology offers courses related to several different specializations: Primary Health Services (Pre-Medical, Pre-Dental, Pre-Veterinarian, Pre-Physical and Occupational Therapy, etc.), Physiology, Neuro-Science, Environmental Biology, Cell and Molecular Biology, Environmental Biology Evolution and Systematics, and Biology Education.

The Biology core curriculum covers a broad range of topics from molecular biology to ecosystems. It emphasizes learning about the many aspects of biology and the ability to use the scientific method to gain new understanding. Evolution is emphasized as an organizing theme throughout.

A wide range of elective courses allows the student to investigate a variety of biological processes and phenomena and to explore the relationships among organisms. Qualified advanced students are encouraged to take Independent Study or Honors (research) and may also take selected graduate courses.

The Department cooperates with the Program in Premedical Studies (PPS), a program of the Division of Science. The program features a curriculum that integrates a variety of learning experiences specifically preparing participants to meet medical, dental and veterinary school admission requirements

as well as those for physician's assistant and physical therapy advanced degree programs. Students may major in Biology while participating in PPS.

RESEARCH OPPORTUNITIES

The Biology Department has an active undergraduate research program. Students who wish to do laboratory research may enroll for Independent Study (Bio 31000) or Honors (Bio 30100-30300). *Up to 6 of the credits from these courses may be applied to the major's elective requirements.* Students interested in research should consult with the Honors and Independent Study Committee. Financial support for research during the academic year and the summer is available through a variety of grant sponsored programs.

REQUIREMENTS FOR MAJORS

Math and Science Requirement Chemistry:

One of the following sequences: 8

Sequence A:

10301-10401: General Chemistry and Laboratory (8 cr.)

Sequence B:

10300-10400: General Chemistry (6 cr.)

10800: Basic Laboratory Techniques (2 cr.)

26100: Organic Chemistry I 3

26200: Organic Chemistry Laboratory I 2

26300: Organic Chemistry II 3

Earth and Atmospheric Sciences:

10600: Earth Systems Science 4

Mathematics:

10500: Elements of Calculus I 4

20900: Elements of Calculus and Statistics 4

Physics:

20300-20400: General Physics 8

Science:

20000: Measurements, Modeling, and Computing (or equivalent) 3

Total Math and Science Credits 39

Biology Requirement* Required Courses (Core Curriculum)

Biology:

10100: Biological Foundations I** 4

10200: Biological Foundations II** 4

20600: Introduction to Genetics 2

At least 2 out of the following 3 primary electives plus additional advanced electives *** to a total of 29 elective credits. 8

20700: Organismic Biology (4 cr.)

22900: Cell and Molecular Biology (4 cr.)

22800: Ecology and Evolution (4 cr.)

Total Biology Credits 39

The Biology Department revised its core sequence in 2001. Students who started in the Biology core prior to 2001 should consult with the department for advice on course equivalencies.

***Students with AP Biology credit or who pass an exemption examination may waive these courses. Students transferring to City College with one year of College Biology with laboratory (grade C or better) will receive credit for Bio 10100 and 10200 if the course coverage is sufficiently similar. Students applying for transfer credit for Bio 10100 and 10200 should consult the syllabi for these courses to ensure comparability. An exemption exam is available.*

****No more than 2 of the 17 Advanced Biology credits may be in Graduate Biology Colloquium. Majors will not be permitted to register for Biology Core or elective courses unless the Biology course prerequisites have been passed with a grade of C or higher. Effective Fall 2003, Human Anatomy and Physiology courses at other colleges must have their syllabi evaluated by the department advisor for appropriate transfer credit.*

Teaching Biology In Secondary Schools

Major requirements are listed below. Pedagogical requirements are listed in the Department of Education section of this *Bulletin*.

Required Courses:

22900: Cell and Molecular Biology	4
22800: Ecology and Evolution	4
Advanced Biology electives	24

Total Credits 33

Honors

To qualify for Honors it is necessary to complete nine hours of Honors credit, six of which may count towards the 29 hours of Biology electives. The successful Honors candidate submits a thesis approved by his/her advisor which is based upon the student's original research.

ADDITIONAL REQUIREMENTS

All Biology majors must complete the following courses:

- New Student Seminar, unless exempt (0 cr.)
- English 11000: Freshman Composition (3 cr.)
- English 21003 or equivalent: Second Level Writing Course (3 cr.)
- Core Curriculum for the intended degree
- Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination: Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either two years of foreign language in high school or a second semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

ADVISEMENT

The Department provides advice and information on career opportunities, programs and opportunities for financial support. Students needing advice on planning elective programs, as well as non-majors seeking advice on individual courses, should consult with the Deputy Chair.

To declare a major in Biology

Chairman and Deputy Chairman
Marshak 526; 212-650-6800

Undergraduate Majors

Professor Ralph Zuzolo
Marshak 526; 212-650-6588

Premedical/Predental Students

Ms. Lolita Wood-Hill
Marshak 529; 212-650-7845

Transfer Students

Professor Robert Goode
Marshak 529; 212-650-7843

Honors and Independent Research Advisors

Professor Amy Berkov
Professor Jonathan Levitt
Marshak 718; 212-650-8570/8539

TUTORING

Special tutoring services are available to those students needing help in Biology. Students seeking to avail themselves of such services are directed to the office of the Program in Premedical Studies, Marshak 529, or the CCAPP program.

FACILITIES

Resource Center

The Resource Center of the Department of Biology (Marshak 502) maintains a wide variety of visual aids and reference materials for student use in conjunction with many of the undergraduate courses. Instructors will inform students as to the availability of lecture tapes, slide-sound programs, videotapes, supplemental readings, and computer hardware and software which are available for their course. The facility is open Monday through Friday (hours are posted outside Marshak 502).

Computer Laboratory

The Biomathematical Laboratory (Marshak 819) provides students and faculty access to a variety of computer hardware and software. The aim of the facility is to make available a wide range of tools to be used in simulating biological processes and analyzing data.

Electron Microscope Complex

The Electron Microscope Complex houses a transmission electron microscope, a scanning electron microscope, a confocal microscope, a digital darkroom, and complete support facilities for tissue preparation. In addition to its use in several courses, the facility supports faculty and student research in many aspects of cellular biology.

DEPARTMENTAL ACTIVITIES

The Caduceus Society

The Caduceus Society, a student-run organization, provides programs for those interested in the biological and biomedical sciences.

AWARDS

The following awards are made annually to deserving students on the basis of merit and superior scholarship in biology:

The Edmund Baermann Scholarship in Natural Sciences

To a sophomore or junior completing the Biology core. Selection is based on performance in the Biology core.

The August Anthony Gavasci Award

To a student demonstrating promise in research in the fields of Microbiology or Molecular Biology.

The Professor Joseph Grossfield Memorial Scholarship

To a senior who excels in biology courses and in the humanities.

The Professor Paul L. Krupa Award for Excellence in Research

To the student completing Honors or Independent Studies who demonstrates the greatest proficiency in research.

The Professor Paul Margolin Scholarship

To a sophomore or junior who demonstrates creativity in research.

The Sylvia F. Rubin/Martin Saks Award

To the student demonstrating the greatest proficiency in research in Environmental Science.

The Professor William Stratford Prize

To the student demonstrating the greatest proficiency in both course work in zoology and zoological research.

The Ward Medal

To the student with the best overall record in his/her Biology courses.

COURSE DESCRIPTIONS**COURSES FOR NON-MAJORS****10000: Biology: The Strategy of Life**

The basic properties of living systems with emphasis on human beings as functioning biological entities. 3 LECT., 1 REC. HR./WK.; 3 CR.

32100: Physiological Processes

This course is designed to introduce fundamental concepts of physiology to biomedical engineering students. Areas covered include muscular function, cardiovascular system function, bioelectrical signals, capillary-level transport, organ-level exchange

and immune system function. For Biomedical Engineering Students only. Prereq: Bio 10100 and Math 20103. 3 LECT HR./WK.; 3 CR.

32600: Human Biology

The human organism from cellular function to human evolution. This course presents a practical approach to human biology for the non-science major and includes topics such as human reproduction, emergent diseases, and neural function. The evolutionary relationship of humans to other organisms is presented. Prereq.: Sci 10300 and Sci 10400. 3 LECT, 1 REC. HR./WK.; 3 CR.

32700: Principles of Ecology

Structure and function in ecological systems and the effects of human activities on their biotic and abiotic components. Required for landscape architects. Prereq.: Sci 10300 and Sci 10400 or equivalent. 3 LECT. HR./WK.; 3 CR.

34700: Botany for Landscape Architects

Study and identification of local flora and their possible use in urban landscaping. The structure, function, growth and propagation of plants will be considered to their natural habitats. Botanical gardens and arboreta will be visited. Required for landscape architects. 2 LECT., 4 LAB. OR FIELD HR./WK.; 4 CR.

INTRODUCTORY COURSES**10100: Biological Foundations I**

Introduction to biology, emphasizing primarily the cell and molecular levels of organization. Topics include characteristics of life, cellular organization and diversity, chemistry of life, bioenergetics, reproduction and early development, and major living groups. The course features in-depth study of selected topics that are foundational for upper level study. Students develop critical thinking and technical skills that are essential for mastering the content areas and being successful in upper level courses. These include: vocabulary skills, critical thinking, collaborative learning, microscopy, collection and handling of scientific data, and elements of scientific investigation. Required for Biology majors. Pre- or coreq.: Math 19000. 2 LECT., 4 LAB. HR./WK.; 4 CR.

10200: Biological Foundations II

Second semester of introductory biology, emphasizing organismic biology, evolution, and ecology. Topics include heredity, macro- and microevolution, structure and function of body systems, and ecology. The course features a survey of topics in lec-

ture and in-depth study of selected topics in laboratories and workshops. Students develop critical thinking and technical skills that are essential for mastering the content areas and being successful in further study. These include: vocabulary skills, problem solving, collaborative learning, computer skills, experimental design, collection and analysis of scientific data, and preparing scientific reports. Laboratories make use of the Biology Department Vivarium enabling students to study living organisms. Required for Biology majors. Prereq.: a grade of C or better in Bio 10100 or an equivalent course or permission of the instructor. 2 LECT., 4 LAB. HR./WK.; 4 CR.

20600: Introduction to Genetics

A thorough introduction to the principles of genetics. Using a combined cell biological and Mendelian approach, the course covers DNA organization, chromosome structure, genes and alleles, and transmission of genetic information in normal and genetically compromised organisms. Required for Biology majors. Prereq.: Bio 10100 and 10200 or equivalent. 2 LECT., 1 REC. HR./WK.; 3 CR.

20700: Organismic Biology

Emphasizes the physiological adjustments organisms make to specific challenges in their environments. Bioenergetics, osmoregulation and transport are the areas of focus. Laboratories are investigational and intended to develop skills in experimental design, the use of technology in acquiring data, data analysis and presentation, and in scientific writing. The development of problem solving and thinking and analysis in biology is emphasized in all aspects of the course. Prereq.: Bio 10100 and 10200 or equivalent; pre- or coreq.: Chem 10301, Eng 21003, and Math 19500. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

22800: Ecology and Evolution

Introduction to the basic principles of ecology and evolutionary biology emphasizing quantitative approaches and hypothesis testing. Computer literacy is attained using spreadsheets and the Internet. Prereq. or coreq.: Bio 20600 and Math 20900. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

22900: Cell and Molecular Biology

Fundamental concepts at the cellular and molecular level of living organisms, including structure, metabolism, genetic continuity, and response mechanisms. Prereq.: Bio 10200, Pre- or coreq.: Chem 26100; Bio 20600. 2 LECT., 4 LAB. HR./WK.; 4 CR.

ADVANCED ELECTIVES

31100-32000: Selected Topics in Biology

Discussions, student seminars, literature survey, experimental study focusing attention on specific areas in biology. Course topics will be selected by instructor and announced early in the preceding semester. Prerequisites to be determined by instructor. HRS. AND CR. (TO A MAXIMUM OF 4 CR.) TO BE DETERMINED BY INSTRUCTOR.

33000: Survey of the Vertebrates

Survey of the major features of the vertebrates, including brief modern classification of the major groups and summary review of their morphological features, evolutionary history, distribution, ecology, and social behavior. Specific additional characteristics such as mimicry, ectothermy-endothermy, cannibalism, migration, predation, defense and use of venom will be discussed. Special attention is given to conservation, destruction of the environment and human impact on vertebrate life. Prereq.: Bio 10200. 3 HR./WK.; 3 CR.

33700: Mammalian Histology

Microscopic anatomy of cells, tissues and organs of selected mammals. Prereq.: Bio 22900. 2 LECT., 4 LAB. HR./WK.; 4 CR.

34000: Biology of Invertebrates

The structure and function of various invertebrates selected to illustrate morphological, physiological and ecological adaptations. Prereq.: Bio 10200. 2 LECT., 4 LAB. HR./WK.; 4 CR.

34500: Botany

Survey of the structure, physiology, diversity and ecology of photosynthetic plants and fungi. (W) Prereq.: Bio 10200 and Chem 10310. 2 LECT., 4 LAB. HR./WK.; 4 CR.

34900: Field Botany

Identification and ecological relationships of local plants. Prereq.: Bio 10200 and 34500. 2 LECT., AND AT LEAST 4 HR. OF FIELDWORK/WK.; 4 CR.

35000: Microbiology

Characteristics and systematics of prokaryotes and unicellular eukaryotes. Nutrition growth, physiological ecology, and comparative metabolism of bacteria. Methods used to study microbes. Introduction to viruses, microbial genetics, and mechanisms of microbial pathogenesis. Applied microbiology, microbial ecology, and microbes in symbioses. Prereq.: Bio 22900. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

36400: Field Methods in Oceanography

An interdisciplinary introduction to theories, principles and laboratory methods in aquatic and coastal sciences. Includes extensive fieldwork involving cruises on a research vessel. Course is taught as a continuous three week block of lectures and laboratories during summer session. Students will be required to be in residence at an appropriate field station in the New York area for the duration of the course. Prereq.: completion of a lecture plus laboratory course designed for majors in either Biology or Geology. Completion of one year of chemistry and one semester of calculus is strongly recommended. Enrollment by application only. (W) 4 CR.

37500: Developmental Biology: Lecture

An in-depth analysis of the cellular and molecular mechanisms regulating development of animals and plants. Topics include: the production and storage of genetic information; sperm egg interactions; nuclear and cytoplasmic determinants; morphogenetic movements, inductive interactions and the development of primary organ rudiments; organogenesis; growth, differentiation and morphogenesis, mechanisms of aging, cancer, the immune system and regeneration; development of birth abnormalities; role of experimentation in the analysis of major developmental mechanisms in animals. (W) Prereq.: Bio 22900 or 22900. 3 LECT. HR./WK.; 3 CR.

37600: Descriptive Embryology: Laboratory

The chick embryo as a model of human development. Topics include development of ectodermal, endodermal and mesodermal organs; development of the immune system; sex determination and sex differentiation; fetal membranes and placentation; development of the human fetus; congenital malformations. Exercises involve microscope analysis of whole mounts and serial sections of chick embryos. Pre- or coreq.: Bio 37500. 4 LAB. HR./WK.; 2 CR.

37700: Experimental Embryology: Laboratory

Experimental analysis of the developing embryo, using frog, chick, and *Drosophila* as materials for in vitro fertilization and molecular techniques of analysis. Experimental design, data analysis and trouble-shooting are emphasized. Pre- or coreq.: Bio 37500. (W) 4 LAB. HR./WK.; 2 CR.

37900: Developmental Neurobiology

The cellular/molecular basis of neuronal development. Lecture/discussion format with primary literature (journal articles) used as the text for the course. Prereq.: Bio 20700; pre- or coreq.: Bio 22900 and 37500. (W) 3 LECT. HR./WK.; 3 CR.

38000: Eukaryotic Genetics

Classical, molecular, and population genetics of humans and model eukaryotic organisms (corn, yeast, fruit flies, etc.). Includes experimental and analytical techniques; human genetic disorders; forensic and diagnostic applications. Recommended for all life science students, especially those with career goals in the health and/or legal professions. (W) Prereq.: Bio 22900 and 22800. 2 LECT., 4 LAB. HR./WK.; 4 CR.

40000: Physiology and Functional Anatomy I

The integrated functioning of the musculoskeletal and nervous systems are considered. Emphasis is placed on in-depth problem solving, experimentation, interpretation of data and clinical case studies. This course is appropriate for students considering health related careers or advanced study in biomedical science. Not open to students who have taken Bio 33200. (W) Prereq.: Bio 20700 or Bio 10900 or equivalent. 2 LECT., 4 HR./WK.; 4 CR.

40100: Physiology and Functional Anatomy II

This is in-depth exploration of the integrated functioning of the cardiovascular, renal and pulmonary systems. Emphasis is primarily on human dynamic, non-pathological responses to a range of conditions including exercise and extreme environments. Structural and physiological aspects are covered. Clinical case studies highlight the interdependence of the systems. This course is appropriate for students considering health-related careers or advanced study in biomedical science. Not open to students who have taken Bio 33300. (W) Prereq.: Bio 20700 or Bio 10800 or equivalent, Bio 40000 or Bio 33200 or permission of instructor. 2 LECT., 4 HR./WK.; 4 CR.

40200: Physiology and Functional Anatomy III

Physiological processes of energy acquisition and expenditure, including nutrition, digestion, and reproduction. Specific topics include endocrine regulation of food intake and reproduction, exercise physiology and limits to metabolic output, and temporal variation in physiological capabilities. (W) Prereq.: Bio 20700 or Bio 10900. 2 LECT., 4 HR./WK.; 4 CR.

40500: Development and Evolution

Principles of development as they relate to evolutionary changes in morphology of organisms. Discussion and analysis of classic papers in the literature. Prereq.: Bio 22800 or equivalent. 3 LECT., HR./WK.; 3 CR.

41000: Cell Development and Cellular Senescence

Current topics related to the molecular biology of cell development including cell death or apoptosis and cellular aging. A series of lectures which cover pertinent topics, such as oxidative stress, genetic and stochastic factors in aging. Students are required to present orally two primary journal articles and to write a final paper in which a review of the current literature and provision of experimental designs are required to answer a chosen question. Prereq.: Bio 22900. (W) 3 HR./WK.; 3 CR.

42000: Virology

Introductory survey of diverse genera of animal viruses and bacteriophages and methods used in the classification, detection, and quantification of viruses. The course emphasizes an understanding of the mechanisms of DNA/RNA replication, expression and macromolecular assembly into functional, infectious units (virions) in different viruses. Selected examples are presented in detail, including oncogenic RNA/DNA viruses and HIV/AIDS. Prereq.: Bio 22900 and Bio 35000, or permission of instructor. 4 LECT. HR./WK.; 4 CR.

43000: Genetics of Prokaryotes

The lectures will cover basic microbial genetics, including the biology of bacteria and their phages, structure and function of nucleic acids, gene transmission in microbial systems and the mechanisms of genetic recombination, transposition, and gene regulation. The laboratory experiments will teach mastery in techniques of mutagenesis, selection and screening, gene mapping, and use of transposons in the construction of genetically useful strains. Prereq.: Bio 22900 and Bio 35000, or permission of the instructor. (W) 3 LECT., 2 LAB. HR./WK.; 4 CR.

45300: Conservation Biology

Principles of conservation biology, including habitat fragmentation, exploitation of natural resources, species extinction and the consequences of inbreeding in small populations. Prereq.: Bio 22800 or equivalent. (W) 3 HR./WK.; 3 CR.

45500: Advanced Ecology

Introduction to the analytical techniques necessary to quantify modern ecological theory. Emphasis on application of mathematical tools and computers to models of population growth, interspecific interactions and ecosystem function. Prereq.: Bio 22800 and Math 20900. 3 HR./WK.; 3 CR.

45900: Biological Oceanography

A survey course in biological oceanography that includes discussion of the physical

and chemical properties of the ocean, processes controlling primary and secondary production, biodiversity, and special environments such as polar ecosystems and upwelling systems. Lecture only. Prereq.: Chem 10401, Bio 22800 or permission of the instructor. (W) 3 HR./WK.; 3 CR.

46000: Animal Behavior

The biological bases of behavior, with emphasis on such topics as the development, evolution, genetics and ecology of behavior; sensory physiology; social behavior and communication. Prereq.: Bio 10200. (W) 3 HR./WK.; 3 CR.

46100: Laboratory in Animal Behavior

Experiments and observations to demonstrate various types of behavior and behavioral capacities at different phyletic levels. Introduction to techniques of behavioral research through experiments and an individual research project. Coreq.: Bio 46000. (W) 3 LAB. HR./WK.; 2 CR.

46400: Introduction to Neurobiology

Introduction to the physiology and organization of the nervous system. Topics include membrane potentials, action potentials, synaptic transmission, sensory and motor systems, development, neural basis of learning, memory, and cognition. Prereq.: Bio 20700 or Bio 20900 or Bio 22900. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

46600: Plant Physiology

The growth, development, metabolism, nutrition and water relations of vascular plants and algae. Prereq.: Bio 22900. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

46800: Comparative Animal Physiology

This course examines the physiological process involved on energy acquisition (e.g., nutrition, digestion) and expenditure (e.g., thermoregulation, locomotion) as well as water balance (e.g., osmotic stress, kidney function) in a wide variety of organisms inhabiting diverse environments. Laboratory exercises include problem solving recitations, experimentation and interpretation of data. Prereq.: Bio 10900 or 20700. (W) 2 LECT., 4 LAB. HR./WK.; 4 CR.

48300: Laboratory in Biotechnology

Introduction to DNA isolation, restriction mapping, gene cloning in plasmids and viruses, construction of libraries and other techniques of gene manipulation. Emphasis will be on application of recombinant DNA technology. Prereq.: Bio 22900 and permission of instructor. (W) 6 LAB. HR./WK.; 3 CR.

48500: Evolution

Historical development and current understanding of the principles of evolution. Prereq.: Bio 22800. (W) 3 HR./WK.; 3 CR.

HONORS AND SPECIAL COURSES

The maximum for both Honors and Independent Studies is nine credits but only six may count toward the 39 required for the major.

30100-30300: Honors I-III

Honors work requires the approval of the Dean, of the Departmental Committee on Honors and Independent Studies and of the mentor. Application must be made in J1320 and also to the Departmental Committee. Entrance standards are Bio 10100, 10200, 20600, and at least two of 20700, 22800, or 22900 for Biology majors with an average of 3.5 in Biology and 3.0 or better overall. Only laboratory or field projects will be accepted for Honors. All students participating are expected to present the results of their work at the Honors and Independent study symposium in the Spring. A written paper must accompany the presentation. Although mentors are responsible for giving grades, these grades will be reviewed by the Committee before a final grade is awarded. 3 CR./SEM. FOR A TOTAL OF 9 CR. WHICH MUST BE COMPLETED.

31000: Independent Study

Individual laboratory, field, or library investigation of a problem. Recommended background: Bio 10100, 10200, 20600, and at least two of 20700, 22800 or 22900, with a 3.0 average in Biology. Apply to the Committee on Honors and Independent Studies. Students may not register for Independent Study without written permission from the Committee every semester. Students must present a written proposal with well defined goals to the committee for approval. No more than three credits of library research may be taken. In order to receive credit, a written paper must be produced and presented to the Committee. Students who work with mentors outside the department must also have a co-sponsor inside the department. Although mentors are primarily responsible for giving grades, these grades will be reviewed by the Committee before a final grade is awarded. 1-3 CR./SEM.

GRADUATE COURSES OPEN TO UNDERGRADUATES

Qualified undergraduate students may take selected graduate courses. Permission of the Instructor, and the Biology Department advisors or the Deputy Chair must be obtained before a student may register for these courses. The courses are described in the *Graduate Bulletin* of The City College.

FACULTY

Mary Alpaugh, Assistant Professor

B.S., King's College; Ph.D., Univ. of Houston

Robert P. Anderson, Assistant Professor

B.A., Kansas State Univ.; Ph.D., Univ. of Kansas

Amy Berkov, Assistant Professor

BFA., Univ. Colorado; Ph.D., CUNY

William M. O. Boto, Professor

B.Sc., Makerere Univ.; M.Sc., Harvard Univ.; Ph.D., Univ. of Massachusetts Medical School

Rochelle Buffenstein, Professor

B.S., Univ. Cape Town, Ph.D.

David Eastzer, Assistant Professor

B.S., Cornell Univ.; M.S., The City College; Ph.D., Univ. North Carolina (Chapel Hill)

Jay A. Edelman, Assistant Professor

A.B., Univ. of California, Ph.D.

Jane C. Gallagher, Professor and Chair

B.S.–A.M., Stanford Univ.; Ph.D., Univ. of Rhode Island

Robert P. Goode, Professor

B.A., New York Univ.; M.A., Columbia Univ., Ph.D.

Shubha Govind, Professor

B.S., M.S., Delhi Univ.; Ph.D., Univ. Illinois (Urbana-Champaign)

Jerry Guyden, Professor

B.A., North Texas State, M.S.; Ph.D., Univ. of California

Sally Hoskins, Associate Professor

B.S., Univ. of Illinois; Ph.D., Univ. of Chicago.

Karen Hubbard, Associate Professor

B.A., Barat College; Ph.D., Illinois Inst. of Tech.

John J. Lee, Distinguished Professor

B.S., Queens College; M.A., Univ. of Massachusetts; Ph.D., New York Univ.

Daniel Lemons, Professor and Dean, Center for Worker Education

B.A., Goshen College; M.S., Portland State Univ.; Ph.D., Columbia Univ. Medical School

Jonathan B. Levitt, Associate Professor

B.A., Univ. of Pennsylvania; M.A., New York Univ., Ph.D.

Christine Li, Associate Professor

A.B. Barnard; M.S., Columbia; Ph.D., Harvard

Mark Pezzano, Assistant Professor

B.S., William Paterson; Ph.D., CUNY

Robert Rockwell, Professor

B.S., Wright State, M.S.; Ph.D., Queen's Univ., Kingston (Canada)

Ofer Tchernichovski, Associate Professor

B.Sc., Tel Aviv Univ.; DVM, The Hebrew Univ.; Ph.D., Tel Aviv Univ.

Tadmiri R. Venkatesh, Associate Professor

B.S., Univ. of Mysore, India; M.S., Birla Institute of Technology and Science, India, Ph.D.

Joshua Wallman, Professor

A.B., Harvard Univ.; Ph.D., Tufts Univ.

Ralph C. Zuzolo, Professor

A.B., New York Univ., M.S., Ph.D.

PROFESSORS EMERITI

Donald Cooper

Lawrence J. Crockett

Rose R. Feiner

Joseph Griswold

James Kendall

Kumar Krishna

Louis Levine

Linda H. Mantel

Olivia Mckenna

James A. Organ

Robert A. Ortman

Joseph Osinchak

Gerald S. Posner

Janis A. Roze

Norman M. Saks

Robert J. Shields

Carol Simon

William N. Tavolga

John H. Tietjen

Aaron O. Wasserman

Stanley C. Wecker

Black Studies Program

(DIVISION OF SOCIAL SCIENCE)

Professor James de Jongh, Director • Program Office: NAC 4/108 • Tel: 650-8117

GENERAL INFORMATION

The City College offers the following undergraduate degree in Area Studies:

B.A.

PROGRAMS AND OBJECTIVES

Black Studies is a body of knowledge reflecting global African peoples' participation in and contribution to the evolution, development and civilizations of mankind. It is a multidisciplinary program, encompassing a broad-based approach to the Africana experience within the context of human evolutionary development, history, race, ethnicity, and politico-economic interrelationships. The scholarship and teaching of Black Studies emanates from a set of distinct principles that are based on the interconnectedness of African and African Diaspora peoples' diverse experiences. Scholarship and teaching in Black Studies involves the interdisciplinary creation and dissemination of knowledge about peoples of African descent from a perspective that places Black people at the center of their own experiences. Fundamental to this venture is the intent not only to study the world but also to actively engage in transforming it. Black Studies interrogates the methods, paradigms and assumptions of the various disciplines in the humanities, social sciences, arts, and natural sciences not only as a corrective but also as an independent discipline that produces its own body of knowledge, methods and theories. This distinguishes Black Studies from an interest in black issues based on traditional disciplinary paradigms, which

often marginalize, minimize or neglect black people and lack a component of advocacy for social change. The program curriculum offers academic training in various interdisciplinary approaches, methods, interpretations, ethics, philosophies, and ideologies. Students are offered the opportunity to be placed in community-based organizations for at least one year.

The CCNY Black Studies program offers geopolitical, socioeconomic and cultural concentrations in Africa, the Caribbean and African-America.

Students may combine two or more components of the four subject matter areas and/ or three geopolitical areas described below.

Subject Matter Areas

Black World Development
African American Socio-Economy
Latin American and Caribbean Socio-Economy
Special Topics and Independent Studies

Geopolitical Areas

African
African-American
Caribbean-Brazilian

STRUCTURE OF CURRICULUM

The courses of the Black Studies program are categorized under four subject matter areas. Through guidance, students interested in identified subject matter areas will be able to develop an individual plan of study.

REQUIREMENTS FOR MAJORS

Students must complete the following:

Required Courses

10100: African Heritage and the Afro-American Experience	3
10200: African Heritage and the Caribbean-Brazilian Experience	3

Elective Courses

Black Studies	24
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Total Credits **30**

For their elective courses, students must choose courses from two or more of the four subject matter areas and/or the three geopolitical areas described previously.

ADDITIONAL REQUIREMENTS

All majors must complete the following courses:

New Student Seminar (unless exempt) (0 cr.)
English 11000: Freshman Composition (3 cr.)
English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

REQUIREMENTS FOR MINORS

Required Courses

10100: African Heritage and the Afro-American Experience	3
10200: African Heritage and the Caribbean-Brazilian Experience	3

Elective Courses

Four approved courses	12
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Total Credits	18
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PROGRAM ACTIVITIES

Program Activities include: Institute for Research on the African Diaspora in the Americas and the Caribbean,

AWARDS

Black Faculty and Staff Annual Scholarship Awards

Annual Convocation Awards for Outstanding Services

Wilfred Cartey Award for Africana Literary and Creative Excellence

Edward Scobie Award for Africana Social Science Research

Marshariki Chaney Award for Achievement and Community Service

ADVISEMENT

Professor Venus Green
NAC 4/120, 212-650-8656

COURSE DESCRIPTIONS

Introductory and Intermediate Courses

10100: African Heritage and the Afro-American Experience

Introduction to Black "roots" from ancient Africa to contemporary America as an orientation to the nature of Black Studies emphasizing its relationships to world history, Europe, Asia, the Americas, slavery, Reconstruction, colonization, racism, and their politico-economic and cultural impact upon African descendants worldwide. 3 HR./WK.; 3 CR.

10200: African Heritage and the Caribbean-Brazilian Experience

Analysis of historical conditions which shaped the lives of African peoples in the Caribbean and Brazil emphasizing cultural continuities, human organization and similarities in global Black experience among Africans on the continent and in the Western hemisphere, vis-a-vis European politico-economic control and cultural impact. 3 HR./WK.; 3 CR.

14900: Religion and Survival

An historical analysis of the role of religion and the church in sustaining the survival of Black people within white America. (W) 3 HR./WK.; 3 CR.

15500: Black Studies and Black Psychology

Derives its unique status from African philosophy which formulates the values, customs, attitudes, and behavior of Africans in Africa and the African diaspora. Examines, conceptualizes and interprets from an Afrocentric perspective, centered in the history and development of Africa. (W) 3 HR./WK.; 3 CR.

17100: Roots: Seminar on the Black World Experience

The study of a people involuntarily and forcibly transported from Africa to the Americas. The organizing concepts include African world history, culture and religion, family and genealogy, capitalism and slavery, humanism and communalism, socialization and values, cosmology and philosophical thought. (W) 3 HR./WK.; 3 CR.

17600: The Black Revolution

A survey of the forces shaping the current unrest in the world-wide Black community. Movements that project the changed attitude toward being Black for Blacks and non-Blacks. Highlights both the positive and negative reactions resulting from the new self-pride on the part of Black people. (W) 3 HR./WK.; 3 CR.

20000-20400: Practicum

Field work experience in various areas of community service and pre-professional work. Hours arranged. One day per week in field and two hour seminar bimonthly. Students are limited to two courses. 3 CR. EACH

21000-21300: African World Area Studies

A semester or summer-long course designed to expose selected groups of students to major areas populated by persons of African descent through in-area observation, study, laboratory, and cooperative volunteer work experiences with students and other citizens of the area visited. (W) 3 HR./WK.; 3 CR.

21000: African Area Studies

21100: Afro-American Studies

21200: Caribbean Studies

21300: Brazilian and Afro-Latin American Area Studies

Black World Development

12300: African Politics

The emergence of the modern state structures from colonial Africa. A comparative analysis of colonialism, nationalism and political development of selected African countries. (W) 3 HR./WK.; 3 CR.

12400: National Building and Development in Africa

A survey of patterns of leadership, ideologies, and political organization in contemporary Africa. The "revolutionary" pattern will be contrasted to the "conservative" pattern in an effort to provide a contextual understanding of the relationship between political attitudes and social problems. (W) 3 HR./WK.; 3 CR.

12800: The United Nations and New Nation States

The major legal and constitutional problems in international organizations arising in the work of the United Nations with particular reference to decolonization, apartheid, transfer of "appropriate" technology to the developing world, trusteeship questions, peacekeeping functions, human rights, and domestic jurisdiction. (W) 3 HR./WK.; 3 CR.

13500: Economic Development of the Black Community

The impact of technology and industrialization on the Black ghetto; the economics of transportation; perpetuation or disintegration of the ghetto; public welfare; municipal services; effects of migration, limited autonomy, and hostile external political and fiscal policies upon continuous underdevelopment. (W) 3 HR./WK.; 3 CR.

African-American Socio-Economy

13200: The Afro-American Child in His Urban Setting

The sociological, psychological and educational needs of Black children in New York City public and private schools. (Education majors must consult their advisor.) (W) 3 HR./WK.; 3 CR.

13400: The Harlem Community

The origins and ethnic development of the Harlem community: demographic trends, institutions, culture, resources, and the role of Harlem as a training ground for Black leadership. Field learning experiences include visits to historic sites and community landmarks. 3 HR./WK.; 3 CR.

14500: Capitalism and Colonialism in Contemporary America

White America is described as capitalist and colonialist. Efforts will be made to comprehend the relative importance of the two phenomena for strategies of liberation depending upon the understanding of who and what is the American and America. (W) 3 HR./WK.; 3 CR.

14700: The Civil Rights Movement

The struggle for civil rights related to differences in organizational structures, ideologies and tactics. An attempt is made to evaluate each organization in its situation and in contrast to its social environment. 3 HR./WK.; 3 CR.

15700: Racism and the American Legal System

Contemporary legal institutions, their intrinsic race and class biases, the peculiar development and entanglement of the institution of slavery and American jurisprudence, and the effect of the racist application of the American legal system on every facet of the Black experience. (W) 3 HR./WK.; 3 CR.

18900: Sociopolitical Impact of Race and Racism

The historical development and contemporary impact of the concepts of race and racism, focusing upon the early attempts at human classification, notions of polygenesis, the biological and social concepts of race, the origins of racism, slavery, sexism, institutional racism, and contemporary polarization. (W) 3 HR./WK.; 3 CR.

19000: Malcolm X: His Life, Leadership and Legacy

Charismatic, mesmerizing, energetic life. Rise from criminal to international fame. Leadership greatly influenced poor African-American masses, stunned Black conservatives and shocked white America. Black Muslims controversy vis-a-vis civil rights forced him to fight independently. Left legacy of beloved martyr slain in Black struggle. (W) 3 HR./WK.; 3 CR.

33000: Afro-American Heritage: 1619 to 1865

A survey of the sociocultural experiences of African peoples in the North American diaspora defining the historical, economic and political origins of the contemporary position of the Afro-American. 3 HR./WK.; 3 CR.

33100: Afro-American: 1865-Present

A survey of the Black experience in America, this course will focus upon the major issues, trends, personalities, and literature of the period, the contradictions of

Emancipation, and will examine Reconstruction, migration, and exodus, Black Renaissance, the Civil Rights Movement, Black power and nationalism. 3 HR./WK.; 3 CR.

33300: The Black Woman

The various contemporary situations and problems peculiar to Afro-American women in the community and in American society. Entails a study of such institutions as marriage, family, childrearing practices, religion, politics and business. Attention also given to how she is projected in literature and theater. A comparative study of African and Caribbean women will be presented. 3 HR./WK.; 3 CR.

Latin American and Caribbean Socio-Economy**16100: Caribbean and Brazilian Heritage**

A survey of economic and sociocultural factors. History of the Caribbean and Brazil, with special emphasis on the experience of African peoples dispersed in these areas, their role in the affairs of the Third World, varied colonial experiences, covering the pre-Columbian period through the present. 3 HR./WK.; 3 CR.

16300: Race and Politics in the Caribbean

The relationship between race and class; political power dependency in various Caribbean areas. The colonial and neocolonial experiences of key islands, and movements toward autonomy and independence. (W) 3 HR./WK.; 3 CR.

16600: Caribbean Immigration

An analysis of the economic and political factors leading to the 19th and 20th century population movements into, within, and from the Caribbean region, stressing migration to the United States, the Caribbean communities in New York, Panama, Central America, London, Paris, Montreal, New Haven, Caracas and Toronto. Immigration issues worldwide will be studied comparatively. 3 HR./WK.; 3 CR.

Special Topics and Independent Studies**30100-39400: Honors**

Approval of the Program Director required. no Apply no later than December 10 in the Fall term and May 1 in the Spring term. VARIABLE CR., BUT USUALLY 4 CR./SEM.

31000: Independent Reading in Black Studies

Approval of Program Director is mandatory. Program thoroughly planned and structured.

The student will be required to produce evidence of the readings available and relevant to his/her interests. The readings must be compiled into a comprehensive report. Limited to upper-class students with adequate background in Black Studies. (W) 1-4 CR.

Courses in other Departments

In addition to the courses listed above, many courses from other divisions and departments of the College may be accepted towards the degree. Please consult the Program Director and Program Advisor each semester for a list of acceptable courses.

FACULTY

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the major.

Department of Chemistry

(DIVISION OF SCIENCE)

Professor Simon Simms, Chair • Department Office: Marshak 1024 • Tel: 212-650-8402

GENERAL INFORMATION

The City College offers the following undergraduate degree in Chemistry:

B.S.

PROGRAMS AND OBJECTIVES

The Chemistry Department, established in 1849, offers instruction and research training in the following areas:

Analytical Chemistry
Biochemistry
Environmental Chemistry
Inorganic Chemistry
Organic Chemistry
Physical Chemistry

The B.S. program is available for students planning to go into advanced study, government service, the health professions, and secondary school education. There are a number of pathways by which students may specialize in chemistry. The Standard Chemistry curriculum is the program of choice for those who have not yet decided upon their specific career goals and who wish to maximize their opportunities. The Biochemistry Option is more specialized and is often chosen by pre-medical students and students interested in doing life science research. The Environmental Option is for students wishing to pursue an industrial or graduate career in the environmental sciences. Students taking this option are trained to identify the effects of chemical species on the environment, to trace the sources, reactions and fates of such species and to devise chemical methods for treating environmental problems and bringing them

under control. The Secondary Education Option is for students who plan to become secondary school teachers upon graduation. Each of the pathways is flexible and detailed curricula may be obtained by phoning or visiting the Department Office.

There is no "premed major" as such at City College. Premedical students major in biochemistry, biology, chemistry or some other discipline while completing the requirements for admission into medical school. The Department cooperates closely with the Program in Premedical Studies (PPS), a program of the Division of Science. This program features a curriculum which integrates a variety of learning experiences specifically preparing participants to meet the requirements of medical, dental and veterinary schools, and also the requirements for admission into physician's assistant and physical therapy advanced degree programs.

Research and Honors

The Chemistry Department maintains an active undergraduate research program. Students may receive up to 9 credits for their research work by enrolling in Honors (Chem 30100-30400) or Independent Study (Chem 31001-31004) with permission of the Undergraduate Research Supervisor. Financial support for research may be available for some students through a variety of grant-sponsored programs.

REQUIREMENTS FOR MAJORS

Non-Chemistry Core Requirements

Earth and Planetary Science:
 10600: Earth Systems Science 4

Mathematics:

20100: Calculus I 4
 20200: Calculus II 4
 20300: Calculus III 4

Physics:

20700: General Physics I 4
 20800: General Physics II 4

Science:

20000: Measurements, Modeling, and Computing 3
 9 Liberal Arts courses (see Core Curriculum for the B.S. degree) 27

In addition, all Chemistry majors must complete "Basic Courses for Chemistry Majors" and either the "Standard Chemistry Option" or one of the "Alternative Options." Students may also elect to satisfy the American Chemical Society Certification requirements.

Basic Courses for Chemistry Majors

Required Courses

10301: General Chemistry I 4
 10401: General Chemistry II 4
 24300: Quantitative Analysis 4
 26100: Organic Chemistry I 3
 26300: Organic Chemistry II 3
 27200: Organic Chemistry Laboratory I 3
 33000: Physical Chemistry I 3

Total Credits for Basic Courses 24

Standard Chemistry Option

Required Courses
 Basic Courses for Chemistry Majors 24
 32500: Inorganic Chemistry 5
 33100: Physical Chemistry Laboratory I 2
 33200: Physical Chemistry II 3
 37400: Organic Chemistry Laboratory II 3

43400: Physical Chemistry and Chemical Instrumentation Laboratory II	3
45900: Biochemistry I	4

**Total Credits for Standard
Chemistry Option 44**

**Biochemistry Option
Required Courses**

Chemistry:	
Basic Courses for Chemistry Majors	24
33500: Physical Biochemistry	5
37400: Organic Chemistry Laboratory II	3
45900: Biochemistry I	4
48005: Biochemistry II	3

Biology:	
10100: Biological Foundations I	4
10200: Biological Foundations II	4
22900: Cell and Molecular Biology	4

**Total Credits for
Biochemistry Option 51**

**Environmental Option
Required Courses**

Basic courses for Chemistry majors	24
Chem 32500: Inorganic Chemistry	5
Chem 33100: Physical Chemistry Laboratory I	2
Chem 33200: Physical Chemistry II	3
Chem 40600: Fundamentals of Environmental Chemistry	3
Chem 40700: Environmental Organic Chemistry	3
Chem 43400: Physical Chemistry and Chemical Instrumentation Laboratory II	3
Chem 45900: Biochemistry	4

A minimum of 6 credits from the
following science courses: 6-8

EAS 21700: ESS: Physical and Chemical Principles (3 cr.)	
EAS 31300: Environmental Geochemistry (3 cr.)	
EAS 47200: Environmental Project (6 cr.)	
BIO 22800: Ecology and Evolution (4 cr.)	
Two of the following courses:	5-8
BIO 35000: Microbiology (4 cr.)	
BIO 45900: Biological Oceanography (3 cr.)	
Chem 40601: Environmental Chemistry Laboratory (2 cr.)	
CE H7700: Biological Systems in Environmental Engineering (3 cr.)	

EAS 34500: Hydrology (3 cr.)	
EAS 43900: Mineral/Energy Resources (4 cr.)	
EAS 56600: Solid Earth Geochemistry (3 cr.)	

Elective Courses

A minimum of 6 credits from Chemistry
Advanced Courses 6-8

**Total Credits for
Environmental Option 66-73**

Secondary Education Option

Major requirements are listed below.
Pedagogical requirements are listed in
the Department of Education section in
this *Bulletin*.

Required Courses

Basic Courses for Chemistry Majors	24
33100: Physical Chemistry Laboratory I	2
33200: Physical Chemistry II	3
43400: Physical Chemistry and Chemical Instrumentation Laboratory II	3

**Total Credits for
Secondary Ed. Option 32**

**ADDITIONAL
REQUIREMENTS**

All Chemistry majors must complete
the following courses:

New Student Seminar unless exempt (0 cr.)	
English 11000: Freshman Composition (3 cr.)	
English 21000 or equivalent: Second Level Writing Course (3 cr.)	
Core Curriculum for the intended degree	

Speech 11100 (3 cr.) or pass the
Speech Proficiency test.

Chemistry majors must maintain a C
average in Chemistry courses. No
courses beyond General Chemistry may
be taken unless a C is obtained in all
prerequisite courses (or permission is
received from the Chair). In addition,
all students must complete the follow-
ing:

College Proficiency Examination:
Pass the CPE after completing 45 but
no more than 60 credits.
Proficiency in a Foreign Language:
Students must complete either two

years of foreign language in high
school or a second semester-level
course at City College.

Writing Across the Curriculum:
Three elective-level courses that are
identified as requiring at least 3,500
words of writing. Courses designated
with a (W) at the end of each course
description fulfill this requirement.

For more information, please consult
the chapter entitled *Degree
Requirements* in the introduction to
this *Bulletin*.

**For American Chemical Society
Certification**

Students wishing to receive American
Chemical Society Certification must
complete the requirements for their
chosen option and the following
courses.

Standard Chemistry Option

Three graduate level courses chosen in
consultation with the advisor (may
include six credits of Honors
Research/Independent Study): 8-11

Biochemistry Option

32500: Inorganic Chemistry 5
Two graduate level courses chosen in
consultation with the advisor (may
include six credits of Honors
Research/Independent Study): 5-10

Secondary Education Option

32500: Inorganic Chemistry 5
37400: Organic Chemistry
Laboratory II 3
45900: Biochemistry I 4

**PREMEDICAL OR
PRE-DENTAL STUDENTS**

Pre-medical or pre-dental students who
are not chemistry or biochemistry
majors are required to take the follow-
ing:

Required Courses

10301: General Chemistry I	4
10401: General Chemistry II	4
26100: Organic Chemistry I	3
26300: Organic Chemistry II	3

One of the following: 2-3
26200: Organic Chemistry Laboratory I
(2 cr.)
27200: Organic Chemistry Laboratory I
(3 cr.)

Elective Courses

If additional chemistry electives are desired, the following courses are recommended:

24300: Quantitative Analysis	4
33000: Physical Chemistry I	3
33500: Physical Biochemistry	5
37400: Organic Chemistry Laboratory II	3
45900: Biochemistry I	4
48005: Biochemistry II	3

STUDENTS PLANNING GRADUATE WORK

For students planning graduate work in chemistry, the following additional courses are recommended:

Mathematics:

39100: Methods of Differential Equations	3
39200: Linear Algebra and Vector Analysis	3

Experience in statistics and computer science.

Reading proficiency in at least one language with a significant scientific literature.

REQUIREMENTS FOR THE MINOR

Students may obtain a minor in Chemistry by completing 16 credits beyond General Chemistry (10301, 10401). The following courses are recommended:

24300: Quantitative Analysis	4
26100: Organic Chemistry I	3
26300: Organic Chemistry II	3
27200: Organic Chemistry Laboratory I	3
33000: Physical Chemistry I	3
45900: Biochemistry I	4

ADVISEMENT

All students, including premedical and pre dental students, planning to concentrate in chemistry should consult a Specialization Advisor.

Chemistry

Professor G. Kowach
Marshak 1116; 212-650-5247

Biochemistry

Professor T. Lazaridis
Marshak 1338; 212-650-8364

Undergraduate Research Supervisor

Professor S. Simms
Marshak 1024; 212-650-8402

Exemption Examinations

Professor S. Simms
Marshak 1024; 212-650-8402

UNDERGRADUATE RESEARCH PROGRAMS**Minority Access and Research Careers (MARC) Research Initiative for Scientific Enhancement (RISE)**

Professor M. Weiner
Marshak 1120; 212-650-8337

Center for Analysis of Structures and Interfaces (CASI)

Professor D. Akins
Marshak 1034; 212-650-6953

TUTORING

Extensive tutoring services are available for general chemistry students in the Chemistry Learning Center (Marshak 1029) during most of each school day. Additional tutoring is offered through CCAPP and several undergraduate research programs.

SEMINARS

The Chemistry Department sponsors weekly seminars on topics of current interest. Advance notice of these seminars will be posted near Room 1024, and all interested students are invited to attend.

AWARDS, PRIZES AND SCHOLARSHIPS

Each year the Department presents a number of awards and prizes to its outstanding students.

Baskerville Award**J. Birnbaum Scholarship Award****Frank and Rose Brescia Award****Ernest Borek Scholarship****Freshman Handbook Award****Benjamin Harrow Memorial Award****Robert and Frances Hochman Scholarship****Arthur G. Levy Prize****Seymour Mann Scholarship****Marks Neidle Memorial Prize****Max Pavey Scholarship****Samuel and Louis Rover Award in Biochemistry****Ward Medal in Chemistry****COURSE DESCRIPTIONS**

Students may register for Chemistry 10301 if eligible for Calculus on the basis of mathematics placement test scores, or if taking Math 19500 concurrently. All others are required to take Chemistry 10100 (Introduction to Chemistry) prior to 10301.

INTRODUCTORY COURSES**10000: Chemistry and Society**

The fundamental principles of chemistry and their application to social issues. (Open to Science majors only with permission of instructor). Fall semester only. 3 HR./WK.; 3 CR.

10100: Introduction to Chemistry

(For students with limited background in mathematics or the physical sciences.) Problem-solving in chemistry: introduction to chemical and physical concepts. Coreq.: Math 19000. 3 HR./WK.; 1 CR.

CORE COURSES**10301: General Chemistry I**

An in-depth introduction to the fundamental laws and techniques of chemistry for majors in science and engineering. Topics include: measurement; stoichiometry; the gaseous state; thermochemistry; atomic structure and chemical bonding; redox reactions; solids, liquids and intermolecular forces. Prereq.: Math 19000; coreq.: Math 19500. 3 LECT., 2 WRKSH., 2 LAB. HR./WK.; 4 CR.

10401: General Chemistry II

An in-depth introduction to the fundamental laws and techniques of chemistry for majors in science and engineering. Topics include: chemical kinetics; chemical equilibrium; acids and bases; free energy, entropy, and the second law of thermodynamics; electrochemistry; advanced bonding concepts; metals and coordination chemistry; nuclear chemistry. Students who feel they would benefit from workshops may also take Chem 10421. Prereq.: Chem 10301. 3 LECT., 4 LAB. HR./WK.; 4 CR.

10421: General Chemistry II Workshop
Optional Workshop. Coreq: Chem 10401.
2 HR./WK.; 0 CR.

ADVANCED COURSES

21000: Applied Chemistry for Biomedical Engineers

Introduces students to organic chemistry and biochemistry principles relevant to the study of the human body. Topics covered include: hydrocarbons; functional groups; and structure and function of biomolecules (lipids, carbohydrates, proteins, and nucleic acids), along with their interactions; and introduction to molecular genetics. Prereq.: Chem 10401 (min. C grade). 3 HR./WK.; 3 CR.

24300: Quantitative Analysis

Volumetric, spectrophotometric and electrochemical analyses. Prereq.: Chem 10401. (W) 2 LECT., 5 LAB. HR./WK.; 4 CR.

26100: Organic Chemistry I

An introduction to the chemistry of carbon compounds, current interpretation of the reactions and properties of these compounds. Prereq.: Chem 10401. 3 LECT., 1 REC. HR./WK.; 3 CR.

26200: Organic Chemistry Laboratory I

(For non-Chemistry majors) Exercises involving the preparation and purification of carbon compounds. Prereq.: Chem 10401 and Chem 26100; coreq.: Chem 26300. 4 HR./WK.; 2 CR.

26300: Organic Chemistry II

A continuation of Chem 26100. Prereq.: Chem 26100. 3 LECT., 1 REC. HR./WK.; 3 CR.

27200: Organic Chemistry Laboratory I

(For Chemistry majors) Exercises stressing the techniques involved in the preparation, isolation, purification, and analysis of carbon compounds. Prereq.: Chem 10401 and Chem 26100; coreq.: Chem 26300. 6 HR./WK.; 3 CR.

32500: Inorganic Chemistry

Concepts of inorganic chemistry, including bonding theory, structure of complexes, symmetry, and reaction mechanisms. Prereq.: Chem 24300. Fall semester only. 4 LECT., 4 LAB. HR./WK.; 5 CR.

33000: Physical Chemistry I

Ideal and real gases, kinetic molecular theory, thermodynamics and phase equilibria, solutions. Prereq.: Chem 10401, Math 20300, and Physics 20700; coreq.: Physics 20800 (recommended as a prereq.). Students who feel that they would benefit from workshops should also take Chem 33001. 3 HR./WK.; 3 CR.

33001: Physical Chemistry I Workshop
(Optional workshop). Coreq.: Chem 33000.
2 HR./WK.; 0 CR.

33100: Physical Chemistry Laboratory I

Vapor pressures; phase diagram; combustion calorimetry; gas viscosities; electrochemical determination of thermodynamic quantities and other experiments based on topics covered in Chem 33000. Prereq.: Chem 24300 and 33000. (W) Spring Semester only. 5 HR./WK.; 2 CR.

33200: Physical Chemistry II

Spectroscopy, quantum mechanics, and statistical thermodynamics. Prereq.: Chem 33000. Students who feel that they would benefit from workshops should also take Chem 33201. 3 HR./WK.; 3 CR.

33201: Physical Chemistry II Workshop

(Optional workshop) Coreq.: Chem 33200. 2 HR./WK.; 0 CR.

33500: Physical Biochemistry

(For students taking the biochemistry option) Thermodynamics, kinetics, transport, spectroscopy, solids, surface and electrochemistry as applied to biological systems. Prereq.: Chem 24300, 26300, and 33000. Spring semester only. (W) 3 LECT., 1 REC., 4 LAB. HR./WK.; 5 CR.

37400: Organic Chemistry Laboratory II

A continuation of Chemistry 26200/27200 stressing qualitative organic analysis. Prereq.: Chem 26300 and Chem 26200 or 27200. 6 HR./WK.; 3 CR.

38200: Chemistry-Physics-Engineering Seminar I

Required for certain undergraduate students; emphasis on topics in physical, organic and inorganic chemistry. Fall semester only. 1 CR.

38300: Chemistry-Physics-Engineering Seminar II

Required for certain undergraduate students; emphasis on topics in physical, organic and inorganic chemistry. Spring semester only. 1 CR.

40300: Chemical Information Sources

An introduction to the retrieval of chemical information. Topics covered: primary, secondary and tertiary literature, including the major abstract journals, data sources, compendia, patents, current awareness, and computer readable sources. Prereq.: Chem 10401 and Chem 26100. Spring semester only. 1 HR./WK.; 1 CR.

40500: Safety in Chemistry

Laboratory and plant safety and toxicology; safety regulations. Prereq.: Chem 10401 and Chem 26100. Spring semester only. 1 HR./WK.; 1 CR.

40600: Environmental Chemistry

Chemical cycles, aquatic chemistry and microbial biochemistry, phase interactions, water pollution and treatment, atmospheric chemistry and pollution, geochemistry, soil chemistry, energy resources, hazardous wastes, toxicological chemistry, and analytical methods. Intended to broaden the students' understanding of chemical processes taking place in our environment. The relationship between atmospheric, soil and water chemistry will be underlined. This course draws upon general, analytical and organic chemistry experience. Prereq.: Chem 24300 and 26100. Fall semester only. 3 HR./WK.; 3 CR.

40601: Environmental Chemistry Laboratory

Introduction to environmental analysis. Samples of water, air, soil, food, etc. will be obtained and analyzed both qualitatively and quantitatively for pollutants. The effects of these pollutants on the environment will be discussed and linked to urban problems. Analytical techniques will include titrations, separations (GC, HPLC, GC/MS), and polarography. Prereq.: Chem 40600. Spring semester only. 4 HR./WK.; 2 CR.

40700: Environmental Organic Chemistry

An examination of processes that affect the behavior and fate of anthropogenic organic contaminants in aquatic environments. Students learn to predict chemical properties that are influencing the transfers between hydrophobic organic chemicals, air, water, sediments and biota. This knowledge will be based on a fundamental understanding of intermolecular interactions and thermodynamic principles. Mechanisms of important thermochemical, photochemical, and biochemical transformation reactions are also investigated, leading to the development of techniques (such as structure-reactivity relationships) for assessing environmental fate or human exposure potential. Prereq.: Chem 26100. Spring semester only. 3 HR./WK.; 3 CR.

43400: Physical Chemistry and Chemical Instrumentation Laboratory II

This course will introduce students to experimental methods in physical chemistry, instrumental analysis and the principles and applications of chemical instrumentation. The course will acquaint the student with the behavior of real chemical systems, the theory of the chemical phenomenon under observation and the design and methodology of measurement systems to detect the chemical phenomenon. Prereq.: Chem 33100 and 33200. (W) Fall semester only. 1 LECT., 5 LAB. HR./WK.; 3 CR.

45900: Biochemistry I

The cellular biochemistry of amino acids, proteins, enzymes, carbohydrates, lipids, and nucleic acids. Chromatography, electrophoresis, spectroscopy, and other quantitative laboratory techniques will be applied to the isolation and analysis of these classes of biochemicals. Prereq.: Chem 26300 and Chem 26200 or 27200. (W) 3 LECT., 4 LAB. HR./WK.; 4 CR.

48005: Biochemistry II

Molecular basis of enzyme action, membranes (transport and transduction), protein structure, signal transduction, virology, bioinformatics, genomics, proteomics, molecular basis of replication, transcription and translation of genetic information, and immunology. Prereq.: Chem 45900. Spring semester only. 3 HR./WK.; 3 CR.

HONORS, INDEPENDENT STUDY AND SPECIAL COURSES

Students can register for undergraduate research projects in the Honors Program or the Independent Study Program. In order to graduate "with Honors", the student must maintain a "B" average or better in the Major subject, submit an Honors paper which is a report in research publication format, and be given 9 credits of "A" for this work by the mentor. A maximum of nine credits may be credited toward the degree.

Students are trained to design and perform experiments, to keep a notebook, to write a report and research paper, and to make oral and poster presentations. Research reports are required for all undergraduate research students for every term for which a grade is given.

Every student in these programs must have a conference with the designated departmental advisor (Prof. Simms), every term he or she is working in research. An information form, including the student's major, the name of the mentor, the title of the research project and the projected graduation date must be on file with the advisor.

Please make an appointment with Prof. Simms in room J1024 or call him at (212) 650-8402.

30100-30400: Honors

Approval of Department Undergraduate Research Supervisor required prior to registration. 3 CR./SEM.

31001-31004: Independent Study

Approval of Department Undergraduate Research Supervisor required prior to registration. 1-4 CR./SEM.

31100-32000: Selected Topics in Chemistry

Special topics not covered in the usual department offerings. Topics will vary from semester to semester depending on student and instructor interest. CREDITS AND HOURS TO BE DETERMINED BY INSTRUCTOR AND DEPARTMENT WITH A MAXIMUM OF 4 CR. PER COURSE.

GRADUATE COURSES OPEN TO UNDERGRADUATES

Qualified students with departmental approval may take any course available in the master's programs or the first year of the doctoral programs in Chemistry or Biochemistry. These courses are described in their appropriate bulletins.

FACULTY

Daniel L. Akins, Professor

B.S., Howard Univ.; Ph.D., Univ. of California, Berkeley

Valeria Balogh-Nair, Professor

B.Sc., Univ. of Louvain (France), Ph.D.

Teresa Badosz, Professor

B.S., M.S., Univ. of Mining Metallurgy (Cracow, Poland); Ph.D., Technical Univ. of Cracow

Ronald Birke, Professor

B.S., Univ. of North Carolina; Ph.D., M.I.T.

Vernon G. S. Box, Professor

B.Sc., Univ. of West Indies, Ph.D.

David H. Calhoun, Professor

B.A., Birmingham-Southern College; Ph.D., Univ. of Alabama

Ranajeet Ghose, Assistant Professor

B.Sc., Presidency College (India); M.S., Yale Univ., Ph.D.

David K. Gosser, Professor

B.S., St. Joseph's Univ.; Ph.D., Brown Univ.

Michael E. Green, Professor

A.B., Cornell Univ.; M.S., Yale Univ., Ph.D.

Thomas Haines, Professor

B.S., The City College, M.A.; Ph.D., Rutgers Univ.

Urs Jans, Assistant Professor

Diploma in Chemistry, Swiss Federal Institute of Technology, Ph.D.

George John, Associate Professor

B.S., Univ. of Kerala (India), Ph.D.

Glen Kowach, Associate Professor

B.S., Univ. of Wisconsin, Madison; Ph.D., Cornell Univ

Mahesh Lakshman, Associate Professor

B.S., University of Bombay (India), M.S.; Ph.D., University of Oklahoma

Themis Lazaridis, Associate Professor

Diploma in Chemical Engineering, Aristotle Univ. (Greece); Ph.D., Univ. Of Delaware

John R. Lombardi, Professor

A.B., Cornell Univ.; M.A., Harvard Univ., Ph.D.

Neil McKelvie, Professor

B.A., Cambridge Univ., M.A.; Ph.D., Columbia Univ.

Kevin Ryan, Assistant Professor

B.S., Providence College; M.S., Univ. of Rochester, Ph.D.

Horst Schulz, Professor

M.S., Technical Univ. Berlin, Ph.D.

Simon A. Simms, Associate Professor and Chair

B.S., The City College; Ph.D., Princeton Univ.

Mark L. Steinberg, Professor

B.A., Univ. of Michigan; Ph.D., Univ. of Pennsylvania

Maria Tamargo, Professor and Dean of Science

B.S., Univ. of Puerto Rico; M.S., John Hopkins Univ., Ph.D.

Maria-Luisa Tasayco, Associate Professor

B.S., Central Michigan Univ.; M.S., Purdue Univ.; Ph.D., State Univ. of New York, Stony Brook

Iban Ubarretxena-Belandia, Assistant Professor

B.Sc., Univ. of Basque Country (Spain); M.Sc., Univ. of Kent (UK); Ph.D., Univ. of Utrecht (The Netherlands)

Ira Alan Weinstock, Associate Professor

B.A., Williams College; M.A. Columbia Univ.; Ph.D., Massachusetts Institute of Technology

Zhonghua Yu, Assistant Professor
B.S., Univ. of Science and Technology
(Hefei, China); Ph.D., Columbia Univ.

PROFESSORS EMERITI

John S. Arents
Theodore Axenrod
Francis E. Condon
Myer M. Fishman
Herbert Meislich
Jack I. Morrow
Stanley R. Radel
Henri L. Rosano
Charlotte S. Russell
Leonard H. Schwartz
Amos Turk
Michael Weiner
Arthur E. Woodward



Comparative Literature Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Joshua Wilner, Director • Program Office: NAC 6/317B • Tel: 650-6307

GENERAL INFORMATION

The City College offers the following undergraduate degree in Comparative Literature:

B.A.

PROGRAMS AND OBJECTIVES

The Comparative Literature program offers students an opportunity to study literature from a broader, more comprehensive point of view than one restricted to the works of a single nation or a single language area.

The B.A. program is designed to make the student aware of the international culture in which national literatures flourish. The student will study the ways in which the literatures of different nations enrich, influence, and help define each other, in order to be able to recognize those traits that are universally shared and those that are distinctive and unique to each one.

The program in Comparative Literature also gives the student the opportunity to enhance his or her competence in a foreign language through the study of literature.

Each student majoring in Comparative Literature will design his or her own program in consultation with one of the faculty advisors, whose approval of the program is required. The choice of electives will reflect the student's background, special interests, and objectives.

Students should review course offerings in the departments or programs of Foreign Languages and Literatures, English, Asian Studies, Black Studies, Jewish Studies, Latin American and Hispanic Caribbean Studies, and Women's Studies.

The possibilities for interdisciplinary study are numerous. Students may, for example, choose to orient their study of the national literatures to such topics as literature and science, literature and society, or literature and other arts, and may include in their programs related courses in such fields as anthropology, art, history, music and theatre.

REQUIREMENTS FOR MAJORS

Students majoring in Comparative Literature must complete the following:

Required Courses

35000: Introduction to Comparative Literature	3
41100-42000: Seminars in Comparative Literature	3

Elective Courses

National literatures in the original language:	
Courses in the first language	minimum 15
Courses in a second language	minimum 6
Related free electives	9

Total Credits 36

ADDITIONAL REQUIREMENTS

All Comparative Literature majors must complete the following courses:
 New Student Seminar or New Transfer Student Seminar (0 cr.)
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree

Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

ADVISEMENT

Students interested in Comparative Literature should consult with the Director, Professor Joshua Wilner, who will assist them in identifying a faculty advisor.

COURSE DESCRIPTIONS

35000: Introduction to Comparative Literature

Study of major themes, genres, and periods. Basic introduction to ways of comparing various literatures and to the relations between literature and other art forms. Readings from world literature (in translation, as necessary) and from secondary sources. Prereq.: World Humanities C10100 and C10200. (W) 3 HR./WK.; 3 CR.

31100-32000: Selected Topics in Comparative Literature

A changing series of innovative and experimental cases on topics not generally covered in regular courses. Students should consult the list of course offerings each semester to determine which selected topic will be offered. (W) 3 HR./WK.; 3 CR.

41100-42000: Seminars in Comparative Literature

Intensive study of a particular period, theme, genre, or literary movement, or of a particular problem in the theory and methods of comparative literature. Prereq.: Comp Lit 35000 or approval of the instructor. (W) 2 HR./WK.; 3 CR.

FACULTY

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the major.

Department of Earth and Atmospheric Science

(DIVISION OF SCIENCE)

Professor Jeffrey Steiner, Chair • Department Office: Marshak 106 • Tel: 212-650-6984

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Earth and Atmospheric Sciences:

B.A. in Geology

B.S. in Geology

PROGRAMS AND OBJECTIVES

The Department of Earth and Atmospheric Sciences offers two B.S. degree concentrations to accommodate student interests and goals:

Earth Systems Science Engineering Geology

The Department of Earth and Atmospheric Sciences offers a unique version of the Earth System Science (ESS) model, the proposed national curriculum for the earth sciences. The ESS approach has been adopted by NASA and other government agencies as the appropriate method for understanding and modeling the complexities of the world system. By understanding the relationships that sustain the earth's oceans and atmosphere we can better develop methods for phrasing and solving environmental problems. EAS/ESS emphasizes a curriculum that deals with the geochemical and geophysical relationships that produce an environmentally sound and self-perpetuating world.

This new approach attempts to be as multi-disciplinary as possible, allowing students to choose electives from other science departments and from engineering. The special strengths of the department include hydrology/sub-surface remediation, geophysics and environmental geophysics, meteorology

and remote sensing, and environmental geochemistry. New courses in this catalog include Atmospheric Change, Environmental Remote Sensing/Image Analysis, and Geographic Information Science (GIS). Students graduating from EAS with the system science training are especially able to include geological/GIS mapping and remote sensing in their portfolio of skills. These and related skills are especially valuable to engineering geology companies, government agencies, such as NASA and NOAA, and a multitude of areas that involve spatial planning. By careful selection of electives students can be equally well prepared for careers ranging from Classical Geology to Environmental Public Policy, and Terrestrial Ecology. Majors are also ideally prepared to pursue careers in education and advanced degrees in the Earth Sciences.

DEPARTMENTAL FACILITIES

The EAS Department houses a Weather/Remote Sensing Laboratory with computer links to Unidata. The IBM RISC 6000 and Sun Sparc workstations permit access to national data banks and are networked via direct satellite link to Internet sources. The Department also maintains well equipped hydrology, geophysics and geochemistry laboratories. Equipment includes Philips x-ray fluorescence and x-ray diffraction stations. Thermo flame and graphite furnace atomic absorption facilities, a Thermo Finnigin Trace DSQ Gas Chromatography/Mass Spectrometry station with chemical ionization and autosampler, a Glas-Col Soxhlet extraction system, Dionex Suymmit

HPLC with gradient pump and Uv detector, a Kodak Image Station 2000MM Multi-Modal high performance digital imaging system and related equipment for quantitative hydrology. The High Pressure Laboratory includes a 0-100,000 PSI Harwood Intensifier, a Honeywell temperature-regulating systems and a petrographic microscope laboratory. Additional equipment includes access to a ZEISS SEM with a Princeton Gammatech Energy Dispersive Analysis System and Phillips Transmission Electron Microscopes. The Geophysics Laboratory is equipped with a 24-channel Strataview engineering seismograph system, an EM-31 electromagnetic ground conductivity meter, a Syscal Kid Switch 24 automated resistivity system, an older Soiltest resistivity meter, a Worden student gravimeter, and a GSM-19T proton precession magnetometer. EAS maintains a cloud laboratory at Steamboat Springs, Colorado that has been the resource for student meteorology projects for the last two decades.

RESEARCH

Qualified students are encouraged to become research assistants to faculty, and must complete a capstone research project as part of the major requirements sequence. Many are assisted in their research with support from the CCNY National Oceanic and Atmospheric Administration Center for Remote Sensing Science and Technology (CREST) and the CCNY National Aeronautical and Space Administration University Research Center for Optical Sensing and Imaging of the Earth and Environment (COSI), or through other resources

provided by the faculty. Research problems vary from studies of bacteria-soil interactions to cloud physics. Each year student meteorological research projects are carried out at Storm Peak Laboratories in Colorado.

DEPARTMENTAL ACTIVITIES

The Planetary Society

The Planetary Society has meetings during club hours. Meetings include guest lectures, environmental films, and field trips in the NYC area.

American Meteorological Society

The American Meteorological Society is for students interested in meteorology and its applications. Weather station operation and visits to other weather stations are scheduled.

AWARDS

The Ward Medal

Presented each year to outstanding graduating seniors in Geology and Meteorology. For detailed information, see the Guide to City College Prizes, Awards, and Medals in the office of the Chair.

ADVISEMENT

For general advisement for all program options:

Professor Jeffrey Steiner
Marshak 106; 212-650-6984

Professor Margaret Winslow
Marshak 930; 212-650-6471

REQUIREMENTS FOR MAJORS

B.S. option

Science core 41-42
Required EAS courses 18
EAS electives (students may take a maximum of six credits from the Social Science list and a maximum of nine credits from the Science/Engineering list. Students concentrating in Engineering Geology will choose at least 9 credits from the CE courses in list A.) 24

Total Credits 83-84

B.A. option

B.A. science core 9
Required EAS courses 18
EAS electives 9
Social Science electives 9
Additional Science/Engineering electives 6

Total Credits 51

CORE COURSES

Earth and Atmospheric Sciences:
One of the following: 3-4
10000: The Dynamic Earth (for B.A. only, or by permission) (3 cr.)
10600: Earth Systems Science (for B.S. majors) (4 cr.)
21300: Engineering Geology (for engineering students) (3 cr.)

Required Courses

Earth and Atmospheric Sciences:
21700: ESS: Systems Analysis of the Earth 4
22700: Structural Geology 4
30800: ESS: Modeling/Databases 3
41300: Environmental Geochemistry 3
47200: Environmental Project 4

Total 18

Electives

Earth and Atmospheric Sciences:
21300: Engineering Geology (3 cr.)
31700: Atmospheric Change (3 cr.)
33000: Geographic Information Systems (3 cr.)
32000: Global Change (3 cr.)
32800: Global Environmental Hazards (3 cr.)
34500: Hydrology (3 cr.)
36500: Coast and Ocean Processes (3 cr.)
42600: Environmental Remote Sensing and Image Analysis (3 cr.)
43900: Mineral/Energy Resources (4 cr.)
44600: Groundwater Hydrology (3 cr.)
48800: Climate Change (3 cr.)
56100: Geophysics (3 cr.)
56600: Solid Earth Geochemistry (3 cr.)

Possible Substitute Electives for the B.S. Degree:

In consultation with the advisor, a student may replace up to 9 credits from the EAS elective list with course credits from Science and Engineering List A. Similarly, a student may select up to

6 credits from the Social Science List B as substitutes for the EAS credits listed above. Students may propose other replacement electives to meet their career objectives.

Possible Substitute Electives for the B.A. Degree:

In consultation with the advisor, a student may replace up to 6 credits from the EAS elective list with course credits from Science and Engineering List A. Similarly, a student may select up to 9 credits from the Social Science List B as substitutes for the EAS credits listed above. Students may propose other replacement electives to meet their career objectives.

Science/Engineering List A Biology:

20800: Population and Community Biology
32700: Principles of Ecology
32800: The Environmental Crisis
34500: Botany
45700: Biological Oceanography

Civil Engineering:

23100: Structural Mechanics
26300: Surveying
33000: Mechanics of Materials
34500: Soil Mechanics
36100: Hydraulics
45100: Environmental Water Resources

Chemistry:

26100: Organic Chemistry I
26200: Organic Chemistry I Laboratory
33000: Physical Chemistry I
33100: Physical Chemistry I Laboratory

Earth and Atmospheric Science: (courses listed below)

Physics:

35100: Mechanics
35300: Electricity and Magnetism

Social Science List B Anthropology:

20000: Archaeology
20300: Human Origins
20600: Urban Ecology
22000: Anthropology of the Built Environment
22800: Anthropology of Urban Areas
28200: Primate Ecology
29000: Human Ecology

Economics:

- 10300: Economics: Principles and Policies
25400: Urban Economics

International Studies:

- 20100: International Studies
31103: Social Foundations of International Studies

Political Science:

- 12500: Introduction to Public Policy
22500: Selected Problems in Urban Politics and Urban Policy
22701: Seminar and Internship New York City Government
25300: International Law
32100: Politics and Policy Process: Analyzing Public Policy

Sociology:

- 24700: Community Organization
25100: Urban Sociology
25500: Population and Human Ecology
26700: Social Change in Developing Countries

SECONDARY EDUCATION OPTION

Major requirements are listed below. Pedagogical requirements are listed in the Department of Education section of this *Bulletin*.

Basic Courses:

- Physics:
30500: Methods in Astronomy 3

Required Courses:

- 21700: ESS: Systems Analysis of the Earth 3
22700: Structural Geology 4
30800: ESS: Modeling Data Bases 3
41300: Environmental Geochemistry 3
47200: Environmental Project 4

Electives:

- 21900: Weather Casting (3 cr.)
31900: Geographic Information Systems (offered at Hunter or Lehman College) (3 cr.)
32800: Global Environment Hazards (3 cr.)
34500: Hydrology (3 cr.)
36500: Coast and Ocean Processes (3 cr.)
43900: Mineral and Energy Resources (4 cr.)
44600: Groundwater Hydrology (3 cr.)

- 48800: Climate Change (3 cr.)
56100: Geophysics (3 cr.)
56600: Solid Earth Geochemistry (3 cr.)

Total Credits**29****ADDITIONAL REQUIREMENTS**

All majors must complete the following courses:

- New Student Seminar, unless exempt (0 cr.)
English 11000: Freshman Composition (3 cr.)
English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

COURSE DESCRIPTIONS**CORE COURSES****10000: The Dynamic Earth**

Basic concepts of geology. The materials, structures, and surface features of the earth, and the processes which have produced them. 3 LECT. HR./WK.; 3 CR.

10100: The Atmosphere

An introduction to the processes and phenomena of our atmosphere. Topics include clouds, sky color, greenhouse effect, storms, climates and Ice Ages. 3 LECT. HR./WK.; 3 CR.

10600: Earth Systems Science

A systematic global view of the features, processes, and underlying scientific concepts of the earth, atmosphere, and oceans, emphasizing environmental applications. 3 LECT., 3 LAB. HR./WK.; 4 CR.

21300: Engineering Geology

Fundamental facts and principles of geology with special reference to their importance in engineering projects; geologic perspective on current environmental issues; remote sensing; techniques for geologic study of project sites in terms of the surface and subsurface environment. 3 LECT. HR./WK., NINE 3 HR. LAB. SESSIONS/SEM.; 3 CR.

ADVANCED COURSES**21700: ESS: Systems Analysis of the Earth**

Analysis and modeling of the grand cycles and systems in the Earth Sciences including plate tectonics and climate change by incorporating the underlying physical, chemical and biological principles. Physical and chemical properties of earth materials are examined. EXCEL, Visual Basic and PowerPoint are all used extensively. Prereq.: EAS 10600 or 21300, Physics 20300 or Chemistry 10300 or equivalent; coreq.: Sci 20000. (W) 3 LECT., 2 LAB. HR. WK.; 4 CR.

22700: Structural Geology

Geometry of elementary earth structures, especially faults and fractures, their modes of origin, stress analyses, and models. The mechanics of naturally occurring structures and their relationship to human-made structures. Includes earthquake mechanics and development of geological maps. Prereq.: EAS 10000, 10600 or 21300. 3 LECT., 2 LAB. HR./WK.; 4 CR.

30100-30400: Honors I-IV

Research and studies in Earth Systems Science. Approval of Dean and Department required. Apply in J1328, no later than December 10 in the Fall term or May 1 in the Spring term. VARIABLE CR., USUALLY 3 CR./SEM.

30800: ESS: Modeling/Databases

Applications of the principles of ESS to the diagnosis and modeling of global and local environmental problems. Introduction to remote sensing techniques, processing, and analyses of global data sets, and computer models of Earth Systems. Prereq.: EAS 21700, or permission of the instructor. (W) 3 LECT., 1 LAB. HR./WK.; 3 CR.

31000: Independent Study

Individual laboratory, field or library investigation of a problem in Earth Systems Science. Approval of instructor required. 1-4 CR./SEM.

31100-31500: Selected Topics in Earth Systems Science

Current topics and problems with emphasis on aspects not treated in regular courses. Department permission required. 3 LECT. OR REC. HR./WK.; 3 CR./SEM.

31700: Atmospheric Change

Introduction to the phenomena and their interactions with the oceans and solid earth, including atmospheric composition, chemistry and evolution, atmospheric structure, radiation, heating, clouds and precipitation, atmospheric motions, circulation systems, storms, and climate. Applications include elements of weather forecasting, air quality monitoring and remote sensing. Prerequisites: EAS 21700 and Science 20000 or equivalent or permission of instructor. 3 HR./WK.: 3 CR.

32000: Global Change

Analysis and modeling of the grand cycles and systems in the Earth Sciences including plate tectonics and climate change by incorporating the underlying physical, chemical and biological principles. Physical and chemical properties of earth materials are examined. Prereq.: EAS 10600 or 21300; coreq.: Physics 20300 or Physics 20700 or Chemistry 10300; Math 10100 or Math 10500 or equivalent. 2 LECT., 2 LAB. HR./WK.; 3 CR.

32800: Global Environmental Hazards

Study of important, naturally-occurring, destructive phenomena, such as earthquakes, volcanic eruptions, landslides and coastal flooding. Long-term causes and remediation of these problems. Topics will focus on consequences to urban environments. 3 LECT. HR./WK.; 3 CR.

33000: Geographic Information Systems

Introduction to Geographic Information Systems using ArcGIS. Analysis of spatial data based on location. Hands-on work with downloading databases from the Internet, modification of formats, editing, and data analyses. Visual representation of data will emphasize different data types (point, linear, and spatial) and use of various analytical tools (IDW, spline, nearest neighbor, quadrat analysis, and different pattern types, such as random, clustered, uniform, bi-modal, etc. Environmental Applications are stressed in class and include: Earthquake Patterns and Risk

Analysis, Vegetation Patterns and Changes over Time, Patterns of Sea Level Change due to Global Warming, remote sensing of fracture patterns, aerosol dispersal over time, pollution plumes in subsurface groundwater. 3 HR./WK.; 3 CR.

34500: Hydrology

Introduction to hydrological data, the hydrologic cycle. Precipitation, streamflow, evaporation, and runoff. Emphasis is on their interactions and processes. Prereq.: Math 20300 or 20800, Physics 20800, or permission of the instructor. 2 LECT., 2 LAB. HR./WK.; 3 CR.

36400: Field Methods in Oceanography

An interdisciplinary introduction to theories, principles and laboratory methods in aquatic and coastal sciences. Includes extensive fieldwork involving cruises on a research vessel. Course is taught as a continuous three week block of lectures and laboratories during summer session. Students will be required to be in residence at an appropriate field station in the New York area for the duration of the course. Prereq.: Completion of a lecture plus laboratory course designed for majors in either Biology or Geology. Completion of one year of chemistry and one semester of calculus is strongly recommended. Enrollment by application only. 4 CR.

36500: Coast and Ocean Processes

Principles governing atmosphere-coast-ocean interactions. This course utilizes the Department's Weather Station and Geosciences Computer Laboratory where oceanographic and atmospheric data are remotely sensed from space. The role of the world's oceans to current global warming/cooling models will be examined. Topics also include: bathymetric features, origins of the hydrosphere, sea-level change, wave formation, temperature, salinity, and density of the ocean water. Prereq.: EAS 10600 or 21300, or Bio 10200 or 10500, or permission of the instructor. 3 LECT. HR./WK.; 3 CR.

41300: Environmental Geochemistry

A traditional geochemistry survey course that emphasizes earth system science considerations. The survey includes groundwater systems, the ocean system, carbon-silicon cycle relative to these systems, stable and radioisotope geochemistry, trace metal distribution theory and applications, and an introduction to igneous and metamorphic petrology. Hands-on exercises in x-ray fluorescence and x-ray diffraction spectrometry complement lecture materials. Prereq.: EAS 21700 or permission of the instructor; pre- or co-req. Chem 10401. (W) 3 LECT., 1 LAB. HR./WK.; 3 CR.

42600: Environmental Remote Sensing and Image Analysis

Remote sensing of the environment is a course devoted to the study of earth system interactions through downloading and manipulating satellite data. The course reviews the historical creation of satellite platforms, current usages of satellite data in the earth sciences, and emphasizes image analytical techniques used to highlight important data sets. Lecture and laboratory work emphasizes the use of Interactive Data Language (IDL) programming to perform image manipulations. Prerequisites: undergraduate course in computer science or permission of instructor. 3 LECT. HR./WK.; 3 CR.

43900: Mineral/Energy Resources

Minerals in Earth Systems Science: principles of mineral stability and mineral associations; identification and recovery of earth resources. Mineral issues in human terms: toxic waste sites, climatology, and slope stability. Course introduces mineral optics and x-ray diffraction. Prereq.: EAS 21700 or permission of the instructor. 2 LECT., 4 LAB. HR./WK.; 4 CR.

44600: Groundwater Hydrology

Occurrence of ground water. Basic equations and concepts of groundwater flow. Flow nets. Methods of groundwater investigation. Prereq.: Math 20300 or 20800, Physics 20800, EAS 10600 or 21300, or by permission. 2 LECT., 2 REC. HR./WK.; 3 CR.

47200: Environmental Project

Senior-level project utilizes field data to solve an urban environmental problem. Can be taken in the spring semester or in the summer. Also open to post-graduates in the environmental fields, by permission. Prereq.: EAS 21700 and 22700; coreq.: EAS 30800, or permission of the instructor. (W) 4 WEEKS IN FIELD PLUS LAB. ANALYSES; 6 CR.

48800: Climate Change

This course links processes and interactions of the atmosphere, ocean, and solid earth and their impact on climate and climate change. Topics include the physical principles of climate; climates of the past and present; Ice Age theories; the Greenhouse Effect; and human impact on climate. Prereq.: EAS 10100 or 10600; one semester of college math. 3 LECT., 2 LAB. HR./WK.; 4 CR.

52800: Plate Tectonics/Geodynamics

This course treats the processes that change the face of the earth. It includes the concepts of mantle convection, continental drift, leading to the modern theory of plate tectonics. The perspective is global and process-oriented, with examples

from nearby active plate boundaries. The plate tectonic model explains global distributions of earthquakes, volcanoes, mineral deposits, and long-term climate patterns. 3 LECT. HR./WK.; 3 CR.

56100: Geophysics

This course covers the physical principles that govern the behavior and techniques used to infer the earth's internal structure, composition, and mineral resources. It provides earth scientists and engineers with the techniques to determine earth structures, locate environmental pollutants, and prospect for natural resources from remote locations. Topics include: seismology, geodesy, gravity, magnetics, and thermal properties of the earth. Prereq.: EAS 10600 or 21300 and Physics 20800. 3 LECT. HR./WK.; 3 CR.

56500: Environmental Geophysics

The application of geophysics to environmental and engineering problems. Hands-on work and demonstrations on seismic, electrical, electromagnetic and magnetic instruments and techniques. Survey design and execution. Computer analysis of survey results. Prereq.: EAS 56100. 3 LECT., DEMONSTRATION, OR FIELDWORK HR./WK.; 3 CR.

56600: Solid Earth Geochemistry

Deep earth involvement in Earth Systems Science: plutonism and volcanism; isotopic age dating; non-radiogenic isotope systematics; and trace metal characteristics of evolving earth systems. Course introduces petrography and x-ray fluorescence. 3 LECT. HR./WK.; 3 CR.

GRADUATE COURSES OPEN TO UNDERGRADUATES

Qualified undergraduate students may take, with permission of department, courses available in the Master's Program in Earth Systems Science (see Graduate catalogue) or at Lehman College or other CUNY campuses.

FACULTY

Stanley Gedzelman, Professor

B.S., The City College; Ph.D., M.I.T.

Edward Hindman, Professor

B.S., Univ. of Utah; M.S., Colorado State Univ.; Ph.D., Univ. of Washington

Patricia Kenyon, Associate Professor

B.S., Rensselaer Polytechnic Inst.; Ph.D., Cornell Univ.

Federica Raia, Assistant Professor

B.S., Univ. of Naples, Ph.D.

Jeffrey Steiner, Professor and Chair

B.S., Washington State Univ.; Ph.D., Stanford Univ.

Margaret Anne Winslow, Professor

B.S., Columbia Univ. M.A., M. Phil., Ph.D.

Pengfei Zhang, Assistant Professor

B.S. Univ. of Science & Technology of China; M.S., Montana Tech of the Univ. of Montana; Ph.D., Univ. of Utah

PROFESSORS EMERITI

Charles A. Baskerville

Simon Schaffel

Willard J. Pierson

Jerome Spar

Dennis Weiss

O. Lehn Franke

Cecil H. Kindle

Kurt E. Lowe

Department of Economics

(DIVISION OF SOCIAL SCIENCE)

Professor Malcolm Galatin, Chair • Department Office: NAC 5/144B • Tel: 212-650-5403

GENERAL INFORMATION

The City College offers the following undergraduate and combined degrees:

- B.A. (Economics)**
- B.A. (Management and Administration)**
- B.A./M.A. (Combined Degree)**

PROGRAMS AND OBJECTIVES

Economists are concerned with the problems that arise in allocating scarce resources to alternative uses. They analyze supply and demand both for individual goods and services and the economy as a whole. Students prepare for a variety of careers in the business, non-profit, public and academic sectors of society. The study of Economics helps people to make informed decisions as citizens and community leaders and in their private affairs.

An undergraduate concentration in the Program in Management and Administration prepares students for a variety of careers in the private and public sectors of society.

A certificate combining Economics with Management and Administration is available to students who complete the Management and Administration major and also take Economics 22000 and 22500.

The Minor in Economics or Management and Administration

For information on requirements for the Minor, consult the departmental advisor.

B.A./M.A. Program

The B.A./M.A. program is an intensive program that affords academically gift-

ed undergraduate students the opportunity to obtain an M.A. degree along with a B.A. degree. Entering students with a superior high school record making them eligible for Freshman Honors and sophomores or juniors with a B+ overall average are eligible for the B.A./M.A. program.

DEGREE REQUIREMENTS

Economics

Required Courses

One of the following alternatives: 3-6
Alternative 1:

10000: Principles of Microeconomics (3 cr.)

10300: Principles of Macroeconomics (3 cr.)

Alternative 2:

10101: Introduction to Economics (4 cr.)

Alternative 3:

10400: Introduction to Quantitative Economics (3 cr.)

22000: Microeconomic Theory I 3

22500: Macroeconomics I 3

29000: Principles of Statistics 4

29400: Computer Aided Economic Analysis 4

One of the following two: 3-4

Mathematics:*

20100: Calculus I (3 cr.)

20500: Elements of Calculus I (4 cr.)

* Additional mathematics courses are strongly recommended for majors, particularly Math 20200, 20300, 20600, or 20800.

Elective Courses

Five additional economics elective courses 15-20

Total Credits 36-44

For the specialization in Financial Economics, students should take 27000, 27100, 27200, 27400, 27500 and 36000.

Management and Administration** Required Courses

Economics:

One of the following alternatives: 3-6
Alternative 1

10000: Principles of Microeconomics (3 cr.)

10300: Principles of Macroeconomics (3 cr.)

Alternative 2

10101: Introduction to Economics (4 cr.)

Alternative 3

10400: Introduction to Quantitative Economics (3 cr.)

27100: Economics of Corporate Finance 3

29000: Principles of Statistics 4

29400: Computer-Aided Economic Analysis 4

33000: Economics of Marketing 3

34000: Organization and Management 3

35000: Managerial Economics 3

35200: Administrative Economics: Operations and Production 3

35300: Administrative and Managerial Policy 3

35800: Government Regulation and Executive Decision-Making* 3

36000: Principles of Accounting I 3

Mathematics:

One of the following: 3-4

20100: Calculus I (3 cr.)

20500: Elements of Calculus (4 cr.)

Total Credits 38-42

Additional Recommended Courses:

Economics:

27200: Economics of Investment

36100: Principles of Accounting II

35700: Entrepreneurial Economics
 38100: Law of Business Organization
 35100: Administrative Economics:
 Personnel

38000: Law of Business Contracts

*38000 may be substituted for 35800.

*35100 may be substituted for 35800

** The program requirements for the major in Management and Administration are under revision and are expected to change as of September 2006.

ADDITIONAL REQUIREMENTS

All Economics majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)

English 11000: Freshman Composition (3 cr.)

English 21000 or equivalent: Second Level Writing Course (3 cr.)

Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
 Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
 Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

ADVISEMENT

Economics (Financial Economics and Dual Major in Economics and Management and Administration)

Professor Malcolm Galatin
 NAC 5/144B

B.A./M.A. Program

Professor Mitchell Kellman
 NAC 5/103C

Graduate Programs

Professor Ross Weiner
 NAC 5/139D

Career Opportunities and Placement

Professor Malcolm Galatin
 NAC 5/144B

DEPARTMENTAL ACTIVITIES

The Economics Society

The Economics Society is an undergraduate student organization.

Omicron Delta Epsilon

Omicron Delta Epsilon, a National Honor Economics Society, originated at this college. Open to outstanding undergraduate and graduate students specializing in Economics. See Prof. Y. Shachmurove, NAC 5/139A.

AWARDS

The Department of Economics bestows the following awards. For information, see Professor Kevin Foster, NAC 5/103A, or Professor Ross Weiner, NAC 5/139D.

Business Alumni Association Award

For academic excellence and distinguished service (GPA above 3.0).

Business Alumni Society Scholarships

For outstanding students in Economics and Management.

Leonard Cantor Scholarship

For excellence in Economics.

Mark and Estelle Clements Scholarship

For excellence in Economics and Statistics.

Carl Dunat Award

For excellence in Economics

David B. Elkin Scholarship

For excellence in Economics and Public Policy.

Earl A. Estwick Scholarship

For excellence in Economics.

Rhoda Harnick Alumni Association Scholarship

Awarded to a sophomore demonstrating excellence in Economics with a GPA above 3.0.

Bernard Jacobs Award

For excellence in Economics.

Edna and Harold Kaufman Alumni Association Scholarship

Awarded to a junior/senior for academic excellence.

Ketchum Prize

For excellence in Economics.

Julius Lefkowitz Award

For academic excellence.

Harvey Leopold Alumni Association Scholarship

A junior in Management demonstrating academic excellence (GPA above 3.0).

Pritzker Fellows

The Department selects outstanding students for paid internships in private and public organizations.

Wall Street Journal Student Achievement Award

For excellence in Finance.

Ward Medal

For the best Economics major in the graduating class.

Mary and Martin Weinman Medal

For academic excellence.

COURSE DESCRIPTIONS

Students under the new core curriculum should take Economics 10000. Students may satisfy the old core by taking Economics 10300, unless they have already received credit for Economics 10200. There is no mathematics prerequisite for either Economics 10000 or Economics 10300.

CORE AND INTRODUCTORY COURSES

10000: Principles of Microeconomics

This introductory course develops the basic tools and methods of microeconomic analysis. The choices of individual decision makers are analyzed in studying how markets operate. The fundamentals of supply and demand, consumer and firm behavior, and market interactions are examined. Applications to current macroeconomic issues are discussed in the course, for example, the role of government in markets. 3 HR./WK.; 3 CR.

10101: Introduction to Economics

For students enrolled in Freshman Honors Program. Replaces Eco 10000 (or 10200) and 10300. 4 HR./WK.; 4 CR.

10300: Principles of Macroeconomics

This introductory course develops the basic tools and methods of macroeconomic analysis. Issues of employment and unemployment, inflation, the level of output and its growth, and other important current policy problems are examined within the framework of models that economists use. The main area of current applications will be the United States economy, but attention will also be given to international economic issues. 3 HR./WK.; 3 CR.

10400: Introduction to Quantitative Economics

For students enrolled in the School of Engineering. An integrated intensive treatment of micro- and macroeconomics. Modern analytical approach employed to treat topics including theory of consumer demand, theory of firm, market structure, inflation, unemployment, and economic growth. Special emphasis on managerial economics and empirical methods by which economists test hypotheses and estimate parameters. Prereq.: Math 10100 or Math 10700. 3 HR./WK.; 3 CR.

INTRODUCTORY ELECTIVE**12200: Public Economics**

For students enrolled in Media and Communication Arts and in the Program in Public Policy and Public Affairs. Microeconomic analysis of group decision-making; resource allocation in profit and not-for-profit entities. Public policy alternatives. 3 HR./WK.; 3 CR.

ADVANCED ELECTIVES

Engineering students who wish to take advanced courses should take Economics 22000, 22100, and 26500. Economics 22000 is especially recommended for students planning to take courses at the master's level.

Economic Analysis**22000: Microeconomic Theory I**

Forces determining product and factor prices and quantities under alternative market structures. Consumer demand, production, and cost; firm and industry. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

22100: Microeconomic Theory II

Factor markets; introduction to general equilibrium theory, capital theory, and welfare economics. Prereq.: Eco 22000, Math 10100 or 20700 or 10500. 3 HR./WK.; 3 CR.

22500: Macroeconomics I

Factors determining income, employment, price levels, and interest rates. Emphasis placed on policy problems. Prereq.: Eco 10000 or Eco 10100 or 10101 or Eco 10200 or Eco 10300 or Eco 10400. 3 HR./WK.; 3 CR.

22600: Macroeconomics II

Theoretical analysis of economic growth, fluctuations and technological change. Emphasis placed on policy implications, with particular reference to developed economies. Prereq.: Eco 22500. 3 HR./WK.; 3 CR.

International Economics**23000: International Trade Theory**

Development; trade doctrines; gains from trade; theory and practice of protection; balance of payments, capital exports, and theory of transfer; interrelations between domestic economies and international economy. Prereq.: Eco 22000. 3 HR./WK.; 3 CR.

23100: International Finance

Macroeconomic theory and policy in open economy. Issues associated with balance of payments disequilibrium, fluctuating currency values, international factor flows and international capital mobility. Extensions of Keynesian model; monetary and fiscal policy for internal and external balance, macro policy coordination. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

23200: International Environment of Business

Causes, dimensions, consequences, and evolution of our current interdependent world economy. Examines the institutional background of the world financial order, international income comparisons, foreign exchange, balance of payments, the multinational enterprise, international trade, and international investment. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

Economic Development and Comparative Economic Systems**24000: Economic Development**

Rates of growth and stages of development; strategic factors in theory and practice; domestic and international problems of growth, with principal attention to underdeveloped countries. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

24300: European Economic Development

Emphasis on factors responsible for industrialization and growth, interrelation of theory and economic history. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

24400: American Economic Development

Factors responsible for growth of the American economy; emphasis on the period since 1860. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

24500: Asian Economic Development

Economic-social structure and developmental process of India, China, Japan and Southeast Asia. Domestic and international conditions and practices favoring or retarding economic progress in Asia past and future in the light of principles of development. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

24600: Comparative Economic Systems

Compares American capitalism with other ways of organizing economic activity, with special emphasis on price systems and central planning. Prereq.: Eco 10000 or 10101 or 10400. (W) 3 HR./WK.; 3 CR.

Economic Policy and Problems**25000: Contemporary Domestic Economic Problems**

Considers efficiency of free enterprise, with emphasis on the resource waste involved in depressions, lack of competition, inflation, advertising, farm surpluses, tariffs; measurements of waste; procedures to improve performance. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

25100: Contemporary International Economic Problems

Trade liberalization, the balance of payments, regional integration, East-West relations, economic development, and foreign aid. Particular attention to U.S. policy, U.N. activities, and international agencies. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

25400: Urban Economics

Economic origins of cities and suburbs; effects of technological change on industrial structure and urban land use patterns; economics of urban transportation, housing, public utilities, and municipal services; roles of government and private enterprise. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

26000: Industrial Organization and Public Policy

Structure of the American economy. Public policy in maintaining competition. Antitrust activities of Justice Department and F.T.C., with special emphasis on leading recent cases. Prereq.: Eco 10000 or 10101 or 10200 or 10003 or 10400. (W) 3 HR./WK.; 3 CR.

26100: Economics of Regulation

Study of appropriate social controls where competition is lacking; role of government in direct regulation of price and output, and related matters. Prereq.: Eco 26000. 3 HR./WK.; 3 CR.

26400: Public Finance

Taxes and debts of federal, state and local government; budgets and intergovernmental fiscal relationships; the economic implications of their financial activities. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

26500: Public Expenditure

Introduction to public expenditure theory (cost-benefit analysis); political and economic approaches to government decision making. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

Economics of Finance**27000: Money and Banking**

Organization and operation of U.S. financial system, both public and private; money and capital markets, commercial banking policy; relationship between financial and economic activity, including monetary and fiscal policy. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

27100: Economics of Corporate Finance

Economic principles underlying operations of modern business corporations and regulatory controls pertaining thereto. Procurement of capital and conservation of capital resources. Problems of capitalization. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400 and 29000 and 36000. (W) 3 HR./WK.; 3 CR.

27200: Economics of Investment

Security analysis with emphasis upon meaning, measurements and relationship of risk. Portfolio analysis, alternative approaches to valuation, determination of asset values in open market, internal and external rates of return, objectives of investment decision. Prereq.: Eco 27100. 3 HR./WK.; 3 CR.

27300: Personal Finance

Problems involved in efficient handling of personal affairs and consumption expenditure, including consumer protection, taxation, insurance, home financing, and methods of borrowing and investing money. Prereq.: Eco 10000 or 10101 or 10300 or 10400. 3 HR./WK.; 3 CR.

27400: Advanced Financial Economics

Leading and contemporary developments in financial management, including security analysis, portfolio analysis, capital budgeting, working capital management, and benefit-cost analysis. Prereq.: Eco 27100 and 27200. 3 HR./WK.; 3 CR.

27500: Options and Futures

Option pricing theory and applications to corporate finance and security valuation. Options on stocks, futures, commodities and currencies. Organization and operation of futures markets. Futures on commodities and fixed income securities. Stock indexes and international securities. Applications of futures for financial management. Prereq.: Eco 27100 and 27200. 3 HR./WK.; 3 CR.

27600: Banking and the Financial Services Industry

Current policies, problems and banking practices. Interaction of nonbank depository institutions and nonfinancial intermediaries with evolving commercial banking. Prereq.: Eco 27000. (W) 3 HR./WK.; 3 CR.

Labor Economics**28000: Economics of Labor**

Survey of labor, utilization, allocation and compensation of labor. Unionism, government regulation, and other factors affecting labor resources. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

28100: Trade Unionism in the United States

History and structure of the labor movement in the United States. Detailed analysis of policies, functions, methods and procedures of trade unions. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

28200: Comparative Labor Movements

Labor movements in foreign countries with reference to the American scene; relationship between various economic systems and accompanying labor movements, together with appraisal of the work of international labor institutions. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

28500: Economics of Economic and Social Security

Causes and solutions of economic and social insecurity. Special attention given to problems of poverty and unemployment in United States, including examination of alternative Social Security systems. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

Statistics**29000: Principles of Statistics**

Introduction to statistical methods and reasoning. Nature and scope of statistical inquiries, collection, and presentation of data. Descriptive methods, with particular reference to frequency distribution, regression and correlation, index numbers and time series analysis. Elements of probability, sampling methods, sampling error, and principles of estimation and testing. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 4 HR./WK.; 4 CR.

29400: Computer-Aided Economic Analysis

An introduction to the use of the computer as a tool in the solution of economic problems; including problem definition, algorithms, overview of computer organization, impact on practice, data structures, processing, and analysis of output. Emphasis on economics and business applications of statistical techniques. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400 and Eco 29000 or permission of the instructor. 4 HR./WK.; 4 CR.

29700: Econometrics

Statistical models and problems arising in econometrics. Recent work in econometrics applications. Prereq.: Eco 22000 and 29400, or permission of the instructor. 4 HR./WK.; 4 CR.

Management**33000: Economics of Marketing**

Distribution and sale of goods and services from production to final consumption. Includes changing behavior of consumers and relationship to producers' selling behavior; and the economics of merchandising, including product life cycle, location theory, and optimal sales effort. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

34000: Organization and Management

The modern corporation and its historic development; the principal functions of management, and its role in our modern society with emphasis on the structure of the management decision process, and appropriate management tools for analysis

of these decisions or to reduce the uncertainty of their outcome. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

35000: Managerial Economics

Use of management science for the efficient administration of economic units, including applications to production, financial, and marketing operations.

Attention given to the formulation of models to analyze management problems. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400 and Eco 29000 and Eco 29400. 3 HR./WK.; 3 CR.

35100: Administrative Economics: Personnel

Personnel functions in larger organizations; attitudes toward work; role of government, public interest groups and unions in determining job environment. Development of manpower and management resources; planning manpower needs, management of compensation programs. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. (W) 3 HR./WK.; 3 CR.

35200: Administrative Economics: Operations and Production

Investigation of production systems. Application of analytical techniques to product and process design, optimal plant location, efficient plant design. Planning for production. Systems of inventory and quality control. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400 and Eco 29000, Math 10100 or 20100 (W) 3 HR./WK.; 3 CR.

35300: Administrative and Managerial Policy

General management function. Organizational objectives and long-range forecasting. Implementation of organizational strategy for operations, control, expansion, recovery. Social responsibility of corporations. Prereq.: Eco 27100, 33000 and 34000, senior status. (W) 3 HR./WK.; 3 CR.

35700: Entrepreneurial Economics

Exploration of the economics of new businesses. Each member of the class prepares a plan for a potential new business; plans will be discussed stage by stage as they evolve. Prereq.: Eco 34000, 35200, 35300, 27100 and 36000 or permission of the instructor. 4 HR./WK.; 4 CR.

35800: Governmental Regulation and Executive Decision Making

Impact of the new governmental "social" regulation upon managerial and administrative decision making in private enterprises and public organizations. Legal,

ethical and economic aspects of health, safety, environment, consumerism and the like are considered. Attention given to the effects of regulation on costs, innovation, productivity, inflation and economic growth. Prereq.: Eco 27100, 33000, 34000. (W) 3 HR./WK.; 3 CR.

Accounting

36000: Principles of Accounting I

Introduction to accounting cycle, fundamental concepts and techniques of accounting for business transactions and preparation of financial statements. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 4 HR./WK.; 3 CR.

36100: Principles of Accounting II

Emphasis on the use of accounting data and analysis of management decisions. Prereq.: Eco 36000. 4 HR./WK.; 3 CR.

Law

38000: Law of Business Contracts

Basic principles of law of business contracts and their applications to business transactions. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

38100: Law of Business Organization

Basic principles of law governing the formation, operations and dissolution of proprietorships, partnerships and corporations. Prereq.: Eco 10000 or 10101 or 10200 or 10300 or 10400. 3 HR./WK.; 3 CR.

Advanced Independent Study

30100-30400: Honors I-IV

Approval of Dean and Chair is required. Apply no later than December 10 in the Fall term or May 1 in the Spring term. VARIABLE CR.

31000: Independent Study

The student will pursue a program under the direction of a member of the Department with approval of the Chair. CREDIT MAY BE FROM 1-4 CREDITS, DETERMINED BEFORE REGISTRATION, BY THE INSTRUCTOR WITH THE APPROVAL OF THE DEPARTMENT CHAIR.

31001-32000: Selected Topics in Economics

Advanced independent study, chosen from the following areas. FLEXIBLE CR., USUALLY 3 CR./SEM.

31100: Micro Theory

31200: Macro and Monetary Theory

31300: Computer Applications for Business and Management Information Processing

31400: Management

31500: Managerial Accounting

31600: Statistical Analysis and Mathematical Economics

31700: Finance

31800: Economic Systems

31900: Economic Development

32000: Cost Accounting

42000-42100: Internship

Work in a city agency or a private organization for a year as research aide, gaining some practical applications of economic analysis to urban policy programs. Students work approximately ten hours per week in the placement and attend a seminar on campus. Student is expected to complete two consecutive semesters. Prereq.: junior or senior status, completion of, or current enrollment in, Eco 22000, 22500 and 29000, permission of the instructor. 3 CR./SEM.

FACULTY

Maria C. Binz-Scharf, Assistant Professor

M.A., Bocconi Univ.; Ph.D., Univ. of St. Gallen, Switzerland

Nusret Cakici, Professor

B.S., Istanbul Univ. M.B.A.; Ph.D., CUNY

Peter Chow, Professor

B.A., National Taiwan Univ.; M.S., Southern Illinois Univ., Ph.D.

Gergana Danailova-Trainor, Assistant Professor

M.A., John Hopkins Univ.; M.B.A., Univ. of Kentucky; Ph.D., Johns Hopkins

Kevin Foster, Assistant Professor

B.A., Bard College; M.A., Yale Univ., Ph.D.

Malcolm Galatin, Professor and Chair

B.Sc. (Econ.), London School of Economics and University College London; Ph.D., M.I.T.

Mitchell H. Kellman, Professor

B.A., Univ. of Pennsylvania, M.A., Ph.D.

Benjamin J. Klebaner, Professor

B.S., The City College; M.A., Columbia Univ., Ph.D.

Sanghoon Lee, Assistant Professor

B.A., Seoul National Univ.; M.A., Columbia Univ., Ph.D.

Gokce Sargut, Instructor

B.S., Bilkent Univ. (Turkey); M.B.A., Univ. of Illinois at Urbana-Champaign; M.Phil., Columbia Business School

Yochanan Shachmurove, Professor

B.A., Tel Aviv Univ., M.B.A.; M.A., Univ. of Minnesota, Ph.D.

Ross Weiner, Assistant Professor

B.A., Univ. of Massachusetts (Amherst), M.A., Ph.D.

PROFESSORS EMERITI

Stanley L. Friedlander

William I. Greenwald

Eric Isaac

Marvin Kristein

Abraham Melezin

Edwin P. Reubens

Morris Silver

Gerald Sirkin



Department of English

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Joshua Wilner, Chair • Department Office: NAC 6/219 • Tel: 212-650-5407

GENERAL INFORMATION

The City College offers the following undergraduate and combined degrees in English:

B.A. in English

PROGRAMS AND OBJECTIVES

Courses in literature and writing enhance the experience of students in virtually all areas of the liberal arts, the performing arts, and the sciences.

Departmental majors may specialize in the following:

- Literature
- Creative Writing
- Teaching

The discipline of English has changed dramatically over the past few decades, and the offerings of the City College English Department reflect those changes. The two required “Critical Reading and Writing” courses, English 33000 and English 33100, take poetry and narrative as their respective subjects. These courses help students develop the basic vocabulary and skills of close textual analysis, but they also introduce influential theoretical concepts and encourage students to read literary texts in light of these concepts. The “Representative Writers” sequences in United States and British literature replace traditional surveys of major writers and provide a more interdisciplinary and intertextual approach to the American and British literary traditions. The “Selected Topics” courses offer visiting and permanent faculty members the opportunity to share their particular research interests with students, while the “Seminars” allow

for comprehensive treatment of a particular topic in a more intimate classroom setting.

Creative Writing

The teaching of creative writing at the College began in 1919, and the Department’s graduates include some of the most eminent authors of this century. Workshops in fiction, poetry, and playwriting are regularly offered by professors who are themselves accomplished authors.

Teaching

The teaching concentration is a specific regimen of literature, language, and writing courses required by most states (including New York) of candidates for high school teaching certification.

Publishing Certificate Program

This program is for those students interested in pursuing a career in publishing. Students take four courses—one of which must be Introduction to Publishing—offered campus-wide in the editorial, marketing and design track. To complete the certificate, students must maintain a 3.0 average in their publishing courses and take part in paid internships in a publishing house suitable to their career goals. Faculty and guests include some of the leading publishing professionals in the country. For more information, contact David Unger, the Program Director, at 212-650-7925.

Minor in English

The Department offers a minor as well as a major in English. Students wishing to pursue a specialized minor such as “Literature and Law” or “Literature and

History” will develop a program in consultation with their English Department advisor and advisors from other relevant departments or programs.

The Honors Program

Majors and minors with a 3.5 GPA in upper-division department electives may apply to the Honors Program, which includes two seminars and a course devoted to the writing of a thesis under the supervision of a faculty mentor. The program also offers advising, lectures, outings, and opportunities for students to share their work. Creative writing students may submit a manuscript of poems or stories in lieu of the thesis. Students should contact Professor Mikhail Dekel for additional information.

REQUIREMENTS FOR ENGLISH MAJORS

Required Courses

English:
33000-33100: Critical Reading and Writing 6

Elective Courses

Electives in one of the three concentrations 30
[See specific requirements for concentrations below.]

Total Credits 36

Students are urged to enroll in English 33000-33100 as soon as possible after declaring the major. Composition and World Humanities are prerequisites to all concentrations within the English major.

Areas of Concentration

English majors choose one of the three areas of concentration and complete 30 credits as listed below:

Literature

Additional literature courses (30000-level or above) 30
[See the chief departmental advisor for a list of the department's recommendations.]

Creative Writing

Additional literature courses (30000-level or above) 12
Creative writing (22000 or 30000-level or above) 18

Teaching

Specific courses required by the state 21
Electives 9
[See the chief departmental advisor for correct requirements.]

ADDITIONAL REQUIREMENTS

All English majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)
English 11000: Freshman Composition (3 cr.)
English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

Requirements for Minors in English

English:
33000 or 33100: Critical Reading and Writing 3

Elective Courses

Additional credits in English (22000-level or above) 12

Total Credits for Minor 15

ADVISEMENT

English

Tyson Ward and Michelle Valladaras,
Chief Advisors
NAC 6/219; 212-650-6360

Composition Program

Marian Olah
Composition Office
NAC 6/219; 212-650-5461

English Honors Program

Professor Mikhal Dekel
Fellowship Office
NAC 6/317D; 212-650-6305

Departmental Ombudsman

Professor Lawrence Hanley
NAC 6/216; 212-650-5875

DEPARTMENTAL ACTIVITIES

Arts and Letters Society

The Arts and Letters Society, a student-run group, promotes writing by members of the City College community and publishes *Promethean* and *Tribes*. For information about the Society, which all majors are urged to join, inquire in the Department office, NAC 6/219.

Publications

Fiction, an internationally renowned literary magazine.
Promethean, the City College literary magazine.
Tribes, a periodic literary pamphlet of student writing.

Events and Productions

Members of the English Department arrange events throughout the year, including:
The Langston Hughes Festival
The Spring Poetry Festival
The English Department Annual Awards Ceremony

AWARDS

In sum, The City College Department of English awards \$50,000 in prizes and over \$20,000 in loan grants every year to undergraduate and graduate students. Awards include:

The Ross Alexander Drama Award

For promising playwriting students.

Award for Excellence in Writing

The Meyer Cohn Essay Award

The Allan Danzig Award in Victorian and Romantic Literature

The Jerome Lowell DeJur Award In Creative Writing

James Emmanuel Poetry Prize

English 11000 Family Narrative Award

The Sarah Fortune Award

For prospective teachers of writing.

The Goodman Fund Loan Grants

For literary works in progress.

The Goodman Fund Poetry Awards

The Goodman Fund Short Story Awards

The Julius and Elizabeth Isaacs Scholarship

A major award covering tuition, living and other expenses, including study abroad for English majors.

The Leon Pin

For overall excellence in English.

The Edward Mack Graduate Fellowship

The Malinche Prize/Literary Translation

David Markowitz Essay Award

David Markowitz Poetry Award

Geraldine Griffin Moore Award in Creative Writing

The William Bradley Otis Fellowship In American Literature.

Reyne Prize in Creative Writing

The Riggs Gold Medal Essay Award

**The Roehmer Prize for Theatre Work
James Ruoff Memorial Essay Award**

On American Soil: The Lucia Santorsa-Beatrice Coviello Essay Prize

The Alice M. Sellers Academy of American Poets Prize

The Alice M. Sellers Fund Prize
In creative writing or literature.

Mina Shaughnessy Award in Composition

The Oxford University Press Mina Shaughnessy Memorial Prize

Jane L. Specter Undergraduate Award in Creative Writing

The Irwin and Alice Stark Short Fiction Prize

Esther Unger Poetry Prize

The Ward Medals

In composition and in literature.

Rinna Evelyn Wolfe Award

Weinberg Award for Excellence in Writing

For further information about these awards, inquire in the Department Office.

COURSE DESCRIPTIONS

WRITING COURSES

11000: Freshman Composition

The longer paper, and practice in essay forms. 3 HR./WK., PLUS CONF.; 3 CR.

21000: Introduction to Academic Writing

Practice in the styles and forms of expository writing required in specific disciplines. Readings that acquaint students with standards of good writing in their field. Prereq: English 11000 or exemption on the basis of the placement test. 3 HR./WK., PLUS CONF.; 3 CR.

21001: Writing for Humanities and the Arts

21002: Writing for the Social Sciences

21003: Writing for the Sciences

21007: Writing for Engineering

23000: Writing Workshop in Prose

Emphasis on development of a prose style appropriate to a given disciplinary or work-world context. Prereq. Eng. 21000. May be repeated for credit when focus varies. 3 HR./WK., PLUS CONF.; 3 CR.

Creative Writing

All Creative Writing courses are conducted by teachers who are themselves professional creative writers sensitive to the efforts of the beginning writer. Interested students should check the available descriptions for information concerning specific sections each term.

22000: Introductory Workshop in Creative Writing

For students who wish to explore the various areas of creative writing. May be taken twice for credit. 3 HR./WK.; 3 CR.

32000: Workshop in Fiction

More advanced than 22000, for students who wish to concentrate on the writing of fiction. Reading and analyzing contemporary short stories, and writing stories that will be discussed in class with other students and in regular conferences. May be taken three times for credit. (W) 3 HR./WK.; 3 CR.

32100: Workshop in Poetry

More advanced than 22000, for students who wish to concentrate on the writing of poetry. Regular conferences. May be taken twice for credit. 3 HR./WK.; 3 CR.

32200: Workshop in Drama

More advanced than 22000, for students who wish to concentrate on the writing of drama. Work in both the one-act and full-length play forms. Student work will be the basis for class readings and discussions. Regular conferences. May be taken twice for credit. (W) 3 HR./WK.; 3 CR.

32300: Workshop in Film and Television

Writing scripts for film and television. Regular conferences. (W) 3 HR./WK.; 3 CR.

32400: Reading and Writing Children's Literature

This course investigates all the essential aspects of writing for children, including: language/appropriate vocabulary, voice, audience, theme, style and technique. Fiction and poetry are examined. The skills of editing, revision, and presentation are explored. 3 HR./WK.; 3 CR.

LITERATURE COURSES

Prerequisite: students must, unless granted special permission, take World Humanities before enrolling in English Department literature electives. All English majors must take the sequence below. See Requirements for English Majors.

33000-33100: Critical Reading and Writing

A yearlong course providing a practical introduction to fundamental concepts and methods of literary analysis. The course begins with short texts and moves progressively to longer forms. Readings include poems, plays, novels and stories written in English (as well as examples of less strictly literary forms). (W) 3 HR./WK.; 3 CR./SEM.

English Literature

35000-35100: A Historical Approach to Literature

A yearlong course in English literature from the Middle Ages to the present. (W) 3 HR./WK.; 3 CR./SEM.

35001-35101: A Generic Approach to Literature

First semester: tragedy and comedy; second semester: lyric and epic. (W) 3 HR./WK.; 3 CR./SEM.

35200: Representative British Writers of the Middle Ages

An introduction to the literature of the Middle Ages in England. Readings include narrative poetry and prose, religious writings, drama, and lyrics. (W) 3 HR./WK.; 3 CR.

35201: Old English

The language and literature of the Anglo-Saxons. (W) 3 HR./WK.; 3 CR.

35202: Chaucer: The Canterbury Tales

(W) 3 HR./WK.; 3 CR.

35300: Representative Writers of the Renaissance

An introduction to Renaissance literature. Readings include a variety of genres: poems, plays, epic, literary criticism, and fiction. (W) 3 HR./WK.; 3 CR.

35301: Shakespeare I

Early and middle comedies, major histories, early tragedies, poems, and sonnets. (W) 3 HR./WK.; 3 CR.

35302: Shakespeare II

The major tragedies, the problem plays, the late comedies, and romances. (W) 3 HR./WK.; 3 CR.

35303: Shakespeare on Film

(W) 3 HR./WK.; 3 CR.

35304: Seventeenth-Century English Poetry

Donne, Herbert, Jonson, the early Milton. (W) 3 HR./WK.; 3 CR.

35500: Representative British Writers of the Restoration and Eighteenth Century

An introduction to English Romantic poetry and prose. Readings include poetry, fiction, autobiography, philosophy, literary criticism, letters and personal journals from men and women of the period. (W) 3 HR./WK.; 3 CR.

35501: Milton*Paradise Lost* and other major works. (W) 3 HR./WK.; 3 CR.**35502: The Eighteenth-Century English Novel**

From the beginnings to Austen. (W) 3 HR./WK.; 3 CR.

35600: Representative British Writers of the Romantic Period

An introduction to English Romantic poetry and prose. Readings include poetry, fiction, autobiography, philosophy, literary criticism, letters, and personal journals from men and women of the period. (W) 3 HR./WK.; 3 CR.

35700: Representative British Writers of the Victorian Period

An introduction to Victorian literature through representative works in a variety of genres. (W) 3 HR./WK.; 3 CR.

35701: Nineteenth-Century British Novel

From Austen to Hardy. (W) 3 HR./WK.; 3 CR.

35800: Representative British Writers of the Modernist Period

An introduction to representative modern writers of England and Ireland. (W) 3 HR./WK.; 3 CR.

35802: The Twentieth-Century British Novel

(W) 3 HR./WK.; 3 CR.

American Literature**36000: Representative Writers of the United States: Early American Literature**

Literature of the Colonial and Revolutionary periods, including devotional literature, captivity narratives, slave narratives, political rhetoric, and the gothic and sentimental novel. (W) 3 HR./WK.; 3 CR.

36100: Representative Writers of the United States: The Nineteenth Century

Embraces the antebellum period and the late nineteenth century: likely topics include Transcendentalism, literary nationalism, the literature of emancipation, and the cult of domesticity as well as post-Civil War developments in regionalism, realism, and naturalism. (W) 3 HR./WK.; 3 CR.

36200: Representative Writers of the United States: The Twentieth Century

Modern and contemporary American literature from the rise of modernism to post-modernist developments in the late twentieth century. (W) 3 HR./WK.; 3 CR.

36201: Twentieth-Century American Poetry

(W) 3 HR./WK.; 3 CR.

36300: Latino Literature in the U.S.

A one semester elective course on selected literature, from a variety of genres, by contemporary Latino writers. 3 HR./WK.; 3 CR.

Africana Literature

A historic and thematic examination of significant works by Black writers in the United States and elsewhere. Division into region and genre is to facilitate systematic study. 3 HR./WK.; 3 CR.

37001: African American Literature in America

A historical survey. (W)

37004: African American Fiction (W)**37006: Comparative Africana Fiction**

Africa, the United States, the Caribbean. (W)

Literary Perspectives on Women**37501: Women Writers of the Middle Ages and the Renaissance**

An historic and thematic examination of significant works by women of the Middle Ages and Renaissance, with consideration of related historical, social, and religious issues. (W) 3 HR./WK.; 3 CR.

37502: Nineteenth-Century Women Writers

Austen, Eliot, the Brontes, and minor figures. (W) 3 HR./WK.; 3 CR.

37503: Twentieth-Century Women Writers

Woolf, Bowen, Wharton, Glasgow, Moore, Lessing, Murdoch, Mansfield, Stein, Porter, McCullers, Welty, Plath, and others. (W) 3 HR./WK.; 3 CR.

Historical Studies in World and Comparative Literature**38001: Oriental Literature I**

Readings in Arabian, Iranian and Hindu Indian literature, secular and sacred. (W) 3 HR./WK.; 3 CR.

38002: Oriental Literature II

Readings in Buddhist, Indian, Chinese and Japanese literature. (W) 3 HR./WK.; 3 CR.

38003: The Bible as Literature I

The Old Testament. (W) 3 HR./WK.; 3 CR.

38004: The Bible as Literature II

The New Testament. (W) 3 HR./WK.; 3 CR.

38007: Introduction to Comparative Literature

Introduction to ways of comparing various literatures. Readings from world literature. (W) 3 HR./WK.; 3 CR.

Modern Studies in World and Comparative Literature**38104: Modern Drama I**

Nineteenth century to 1914. Ibsen, Chekhov, Strindberg, Shaw, Synge. (W) 3 HR./WK.; 3 CR.

38105: Modern Drama II

Since 1914. (W) 3 HR./WK.; 3 CR.

Genres**39000: Genres**

Studies of the forms and historical development of various literary genres. (W) 3 HR./WK.; 3 CR.

39001: Satire (W)**39006: Science Fiction (W)****39100: Themes**

Consideration of various themes, ideas, literary patterns, and concepts in literature. 3 HR./WK.; 3 CR.

39102: The Vampire

An exploration of certain ideas of evil in Western literature. (W)

Literature and Other Disciplines**39200: Literature and Other Disciplines**

The relationship of literature to spiritual and social forces, to science, and to art. 3 HR./WK.; 3 CR.

39203: The Political Novel (W)

Selected Topics

31100-32000: Selected Topics in Language and Literature

A changing series of innovative and experimental courses on topics not generally covered in regular courses. Students should consult the Department's course offerings booklet each semester to determine which selected topics courses will be offered. (W) 3 HR./WK.; 3 CR.

Seminars

41100-42000: Seminars in Language and Literature

One writer, a group of writers, a literary subject, a theme, or a period is studied intensively. Offerings change each term, and students should consult the Department's course offerings booklet each semester to determine which seminars will be given. (W) 2 HR./WK.; 3 CR.

Tutorial Courses

These courses provide students an opportunity to pursue independent study and research in areas of literature and language beyond the scope of departmental offerings. Except in extraordinary circumstances, no tutorial in a given subject shall extend beyond one semester; no more than one tutorial may be taken in any semester.

In order to be admitted to a tutorial course, a student must:

- Have completed twelve credits of elective work with an average of B or better;
- Present a letter of recommendation from an instructor who is willing to serve as a mentor.

31001-31004: Independent Study

Independent study and research under the supervision of a mentor. (W) 1-4 CR.

39501-39504: Group Tutorial

For groups engaged in specialized study, beyond the scope of departmental courses, under the direction of one or more mentors. (W) 1-4 CR.

LANGUAGE, LINGUISTICS, AND LITERACY

34005: TESOL Materials and Testing

Approaches to the use and creation of instructional material for the teaching of English as a Second Language. (W) 3 HR./WK.; 3 CR.

34200: Advanced Grammar

This course describes, reviews, and clarifies principles of English grammar and

usage, particularly for Learning Center tutors and those who plan to teach English. 3 HR./WK.; 3 CR.

PUBLISHING CERTIFICATE PROGRAM

32501: Introduction to Publishing I

A dynamic overview of who does what and why in book publishing, providing broad knowledge of book acquisitions, editing, design and production, sales, marketing, advertising, corporate management, and the financial and legal professional areas of the industry. 3 HR./WK.; 3 CR.

32502: Publishing Practicum.

A simulation of the complete book publishing process from contract negotiations to bound book. Designed to complement the fall-semester *Introduction to Publishing* by providing opportunities for students to put their previous learning to practical use. Prereq.: 32501. 3 HR./WK.; 3 CR.

32600: Books for Young Readers

A practical look at the specialized world of publishing for children and young adults with an emphasis on the creative passion involved in producing books for American young people. Licensing, merchandising, sales and marketing to all age groups and every category in publishing will be discussed. Substantial reading of children's titles and discussions of the development of publishing programs with special focus on multicultural programs. 3 HR./WK.; 3 CR.

32700: The Editorial Process

An in-depth look at the process specific to the editorial profession, including book acquisition, manuscript editing (copyediting, line editing, proofreading); selling a manuscript at the editorial meeting; author/agent/editor relations; book contracts and subsidiary rights; seeing a writer's project from concept to manuscript to bound book; the book review process; and the editor's relationship with the marketing, sales, and advertising departments. This course will include class visits by authors and industry professionals, who will explore their individual relationship to the process of book making. Students will acquire the basic skills and knowledge necessary to successfully enter a professional editorial position. 3 HR./WK.; 3 CR.

32800: Fundamentals of Copyediting and Proofreading

Intensive, practical instruction in basic copyediting and proofreading. Working with a variety of texts (including fiction,

nonfiction, cookbooks, reference works), students will learn how to assess a manuscript and employ universal copyediting/proofreading symbols in type-marking manuscripts. Students will also learn design coding; drafting a style sheet; querying; preparing a manuscript for author review and typesetting; composition quality standards; and how to perform the tasks at each stage of the bookmaking process. Pre- or coreq.: Eng 32501. 3 HR./WK.; 3 CR.

32900: Independent Study: Publishing Internship

Students work a minimum of 150 hours in the department of their choice. An essay reviewing and analyzing the relationship between the student's academic and work experience is required. Publishers offering past internships include: Random House, Inc., John Wiley & Sons, Inc., Time Warner Books, W.W. Norton, Inc., Harcourt, Inc., Simon & Schuster, Inc., and Harper Collins. Prereq.: permission of the director. 150 HRS.; 3 CR.

31003: Independent Study: Publishing Internship

This course is the final requirement towards the Publishing Certificate and is available to those students who have completed four courses in the Program with a 3.0 average or better. Publishers offering internships include: Random House, Inc., John Wiley and Sons, Inc., Time Warner Books, W.W. Norton, Inc., Simon and Schuster, Inc., and HarperCollins. Students work in the department of their choice. An essay reviewing and analyzing the relationship between the students' academic and work experience is required. Permission of the Director is required. 150 HRS.; 3 CR.

FACULTY

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PROFESSORS EMERITI**Marcia Allentuck****Ilona Anderson****Nathan Berall****Malcolm J. Bosse****Saul N. Brody****Jerome Brooks****David P. Buckley****Roger Boxill****Arthur K. Burt****Alice Chandler****Morton Cohen****Madeleine P. Cosman****James A. Emanuel****Barbara Fisher****Byrne R. S. Fone****Arthur Ganz****Robert Ghiradella****Arthur Golden****Frederick Goldin****Ralph Gordon****Theodore Gross****James Hatch****William Herman****Mary V. Jackson****Frederick R. Karl****Leonard Kriegel****Valerie Krishna****Patricia Laurence****Daniel Leary****Irving Malin****Karl Malkoff****Philip Miller****Samuel Mintz****Robert K. Morris****Stephen Merton****Nathaniel Norment, Jr.****William L. Payne****Beatrice Popper****Edward Quinn****Betty Rizzo****Irving Rosenthal****Earl Rovit****Paul Sherwin****Robert Silber****Frederic Tuten****Geoffrey Wagner****Arthur Waldhorn****Barbara Bellow Watson****Robert Wilson****John D. Yohannon**

English as a Second Language Courses

(DIVISION OF HUMANITIES AND THE ARTS)

GENERAL INFORMATION

Courses in American English are offered to non-native speakers whose CUNY/ACT scores indicate that their language skills (listening, speaking, reading, and writing) are insufficient for college-level work. The goals of the program are to help students become fluent, clear and correct in their writing, reading and oral communication skills.

The coursework in the ESL Department is on two levels. Students are placed in class on the basis of their CUNY/ACT scores; English 11000 must be taken following completion of the Level II courses; Speech 11100 may be taken following completion of ESL 03000. Upon completion of English 11000 and Speech 11100, students should be ready to pass the CUNY Proficiency Examination and Speech Proficiency Examination.

Students are permitted to take ESL classes along with certain liberal arts electives and Core required courses. Students are encouraged to advance as rapidly as possible. A student may be exempted from any course in the sequence upon recommendation of the instructor and approval by the course coordinator.

COURSE DESCRIPTIONS

Level I

02000: Intermediate American English for Non-Native Speakers

An intensive writing course that focuses on clarity of ideas with heavy emphasis on academic writing and reading as related to the liberal arts elective course(s) being taken. 3 HR./WK.; 0 CR.

02100: Reading for Non-Native Speakers

Instruction in reading and vocabulary development necessary to pass the liberal arts course(s) being taken. 3 HR./WK.; 0 CR.

Students take ESL 02000 and 02100 along with required Core and/or elective Liberal Arts courses (e.g. Sociology, Art).

Level II

03000: Advanced Composition for Non-Native Speakers

An intensive writing course that focuses on correctness in argumentative and persuasive writing. Reading materials are included to help develop expository skills in the Core and/or liberal arts elective courses being taken and to help students pass the CUNY/ACT. Special sections of 03000 are offered for graduate and transfer students. Prereq.: ESL 02000 or placement. 4 HR./WK.; 2 CR.

09901: History, Society, and Culture

Advanced reading course for ESL students at the second level of the reading sequence. Designed to introduce concepts related to the Core and Liberal Arts elective course(s) in which students are registered and to help students pass the CUNY/ACT. Prereq.: ESL 02100 or placement. 4 HR./WK.; 2 CR.

Note: Students take ESL 03000 and/or 09901 along with Core required and/or Liberal Arts elective courses (e.g., World Civilization, Anthropology, Computer Science, etc.).

Department of Foreign Languages and Literatures

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Juan Carlos Mercado, Chair • Department Office: NAC 5/223 • Tel: 212-650-6731

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Foreign Languages:

B.A. in French
B.A. in Italian
B.A. in Spanish

PROGRAMS AND OBJECTIVES

The Department of Foreign Languages and Literatures offers undergraduate courses in: Arabic, Chinese, Classical Greek, French, Hebrew, Hindi, Italian, Japanese, Latin, Linguistics, Portuguese, Spanish, and Swahili.

PLACEMENT EXAMINATIONS

Students who have taken courses in French, Italian, Portuguese or Spanish elsewhere must take a placement examination before registering for a course. Arrangements should be made in advance with the Department of Foreign Languages and Literatures.

The CCNY policy is to administer placement examinations in Spanish, French, Italian, Portuguese, Japanese, Chinese, Hindi, Arabic and Hebrew. When a student knows a language other than those listed above, he/she must identify an instructor within the CUNY system and submit the name of the faculty member and his/her college. In conjunction with that professor, a written examination will be administered, graded and returned with a level of placement of Elementary I, Elementary II, Intermediate I, Intermediate II, Elective or Exempted.

If the student is placed at the level of Exempted, he/she is excused from taking foreign languages at CCNY (but no credit is granted for the exam). In the event that the student is not exempted, he/she has two options: to finish the language requirement or to take another language.

ADVISEMENT

Students wishing to take courses in any of the listed languages should consult with the Chair or the designated faculty member.

TUTORING OFFICE

The Department offers tutoring to any student enrolled in courses who needs additional help. Tutors are advanced students who have been recommended by the faculty. The tutoring office is open on a regular basis. The schedule is posted outside the department office, NAC 5/223.

DEPARTMENT ACTIVITIES

The Department sponsors the following student clubs:

Les Gitans, for students of Francophone cultures.
Spanías, a student association devoted to the appreciation of Iberian and Latin American culture.

Students who meet the necessary scholastic requirements are eligible to become members of the National Honor Societies:

Phi Delta Phi (French)
Sigma Delta Pi (Spanish)

Lectures by members of the Department and by other distinguished

scholars in the field are periodically given on campus. Faculty members frequently organize student groups to attend cultural events, such as foreign language plays, concerts, and art exhibits in New York City.

AWARDS

The department awards a variety of prizes each year:

Ephraim Cross Prize

Awarded through the Division of Humanities and the Arts to a graduating senior who shows the greatest proficiency in at least two foreign languages.

Downer Memorial Fund Scholarship

Awarded annually for study abroad.

The Helen and Karl Goldberg Memorial Prize

An annual prize for the purchase of books, given in recognition of excellence in the study of one of the Romance Languages taught by the Department.

The Italian Teachers Association Medal

Awarded annually for excellence in the study of Italian.

The Israel Edward Drabkin Award

For excellence in Greek or Latin.

The Ellen and Joseph Valenti Scholarship

Awarded for summer study abroad in Spanish.

The Solmen and Evelyn Brauner Scholarship

Awarded to those students whose native language is not English but who have excelled academically despite language barriers.

Menorah Prize

For excellence in Hebrew.

Ward Medals

Awarded for excellence in the study of French, Italian or Spanish.

Study Abroad Opportunities

Students are encouraged to participate in study abroad programs organized by the College or other institutions. Many programs are available to interested students. For additional information consult our fliers or the Chair in NAC 5/223.

REQUIREMENTS FOR MAJORS

Courses are divided as follows:

Group A: Language

Group B: Literature

Students majoring in languages must complete courses in both areas (A and B).

French or Italian

Required Courses

Three courses from Group A 9

Five courses from Group B 15

Elective Courses

Four courses from either A or B 12

Total Credits 36

Spanish

Required Courses

32100: Problems of Spanish Grammar 3

32200: Practice in Writing Spanish 3

Elective Courses

Three of the following courses 9

(at least one from each cluster)

Cluster I

35100: Studies in Spanish Literature I (3 cr.)

35200: Studies in Spanish Literature II (3 cr.)

45100: Spanish Civilization (3 cr.)

Cluster II

35300: Studies in Spanish American Literature (3 cr.)

45201: Topics in Spanish American Civilization I (3 cr.)

45202: Topics in Spanish American Civilization II (3 cr.)

Seven courses in language or literature 21

Total Credits in Spanish 36

Specialization in Spanish Linguistics

31100: Topics in Spanish Linguistics 3

32100: Problems of Spanish Grammar 3

32200: Practice in Writing Spanish 3

32500: Spanish Phonetics and Phonology 3

32700: Introduction to Hispanic Linguistics 3

37000: History of the Spanish Language 3

37300: Advanced Composition for Bilingual Education Students 3

46200: Spanish Dialectology and Sociolinguistics 3

One of the following: 3

32401: Translation I (3 cr.)

32402: Translation II (3 cr.)

One of the following: 3

46301: Spanish in Contact Worldwide (3 cr.)

46302: Spanish in Contact in the US (3 cr.)

At least one course in Spanish literature and civilization from the following: 3

35100: Studies in Spanish Literature I (3 cr.)

35200: Studies in Spanish Literature II (3 cr.)

45100: Spanish Civilization (3 cr.)

At least one course in Spanish American literature and civilization from the following: 3

Studies in Spanish American Literature (3 cr.)

45201: Topics in Spanish American Civilization I (3 cr.)

45202: Topics in Spanish American Civilization II (3 cr.)

Total Credits 36

Teaching Spanish in Secondary Schools

Major requirements are listed below. Pedagogical requirements are listed in the Department of Education section of this Bulletin.

Required Courses

32100: Problems of Spanish Grammar 3
32200: Practice in Writing Spanish 3

Three from the clusters (at least one from Cluster I and one from Cluster II) 9

Cluster I

35100: Studies in Spanish Literature I (3 cr.)

35200: Studies in Spanish Literature II (3 cr.)

45100: Spanish Civilization (3 cr.)

Cluster II

35300: Studies in Spanish American Literature (3 cr.)

45201: Topics in Spanish American Civilization I (3 cr.)

45202: Topics in Spanish American Civilization II (3 cr.)

Seven courses in language or literature 21

Total Credits 36

SPANISH COURSE SEQUENCES FOR NATIVE AND NON-NATIVE SPANISH SPEAKERS

Native students first four courses

sequence: Native speakers would take the following sequence: Spanish 19100, Spanish 19200 and Spanish 32100, 32200, or 32400. (Non-natives will take 32100, 32200, or 32400 after they have taken 22400 if they wish to continue beyond their requirements).

Non-native first four courses

sequence: Non-native speakers will take Spanish 12100, 12200, 22300, and 22400 (or 22500=22300+22400). These two sequences will focus on issues specially constructed for natives and non-native speakers respectively.

Majors/Minors (both native and non-native students) after completing the required courses:

After the fourth semester of Spanish, both native and non-native students will be more prepared to experience learning together in their fifth semester if they choose to major or minor. Non-natives will take 32100, 32200, or 32400 after 22400 or 22500.

Latino students can take any two of the courses 32100, 32200, and 32400 that they did not take as part of their required sequence. After taking these courses, all students can choose any elective course at the 30000 or 40000 level plus the required courses for the major/minor outlined in the brochure and catalogue.

REQUIREMENTS FOR A MAJOR IN TWO ROMANCE LANGUAGES

A student majoring in two Romance languages will be required to complete a minimum of twelve advanced courses, including a minimum of six in each language. Among the six advanced courses chosen in each language, two must be from Group A and two must be from Group B. The remaining two courses may be selected from either group A or B.

Students majoring in two languages will be required to have two specialization advisors, one from each language area. With guidance from their advisors, students will choose those courses that are most pertinent to their backgrounds and objectives.

ADDITIONAL REQUIREMENTS

All Foreign Language majors must complete the following courses:
 New Student Seminar unless exempt
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Writing Across the Curriculum:
 Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated

with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

CURRICULUM FOR MINORS IN FRENCH, ITALIAN, PORTUGUESE, SPANISH, HISPANIC LINGUISTICS, AND CLASSICAL STUDIES

The prerequisite for a minor in French, Italian, Portuguese or Spanish is course 22400 or four years of high school preparation, or as determined by a placement examination.

All minors must be approved by the Chair of the Department of Foreign Languages and Literatures.

Minor in French, Italian or Portuguese (15 credits)

A student minoring in French, Italian or Portuguese will be required to take any five-course combination (Group A or B) at the advanced level (30000 or above).

Minor in Spanish (15 credits)

The minor in Spanish consists of 5 advanced courses at the 30000 and 40000 levels, distributed in the following manner:

A student minoring in Spanish is required to take one language course (Spanish 32100 or 32200); one survey course (Spanish 35100, 35200 or 35300); one course in civilization and culture (Spanish 45100, 45201 or 45202); and two courses to be chosen from Group B (Literature) at the 40000 level.

Minor in Spanish Linguistics

The minor in Spanish Linguistics consists of the 15 credits listed below. The courses should be taken in the indicated sequence.

One of the following two: 3
 Spanish 32700: Introduction to Hispanic Linguistics
 Linguistics 22100: General Introduction to Linguistics

Spanish 32500: Phonetics and Phonology 3
 One of the following two: 3
 Spanish 46200: Spanish Dialectology and Sociolinguistics
 Spanish 37000: History of the Spanish Language
 Spanish 46301: Spanish in Contact Worldwide 3
 Spanish 46302: Spanish in Contact in the U.S. 3

Students interested in the minor can receive information from the following faculty advisors:

Professor Laura Callahan
 Professor Dulce M. García

Minor in Classical Studies

Students minoring in Classical Studies must take a minimum of 12 credits. These will include some combination of (a) courses at the 20000 level or above in which readings are in English, and (b) Greek and Latin courses beyond the first semester of instruction (Latin 12200 and above, Greek 12200 and above). In addition to Greek and Latin classes, students are encouraged to select from the following:

Art 27000: Egyptian Art and Architecture

Art 27100: Greek and Roman Art Classics 32100: Classical Mythology Classics 32300: Greek and Roman

Comedy and Satire in Translation Classics 33100: Latin Literature in Translation

Classics 40100: Modern Problems in Perspective

History 32100: The Ancient World:

The Near East and Greece

History 32200: The Ancient World:

The Hellenistic World and Rome

Philosophy 30500: History of

Philosophy

Political Science 27300: Classical

Political Thought

Other courses dealing with the Greco-Roman world may be substituted with permission. Students must consult their advisors for additional courses on Greek and Roman civilization that might be developed.

Coordinator: Professor Jennifer Roberts

COURSE DESCRIPTIONS

The prerequisite for all advanced courses in French, Hebrew, Italian, Portuguese, Spanish and Swahili is 22400 or four years of high school preparation. Those interested in Greek and/or Latin may take advanced courses after three years of high school instruction.

Arabic

12100: Elementary Arabic I

The course teaches modern standard Arabic (contemporary classical Arabic). Emphasis is on pronunciation of basic everyday vocabulary and simple grammar through conversation and drills based on a situational approach. The reading and writing practice of Arabic script is introduced. Videos are shown to familiarize the students with the language speakers and their culture. 4 HR./WK.; 3 CR.

12200: Elementary Arabic II

Further practice and drills in conversation, using basic structural patterns and reading of simple texts constructed for this level and of short suras from the *Qu'ran*. Videos and discussion of the cultural aspect of Arabic-speaking people are included. All writing is done in Arabic script. Prereq.: Arabic 12100 or equivalent. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Arabic

An intensive course that will build on the skills acquired in basic Arabic 12100 and 12200 with increased emphasis on reading and writing from modern sources in addition to aural/oral proficiency. Prereq.: Arabic 12200 or placement exam. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

ASIAN LANGUAGES

All Asian languages are offered at elementary and intermediate levels. No credit will be given for taking only the first part of any level of language courses.

Chinese

12100: Elementary Chinese (Mandarin) I

Modern vernacular Chinese based on the speech of Beijing. Essentials of sound patterns, grammar and vocabulary. Practice in speaking, reading and dictation. 4 HR./WK.; 3 CR.

12200: Elementary Chinese (Mandarin) II

Further practice in modern vernacular Chinese based on the speech of Beijing. Essentials of sound patterns, grammar and vocabulary. Practice in speaking, reading and dictation. Prereq.: Chinese 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Chinese

An intensive one-semester Chinese course at the intermediate level. This course will continue to develop communicative competence through the study of grammar and new vocabulary. Using communication-oriented activities, this course will help students to be better able to speak naturally and spontaneously. Reading and writing will be stressed through regular assignments to be handed in for review. Additionally, content-appropriate cultural information will be presented to promote the students' understanding of the Chinese-speaking world. Prereq.: Chinese 12200 or placement exam. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Hindi

12100: Elementary Hindi I

An intensive course in the spoken and written language. In addition to classroom hours, students will be expected to do some work in the language laboratory. 4 HR./WK.; 3 CR.

12200: Elementary Hindi II

Further practice in oral and written skills. In addition to classroom hours, students will be expected to do some work in the language laboratory. Prereq.: Hindi 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Hindi

An intensive one-semester Hindi course at the intermediate level. This course will review the grammar of the Hindi language, enhance vocabulary, increase fluency in reading and writing, and will include literary and cultural content. The four basic skills of listening, speaking, reading comprehension and writing will be further developed through class discussions, writing exercises and the use of multimedia and the Internet. Prereq.: Hindi 12100 and Hindi 12200 or placement exam. Recommended for the students who have completed two semesters of Elementary Hindi with a grade of A or B. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Japanese

12100: Elementary Japanese I

An intensive course in the spoken and written language. In addition to classroom hours, students will be expected to do some work in the language laboratory. 4 HR./WK.; 3 CR.

12200: Elementary Japanese II

Further practice in oral and written skills. In addition to classroom hours, students will be expected to do some work in the language laboratory. Prereq.: Japanese 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Japanese

An intensive one-semester Japanese course at the intermediate level. This course will review the grammar of the Japanese language, enhance vocabulary, and will include literary and cultural readings. It will further develop listening, speaking, reading comprehension and writing skills through class discussions and the use of multimedia and the Internet. Prereq.: Japanese 12100 and 12200 or placement exam. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

CLASSICAL STUDIES

Greek

12100-12200: Elementary Greek

An introduction to the vocabulary and grammar of ancient Greek. Introduces students to Greek civilization and prepares them to read the New Testament and classical Greek literature. 4 HR./WK.; 3 CR. EACH

22300: Introduction to Plato: *Apology and Crito*

A first course in Greek literature, focusing on the death of Socrates. Prereq.: Greek 12200. 4 HR./WK.; 3 CR.

22400: Introduction to Homer: *Selections from the Iliad or Odyssey*

Readings from the epic poem by Homer that formed the core of education throughout the Greek world. Prereq.: Greek 22300. 4 HR./WK.; 3 CR.

30100-30300: Honors I-III

Approval of Dean and Department Honors Supervisor required. Apply no later than December 10 in the Fall term or May 10 in the Spring term. (W) VARIABLE CR.

31000: Independent Study

Approval of Department required before registration. (W) 1-4 CR.

31100-32000: Selected Topics

Selected topics. Consult Department prior to registration for offerings. (W)

Latin**12100-12200: Elementary Latin**

An introduction to the Latin language, to the Latin roots of English and the Romance languages, and to the civilization of the ancient Romans. Prepares students to read Latin literature. 4 HR./WK.; 3 CR. EACH

25200: Selections from Latin Prose

Students will complete their study of the grammar of the Latin language and proceed to readings from Cicero and other prose authors. Prereq.: Latin 12100-12200 or two years of Latin in high school. 4 HR./WK.; 3 CR.

30100-30300: Honors I-III

Approval of Dean and Department Honors Supervisor required. Apply in NAC 5/225 no later than December 10 in the Fall term or May 1 in the Spring term. (W) VARIABLE CR.

31000: Independent Study

Approval of Department required before registration. (W) 1-4 CR.

31100-32000: Selected Topics

Consult Department prior to registration for offerings. (W)

35300: Virgil

Selections from the Aeneid. Prereq.: three years of high school latin, three semesters of college Latin or permission of the department. 4 HR./WK.; 3 CR.

Classical Culture

No knowledge of Greek or Latin is required for these courses.

12100: Greek and Latin Roots in the English Language

A practical analysis of Greek and Latin stems, prefixes and suffixes and their functions in various types of English vocabulary. (W) 3 HR./WK.; 3 CR.

32100: Classical Mythology

Greek and Roman myths, their connections with religion, the ancient sources, and the survival and reinterpretation of classical myth in subsequent literature and film up to the present day. (W) 3 HR./WK.; 3 CR.

32300: Greek and Roman Comedy and Satire in Translation

Selections from Aristophanes, Menander, Plautus, Terence, Horace, Juvenal, Martial, and Lucian. The comic and satiric spirit; the classical forms and their modern counterparts. (W) 3 HR./WK.; 3 CR.

33100: Latin Literature in Translation

The principal literary works of ancient Rome, studied both in their historical settings and as contributions to the development of modern literature. (W) 3 HR./WK.; 3 CR.

34100: Science in Antiquity

The origins of Greek scientific thought; its substantive achievements in Mathematics, Astronomy, Physical and Biological Sciences, Technology, and Medicine; its social and cultural relations; its impact upon subsequent ages. (W) 3 HR./WK.; 3 CR.

40100: Modern Problems in Perspective

Problems of the individual and society as they appear in the general cultural tradition, particularly in the literature of the ancient Greek, Hebrew, and Roman civilizations. Problems selected according to the interests of faculty members and students. (W) 3 HR./WK.; 3 CR.

40103: Women in Antiquity**FRENCH****Introductory and Intermediate Courses****12100: Introductory French I**

An intensive course using a communicative approach to develop conversational skills and provide the student with a foundation in French grammar, pronunciation and vocabulary. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

12200: Introductory French II

A continuation of 12100 using a communicative approach to develop conversational skills and provide students with further study of French grammar and vocabulary. Introduction of selection of readings. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

22300: Intermediate French

A review of the most important aspects of French grammar, further vocabulary development, conversation and reading. Prereq.: French 12200 or placement examination. 3 HR./WK.; 2 CR.

22400: Reading in French

Readings for conversation and composition with grammatical support as needed. Prereq.: French 22300 or placement examination. 3 HR./WK.; 2 CR.

22500: Intensive Intermediate French

An intensive one-semester French course at the intermediate level. This course will review the grammar of the French language, enhance vocabulary, and will

include literary and cultural readings. It will further develop listening, speaking, reading comprehension, and writing skills through class discussions and the use of multimedia and the Internet. Prereq.: French 12100, 12200 or placement examination. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Advanced Courses

The prerequisite for all 30000-level French courses is French 22400 or French 22500 or four years of high school preparation. The prerequisite for all 40000-level courses is at least one of the following: French 32100 or 32200.

Group A: Language**32100: Problems of French Usage**

Applied review of grammar. Extensive practice in applying the grammatical structures needed for the correct use of the language. 3 HR./WK.; 3 CR.

32200: Practice in Writing French

Study of contemporary prose to acquaint students with standards of good writing. Intensive practice in writing different types of compositions in French. 3 HR./WK.; 3 CR.

32300: Spoken French

Intensive practice of the spoken language focused on topics of current interest. Work on oral comprehension, correct pronunciation and contemporary idiomatic speech. Discussion of topics of current interest. 4 HR./WK.; 3 CR.

32400: Studies in Translation

Development of skills in the art of translation from French to English and vice versa through the use of a wide range of materials. 3 HR./WK.; 3 CR.

Group B: Literature**33300: French Cinéma and Literature**

In this course, students will discuss important ideological, and formal questions related to the cinematographic adaptation of canonical French texts. In analyzing historical contexts, characters, narrative structures, themes, styles, and techniques, students will think about the relationship between cinema and literature, and about the political and social implications of each film. Close readings of films by Demy, Bresson, Clouzot, Clément, Resnais, Vadim, Chabrol, Angelo, and Miller adapted from texts by Perrault, Diderot, Laclous, Zola, Duras, Flaubert, Balzac, and Carrère will engage students in a larger critique of contemporary visual

culture. The course is taught in English. Films (with English subtitles) will be watched in class. French majors and minors students may write their papers in French. 3 HR./WK.; 3 CR.

42100: French Poetry

A survey of French poetry from the Middle Ages to the present day in light of the evolution of different styles, themes and cultural contexts. 3 HR./WK.; 3 CR.

42300: French Philosophers and Essayists

Study of representative works of Montaigne, Descartes, Pascal, Montesquieu, Diderot, Rousseau, Saint-Simon and Auguste Comte. Emphasis will be placed on the evolution of ideas by French thinkers, and on the style of their writings. 3 HR./WK.; 3 CR.

42500: French Theatre

Study of major plays (tragedy, drama and comedy) from the Middle Ages to the present day taking into account the evolution of the French theatre in terms of themes, styles and social contexts. 3 HR./WK.; 3 CR.

42700: French Novel

Study of representative narrative works by selected authors from different literary periods and trends. 3 HR./WK.; 3 CR.

42701: The Novel in France before 1850

42702: The Novel in France from Flaubert to the Present

44100: French Literature Outside France

A survey of the major literary works from Francophone regions and countries such as Belgium, Switzerland, French Africa, Canada, the French West Indies, and others. 3 HR./WK.; 3 CR.

45100: French Civilization

The study of the cultural history of France along with its social and political structures and attitudes, with an emphasis on current evolution. 3 HR./WK.; 3 CR.

30103-30300: Honors I-III VARIABLE CR., 1-4

31000: Independent Study VARIABLE CR., 1-4

31100-32000: Selected Topics 3 HR./WK.; 3 CR.

French Literature in Translation

28300: The Literature of Contemporary France

Critical analysis of representative works, writers and movements. Proust, Gide, Camus, Sartre, Malraux, Duras, Robbe-Grillet and others. (W) 3 HR./WK.; 3 CR.

HEBREW

12100-12200: Elementary Hebrew

Emphasis on rapid progress in conversational and written Hebrew in the modern idiom. Basic speech patterns, grammar, syntax and vocabulary through drill and conversation. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Hebrew

An intensive one-semester Hebrew course at the intermediate level. This course will review Hebrew grammar, enhance vocabulary, and will include readings in classical as well as contemporary Hebrew literature. Further goals of this course will be to develop speaking and writing skills through classroom activities as well as through multimedia and Internet. Prereq.: Hebrew 12100-12200 or placement examination. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

30100-30300: Honors I-III

Approval of Dean and Departmental Honors Supervisor required. Apply in NAC 5/225 no later than December 10 in the Fall term or May 1 in the Spring term. (W) VARIABLE CR.

31000: Independent Study

Approval of Department required before registration. (W) 1-4 CR.

31100-33900: Selected Topics

Including: The Bible and Archaeology; Bible, Law and Society; The Bible in Light of Ancient Near Eastern Texts; The Dead Sea Scrolls; Messianism; Biblical Themes in Art and Literature; The Bible and Its Commentaries; Comparative Religions; Jewish Law and Lore; Biblical and Classical Foundations of Modern Legal and Bio-ethical Issues. For other offerings, please consult the Department. 3 HR./WK.; 3 CR.

ITALIAN

Introductory and Intermediate Courses

12100: Introductory Italian I

An intensive course using a communicative approach to develop conversational skills and provide the student with a foundation in Italian grammar, pronunciation and vocabulary. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

12200: Introductory Italian II

A continuation of 12100 using a communicative approach to further develop conversational skills and provide the student with a further study of Italian grammar and vocabulary. Introduction to a selection of readings. Prereq.: Italian 12100. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

22300: Intermediate Italian

A review of the most important aspects of Italian grammar, further vocabulary development, conversation and reading. Prereq.: Italian 12200 or placement examination. 3 HR./WK.; 2 CR.

22400: Reading in Italian

Readings for conversation and composition with grammatical support as needed. Prereq.: Italian 22300 or placement examination. 3 HR./WK.; 2 CR.

22500: Intensive Intermediate Italian

An intensive one-semester Italian course at the intermediate level which will be equivalent for requirement purposes to Italian 22300 and 22400. This course will review the grammar of the Italian language, enhance vocabulary, and will include literary and cultural readings. It will further develop listening, speaking, reading comprehension, and writing skills through class discussions and the use of multimedia and the Internet. Prereq.: Italian 12100, 12200 or placement examination. Recommended for students who have completed Italian 12100 and 12200 with a grade of A or B. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Advanced Courses

The prerequisite to all advanced Italian elective courses is Italian 22400 or 22500 or placement.

Group A: Language

32300: Spoken Italian

Practice in conversation with emphasis on contemporary idiomatic speech. Discussions of topics of current interest. 4 HR./WK.; 3 CR.

Group B: Literature

42200: The Divine Comedy

A reading of the *Divine Comedy* within the political, religious and intellectual background of Dante's time. 3 HR./WK.; 3 CR.

42400: Renaissance Literature

Study of the major works written during the Italian Renaissance with an emphasis on their cultural, political and aesthetic context. The topics will vary. 3 HR./WK.; 3 CR.

43200: Contemporary Literature

Major currents in the poetry, fiction and drama. Topics will vary. 3 HR./WK.; 3 CR.

Courses Taught in English**28100: Dante to Machiavelli**

Dante's and Boccaccio's *Decameron*, a selection of Petrarch's love poetry, and Machiavelli's *The Prince*. (W) 3 HR./WK.; 3 CR.

28200: Pirandello to Moravia

The great authors of modern Italian literature: Pirandello, Svevo, Vittorini and Moravia. (W) 3 HR./WK.; 3 CR.

28700: Italian Cinema and Literature

A study of the different relationships that have occurred between Italian film and literature in this century. The cinematic translation of literature will be reviewed through the works of Visconti, Pasolini, DeSica, Bertolucci, Antonioni, Rossellini, Fellini and others. 3 HR./WK.; 2 CR.

45000: Italian Culture and Civilization

The course will attempt to set forth the uniqueness of Italian civilization and to show how these qualities have been transmitted from Italy to other nations. 3 HR./WK.; 3 CR.

LINGUISTICS**22100: General Introduction to Linguistics**

The nature of language, the methods and principles of linguistic science, factors in the evolution of language, and language as a medium of cultural tradition. 3 HR./WK.; 3 CR.

32100: General Linguistics

A continuation of Linguistics 22100 with more detailed treatment of topics in descriptive, historical and comparative linguistics. Prereq.: Linguistics 22100 or permission of the Department. 3 HR./WK.; 3 CR.

42001: Linguistics and Literary Analysis

Linguistic theories and techniques relevant to the typological, semiotic and stylistic description of literature. Linguistic approaches applied to literary theory and to analysis of selected works. (W) 3 HR./WK.; 3 CR.

30100-30300: Honors I-III

Approval of Dean and Department Honors Supervisor required. Apply in NAC 5/225 no later than December 10 in the Fall term or May 1 in the Spring term. (W) VARIABLE CR.

31000: Independent Study

For students with special literary or linguistic interests who desire to pursue independent study and research. Generally for juniors and seniors. Department approval required. VARIABLE CR.

PORTUGUESE**12100: Introductory Portuguese I**

An intensive course using a communicative approach to develop conversational skills and provide the student with a foundation in Portuguese grammar, pronunciation and vocabulary. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

12200: Introductory Portuguese II

A continuation of 12100 using a communicative approach to develop conversational skills and provide the student with a further study of Portuguese grammar, pronunciation and vocabulary. Introduction to a selection of readings. Prereq.: Portuguese 12100. 5 HR./WK. PLUS ONE HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

22300: Intermediate Portuguese

A review of the most important aspects of Portuguese grammar, further vocabulary development, conversation and reading. Prereq.: Portuguese 12200 or placement. 3 HR./WK.; 2 CR.

22400: Reading in Portuguese

Readings for conversation and composition with grammatical support as needed. Prereq.: Portuguese 22300 or placement examination. 3 HR./WK.; 2 CR.

SPANISH**Introductory and Intermediate Courses****12100: Introductory Spanish I**

An intensive course using a communicative approach to develop conversational skills and provide the student with a foundation in Spanish grammar, pronunciation and vocabulary. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

12200: Introductory Spanish II

A continuation of 12100 using a communicative approach to develop conversational skills and provide students with further study of Spanish grammar and vocabulary. Selection of readings. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

22300: Intermediate Spanish I

A review of the most important aspects of Spanish grammar, further vocabulary development through conversation and reading. Prereq.: Spanish 12200 or placement examination. 3 HR./WK.; 2 CR.

22400: Reading in Spanish

Readings for conversation and composition with grammatical support as needed. Prereq.: Spanish 22300 or placement examination. 3 HR./WK.; 2 CR.

22500: Intensive Intermediate Spanish

An intensive one-semester Spanish course at the intermediate level. This course will review the grammar of the Spanish language, enhance vocabulary, and will include literary and cultural readings. It will further develop listening, speaking, reading comprehension, and writing skills through class discussions and the use of multimedia and the Internet. Prereq.: Spanish 12100, 12200 or placement. Recommended for students who have completed Spanish 12100 and 12200 with a grade of A or B. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 4 CR.

Intensive Spanish for Latino and Bilingual Students

Spanish 19100 and 19200 are intensive courses designed to suit the needs of students who are fluent—or nearly fluent—Spanish speakers. These courses focus on the study of grammar to further improve oral skills, and to develop reading and writing skills in the Spanish language.

19100: Intensive Spanish for Latino Students and Bilingual Students I

A course designed for Latino or near-native speakers of Spanish who speak and understand the language and wish to master its structure. This intensive course emphasizes grammar, reading, writing and vocabulary acquisition, so as to help the students become truly bilingual. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 5 CR.

19200: Intensive Spanish for Latino Students and Bilingual Students II

A further study of the grammatical structure of Spanish with emphasis on the nuances of the target language and more intensive practice in reading, writing and vocabulary acquisition. 5 HR./WK. PLUS 1 HR. AT THE LANGUAGE MEDIA CENTER; 5 CR.

Advanced Courses

The prerequisite for all 30000-level Spanish courses is Spanish 22400 or 22500 or four years of high school preparation. The prerequisite for 40000-level courses is Spanish 32100 or 32200 or 32400.

Group A: Language**32100: Problems of Spanish Grammar**

An advanced look at Spanish grammar focusing on description and explanation of selected Spanish syntactic phenomena such as uses of infinitive *ser/estar*, the order of major constituents, uses of *se*, and uses of the subjunctive. Students will analyze Spanish syntax increase their understanding of the structure of Spanish and develop stylistically correct Spanish prose. 3 HR./WK.; 3 CR.

32200: Practice in Writing Spanish

An intensive course in written Spanish, with stress on correct structure of descriptive, narrative and expository prose. 3 HR./WK.; 3 CR.

32300: Spanish Conversation

Development of speaking skills through discussion of current topics (not open to native speakers). 4 HR./WK.; 3 CR.

32400: Translation

Development of skills in the art of translation from English to Spanish and vice versa through the use of a wide range of materials. Prereq.: Spanish 32401 or placement exam or permission of the instructor. 3 HR./WK.; 3 CR.

32401: Studies in Translation I**32402: Studies in Translation II****32500: Spanish Phonetics and Phonology**

A study of phonetic transcription and phonetic and phonological theory in the different Spanish-speaking areas. Especially recommended for students who plan to teach Spanish. 3 HR./WK.; 3 CR.

32600: Spanish in the Business World

Development of technical vocabulary and forms of expression used in the world of commerce, economics and finance. 3 HR./WK.; 3 CR.

32700: Introduction to Hispanic Linguistics

A presentation of the tools and methods of modern linguistics and their application to the study of the phonological, morphological and syntactic characteristics of contemporary Spanish, especially those related to Spanish in the Americas. 3 HR./WK.; 3 CR.

37000: History of the Spanish Language

Study of the development of the Spanish language from Latin to the present, including language contact, especially in the area of lexicology. Prereq.: Spanish 32700 or Linguistics 22100, Spanish

32500 or Education 35000, Spanish 32100 or permission of the instructor. Latin 12100 strongly recommended. 3 HR./WK.; 3 CR.

37300: Advanced Spanish Composition & Conversation for Bilingual Education Majors

This course is intended for bilingual undergraduate students in the School of Education. The course will develop and improve the students' capacity to express themselves in writing and speech utilizing various techniques. Prereq.: Permission of the School of Education Advisor of Placement. 3 HR./WK.; 3 CR.

46200: Spanish Dialectology and Sociolinguistics

This course examines regional and social variation in the Spanish of Spain and Latin America. It examines variable phenomena in Spanish phonology and morphosyntax, and correlates them with predictive factors such as region, nationality, level of education, sex, and age. Also included is a look at such areas as language attitudes, policy and planning, and discourse analysis. 3 HR./WK.; 3 CR.

46301: Spanish in Contact Worldwide

This course examines varieties Spanish spoken in areas where another language is also in widespread use, in Latin America, Spain, North America and other areas where Spanish is spoken. The course considers some of the linguistic and sociocultural effects of bilingualism. Through readings, multimedia materials, and web-based interactive discussions, students learn to appreciate, describe, and compare different varieties of Spanish in contact as they learn to think critically in the field. 3 HR./WK.; 3 CR.

46302: Spanish in Contact in the US

The course examines varieties of Spanish spoken in the continental United States, focusing on variable phenomena and on the role of the home dialects in shaping US varieties. Special emphasis is placed on contact with English and on the public policy and educational consequences of the widespread use of Spanish in the US. 3 HR./WK.; 3 CR.

Group B: Literature**Spanish 33000: Representations of Contemporary Spain in its Cinema**

This course is designed to introduce students to major social, historical, and cultural issues in Spain since the end of the Franco dictatorship in 1975, through an exploration of some of the most outstanding films of the contemporary period. Class discussions may be held either in

English or Spanish or both. Prerequisites: Spanish 22400, 22500 or permission of the instructor. 3 HR./WK.; 3 CR.

33100 Representations of Latin America Through its Cinema

This course will analyze various aspects of the culture and society of Latin American countries through film. A careful selection of movies and texts presented in class will help students improve their ability to read films aesthetically, culturally, and historically. Cultural and social aspects such as the role of women in Latin American society, political ideologies, social and economic structures, power institutions, e.g. the Catholic Church, the State, drug lords, etc. will be examined and discussed through a systematic study of films selected. Prerequisites: Spanish 22400/22500 or permission of chairperson or instructor. 3 HR./WK.; 3 CR.

35100: Studies in Spanish Literature I

A survey of the literature of Spain from the Middle Ages to the end of the 17th century, with emphasis on the different styles and periods and on the characteristics of representative genres. 3 HR./WK.; 3 CR.

35200: Studies in Spanish Literature II

A survey of the literature of Spain from the 18th century to the present, with emphasis on the different styles and periods and on the characteristics of representative genres. 3 HR./WK.; 3 CR.

35300: Studies in Spanish American Literature

An overview of the development of Spanish American literature since its origins to contemporary times. This course will emphasize the literary trends and cultural currents that have shaped Spanish-American letters through the analysis of representative works. 3 HR./WK.; 3 CR.

35400: Dominican Literature and Culture

This course will use a variety of texts including the novel, the essay, the short story, popular poetry, representations of the oral tradition, paintings, music, films, to provide students with a unique opportunity to learn about some of the first literary and cultural manifestations in the Dominican Republic. Readings will cover selections from Columbus Diary and letters, and other selections from chronicles. The course will also focus on how Dominican intellectuals have incorporated modern artistic trends into their creations. Prereq: Spanish 22400 and 22500. 3 HR./WK.; 3 CR.

36000: Techniques for Literary Analysis

The study of critical techniques and terminology for the analysis of different literary genres and contemporary criticism. 3 HR./WK.; 3 CR.

42100: Studies in Medieval Spanish Literature

A literary and linguistic analysis of the major texts of the medieval period, including "cantigas," *Poema del Cid*, *Milagros de Nuestra Señora*, *Libro de Buen Amor*, and *La Celestina*. 3 HR./WK.; 3 CR.

42400: Cervantes: *Don Quijote*

An exploration of Cervantes' major work from different critical points of view. 3 HR./WK.; 3 CR.

42600: Golden Age of Spanish

The study of the major literary and ideological currents that developed in Spain during the Renaissance and the Baroque periods along with the reading and analysis of representative works. 3 HR./WK.; 3 CR.

42601: Lope de Vega and the Evolution of the Spanish Theatre**42602: Renaissance and Baroque Prose and Poetry****42800: Spanish Literature of the 18th and 19th Centuries**

Representative authors and main currents in prose, poetry and drama from various periods: Neoclassicism, Romanticism, Realism and Naturalism. 3 HR./WK.; 3 CR.

43200: The Generation of 1898

Ideas and themes in the works of Unamuno, Azorín, Baroja, Valle Inclán and other major writers of this period. 3 HR./WK.; 3 CR.

43400: Studies in Contemporary Spanish Literature

An exploration of the major trends in Spanish Literature of the 20th century through the study of different genres. 3 HR./WK.; 3 CR.

43401: The Spanish Novel since the Civil War**43402: Contemporary Spanish Poetry and Theater****43600: Spanish American Colonial Literature**

The formation and development of colonial discourse focusing on how indigenous and foreign modes interacted in order to represent a complex reality. 3 HR./WK.; 3 CR.

43800: Spanish American Literature of the 19th Century

A study of literary currents of 19th century Spanish America through its major works. 3 HR./WK.; 3 CR.

44100: The Literature of Social Protest in Spanish America

A study of literary works from different genres focusing on how they portray and respond to a given social, political and/or economic situation. 3 HR./WK.; 3 CR.

44200: The Spanish American Essay

The evolution of the essay from the period of independence to the present, taking into account the philosophical currents and historical events that have shaped this genre. 3 HR./WK.; 3 CR.

44400: Studies in Contemporary Spanish American Literature

Major developments in narrative, poetry and theater from the early 20th century to the present. 3 HR./WK.; 3 CR.

44402: Contemporary Spanish American Poetry and Theater**44403: Contemporary Spanish American Short Story****44404: The Spanish American Contemporary Novel****44600: Literature of the Spanish Caribbean**

Differences and similarities in the cultural and social structures of Cuba, Puerto Rico and the Dominican Republic through the analysis of selected texts of various genres. 3 HR./WK.; 3 CR.

45100: Spanish Civilization

An exploration of Spanish history and culture from their origins to the present. Topics include geography, folklore, development of the arts, ideologies, socio-political changes and social issues. 3 HR./WK.; 3 CR.

45200: Topics in Spanish American Civilization

A study of the social, cultural and political developments of Spanish America. Topics include the contributions of the Native, Iberian and African civilizations; the struggle for independence; the development of the arts; the impact of revolutionary movements; and the place of women in society. 3 HR./WK.; 3 CR.

45201: Topics in Spanish American Civilization I**45202: Topics in Spanish American Civilization II****45300: Gender Issues in Hispanic Letters**

An exploration of the impact of gender in the literature of the Spanish-speaking world. 3 HR./WK.; 3 CR.

45400: Latino Culture and Literature in the U.S.

An exploration of the Latino cultural legacy and its contemporary influence in the United States. The study of the development of Latino communities, history and patterns of immigration, and similarities and differences among these communities. This course will also focus on sociological, economic, political and anthropological factors such as transculturation, assimilation, linguistic similarities, problems of identity and discrimination. It will also examine various psychological factors of the Latino cultures throughout the U.S. through the different ways of expression such as art and literature, taking into account the elements that distinguish these from those of their countries of origin and North America. The course will normally be conducted in Spanish. Readings may be in Spanish and English. Prereq.: Spanish 22400 or placement examination. 3 HR./WK.; 3 CR.

30100-30300: Honors I-III

Approval of Dean and the Department Honors Supervisor required. Apply no later than December 10 in the Fall term or May 1 in the Spring term. VARIABLE CR., 1-4

31000: Independent Study

For students with special literary or linguistic interests who desire to pursue independent study and research. For juniors and seniors, ordinarily. Departmental approval required. VARIABLE CR., 1-4

31100-32000: Selected Topics

A series of advanced courses to be offered with varying frequency on selected topics not generally covered in the set course offerings. Topics to be announced in the preceding semester. 3 HR./WK.; 3 CR.

Spanish Literature in Translation**28100: Masterworks of Spanish Literature I**

The evolution of Spanish literature from the Medieval period through the Golden Age. Critical analysis of representative works and writers. (W) 3 HR./WK.; 3 CR.

28200: Masterworks of Spanish Literature II

The development of Spanish literature during the 18th and 19th centuries. Critical

analysis of representative works, writers and movements. (W) 3 HR./WK.; 3 CR.

28300: Masterworks of Latin American Literature

Representative works and authors of Spanish American letters from the mid 20th century to the present. The texts are analyzed in light of the social, political, cultural and ideological contexts in which they were produced. (W) 3 HR./WK.; 3 CR.

SWAHILI

12100: Elementary Swahili I

The essentials of grammar and basic vocabulary through conversation based on a situational approach. 4 HR./WK.; 3 CR.

12200: Elementary Swahili II

Further practice in conversation, using more complex sentence patterns, with some reading of texts on cultural aspects of Swahili society. Prereq.: Swahili 12100 or permission of the Department. 4 HR./WK., 3 CR.

22300: Intermediate Swahili I

A review of the essentials of grammar; reading and translation of Swahili texts; practice in conversation. Prereq.: Swahili 12200 or permission of the Department. 4 HR./WK.; 3 CR.

22400: Intermediate Swahili II

Grammar and conversation. Emphasis on reading from contemporary literary and journalistic sources that deal with life in Swahili-speaking Africa. Prereq.: Swahili 22300 or permission of the Department. 4 HR./WK.; 3 CR.

31000: Independent Study

For students, generally juniors and seniors, with special literary or linguistic interests who desire to pursue independent study and research. Departmental approval required. (W)

FOREIGN LANGUAGES AND LITERATURES

12100: Elementary Course in the "Less Commonly Taught Languages"

A series of courses to be offered with varying frequency on languages not covered in the set course offerings. Languages to be announced in the preceding semester. 4 HR./WK.; 3 CR.

12200: Intensive Course in the "Less Commonly Taught Languages"

A series of courses to be offered with varying frequency on languages not covered in the set course offerings.

Languages to be announced in the preceding semester. 12100 or permission of the instructor. 4 HR./WK.; 3 CR.

22500: Intensive Intermediate Course in the "Less Commonly Taught Languages"

A series of courses to be offered with varying frequency on languages not covered in the set course offerings. Languages to be announced in the preceding semester. 12200 or placement examination. 6 HR./WK.; 4 CR.

31100-32000: Selected Topics in the "Less Commonly Taught Languages"

A series of courses to be offered with varying frequency on selected topics not covered in the set course offerings. Topics to be announced in the preceding semester. 3 HR./WK.; 3 CR.

FACULTY

Carole Berger, Associate Professor

B.S., The City College, M.S.; Ph.D., Yeshiva Univ.

Maxime Blanchard, Assistant Professor

B.A., Univ. de Montreal; M.A., Univ. of Minn.; D.E.A., Univ. De Paris-IV; Ph.D., Harvard Univ.

Carmen Boulosa, Distinguished Lecturer

Silvia Burunat, Professor

B.A., Boston Univ., M.A.; Ph.D., CUNY

Richard Calichman, Assistant Professor

B.A., Colby College; Ph.D., Cornell Univ.

Laura Callahan, Assistant Professor

B.A., San Jose State Univ., M.A.; Ph.D., Univ. of California (Berkeley)

Raquel Chang-Rodríguez, Distinguished Professor

B.A., Montana State Univ.; M.A., Univ. of Ohio; Ph.D., New York Univ.

Angel Estévez, Assistant Professor

B.A., Hunter College; Ph.D., CUNY

René Pedro Garay, Professor

B.A., Univ. of New Orleans; M.A., Univ. of South Florida; Ph.D., Vanderbilt Univ.

Adriana García-Dávila, Professor

B.A., Univ. of Maryland, M.A.; Ph.D., Univ. of Illinois

Dulce María García, Assistant Professor

B.A., Barry Univ.; M.S., Georgetown Univ., Ph.D.

Juan Carlos Mercado, Professor and Chair

B.A., Univ. del Comahue (Argentina); M.A., Queens College; Ph.D., CUNY

Roy Mittelman, Lecturer

B.A., Univ. of Pennsylvania; M.A. Temple Univ., Ph.D.

Jennifer Roberts, Professor

B.A., Yale College; M.A., Yale Univ., Ph.D.

Vittorio Rotella, Lecturer

B.A., Queens College; M.A., Columbia Univ.

Eve Sourian, Professor

Licence-es-Lettres, Sorbonne; M.A., Bucknell Univ.; Ph.D., Univ. of Colorado (Boulder)

Elizabeth D. Starcevic, Professor

B.A., The City College, M.A.; Ph.D., CUNY

Mary Ruth Strzeszewski, Assistant Professor

B.A., Columbia Univ., M.A., Ph.D.

Araceli Tinajero, Assistant Professor

B.A., Rutgers Univ., M.A., Ph.D.

PROFESSORS EMERITI

Gisele Corbière-Gille

Stephen G. Daitz

Gabriella de Beer

Antonio R. de la Campa

Manuel de la Nuez

Angela B. Dellepiane

Françoise Dorenlot

Janette Gatty

Marshall S. Hurwitz

Theodore Litman

Antonio Sacoto

Zvi Henri Szubin

Alberto Traldi

Renée Waldinger

Sharifa M. Zawawi

Jacques Zéphir

Department of History

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Darren Staloff, Chair • Department Office: NAC 5/144A • Tel: 212-650-7137

GENERAL INFORMATION

The City College offers the following undergraduate and combined degrees in History:

B.A.
B.A./M.A. (Combined Degree)

PROGRAMS AND OBJECTIVES

History is basic to a college education: it provides the knowledge of where we have been that is essential to any individual's understanding of his or her role in contemporary society; it advances analytical skills and promotes the expression of one's ideas in writing and speech; and it encourages students to think critically, which includes the ability to evaluate material and draw appropriate conclusions. The offerings at City College are designed to meet the needs of our diverse student body.

A wide range of occupations is open to history majors beyond those in the teaching area, including positions in business and industry, law, communications, and many agencies of government at all levels. A strong background in history also complements majors in social sciences because it provides the perspective that deepens one's understanding of contemporary developments and problems. In addition, historical study traditionally has been an asset to those interested in literature and other humanities and arts areas.

REQUIREMENTS FOR MAJORS

Elective Courses

Courses in one selected field of history 15
[e.g., American History, Modern Intellectual History]

Courses distributed among other fields of history 18

Total Credit 33

Teaching Social Science in Secondary Schools*

Students wishing to teach history in secondary schools must be certified in the area of Social Studies. Major requirements are listed below. Students should also consult Professor Susan Semel (School of Education).

Required Courses

Two courses in American History	6
Two courses in European History	6
One course in two of the following areas: Asian History, African History and Latin American History	6
Additional History courses in one area (American, African, Asian, European)	12
Additional History Elective	3
Upper division course in Economics or Political Science	3

Total Credits 36

*Social Science students also have these general education core requirements: *ECO 10000: Modern U.S. Economy (3 cr.)* and *Pol Sci 10100: U.S. Government and Politics (3 cr.)*.

ADDITIONAL REQUIREMENTS

All History majors must complete the following courses:
New Student Seminar, unless exempt (0 cr.)
English 11000: Freshman Composition (3 cr.)
English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

THE B.A./M.A. DEGREE

The department offers a B.A./M.A. program that enables outstanding students to receive both degrees in four to five years upon the completion of 142 credits. For details see the Chair or the Departmental Advisor.

NON-MAJORS

Non-majors desiring an introductory course beyond the core level are advised to select courses from the following three areas: Area Studies, Topics in History, Comparative History. Those who wish to take courses in Comparative History and in Special Topics in History should have taken at least two courses in either Area Studies or Topics in History, or, alternatively, two electives in the Social Sciences or Humanities and the Arts.

Electives generally require core level courses in World Civilizations as a pre-requisite. This requirement will be

waived for students who want a course related to their major, e.g., a course in French history for students majoring in French, or the history of science for science majors.

ADVISEMENT

Departmental Advisors

Professor Frank Grande
NAC 5/137; 212-650-7137
(Day Session)

Professor David Johnson
NAC 5/132; 212-650-7456
(Evening session)

MENTOR SYSTEM

The Department's mentor system enables each major to profit from more direct educational advice and a closer working relationship with a professor in his or her field of special interest. Each major is assigned to a member of the department and should maintain contact with that mentor on a regular basis.

DEPARTMENT ACTIVITIES

The History Club provides a student voice in departmental affairs, discuss problems in the field of history, and hear speakers. Open to all interested students.

Phi Alpha Theta

Phi Alpha Theta is the International Honor Society in History. Juniors and seniors who have completed at least five courses in history (including three electives) with an average of B+ and who have an overall average of B, may apply for membership. The Alpha Mu Chapter was founded in 1946.

The History Forum

The History Forum is a series of informal presentations by the faculty and outside historians on topics of current research. These range widely but are intended to demonstrate how historians go about tackling significant and controversial subjects. Every History Forum is followed by an open discussion.

AWARDS

The History Department awards a number of medals and grants to outstanding undergraduates. For detailed information see the Chair of the History Department.

Paul Aron Award

For the best undergraduate research paper.

Bernard Bellush Service Award

For social service as well as scholarship.

Charles T. Cromwell Award

For a senior History major with the highest average in History.

Baily W. Diffie Award

For outstanding work in a core course.

Carl Dunat Scholarship

To help support future studies.

Joan Kelly Prize

For the best essay written in an elective course in History.

Oscar Lloyd Meyerson Prize

For the best Honors essay.

Sidney I. Pomerantz Prize

For the best essay on the history of New York City written in an elective course.

J. Salwyn Shapiro Award

For a senior who has done outstanding work in European History.

General Tremain Prize

For a student who writes the best essay on some aspect of American History related to the Civil War.

Joseph E. Wisan Prize

For the best essay on 20th century American History written in an elective course.

COURSE DESCRIPTIONS

The History Department Guide is available at the end of each semester in the Department Office with complete information about the content, hours and instructors of all courses for the following semester.

The "20000" numbers designate courses that cover a relatively long time span (e.g.,

Traditional Civilization of Japan or Modern Japan), the "30000" numbers indicate more intensive examination of a particular era or topic, and the "40000" numbers, comparative history.

In addition to the electives detailed in this Bulletin, each term the Department of History offers several colloquia and other courses (History 31100-32000) to enable advanced students to explore specialized areas of knowledge in even greater depth. These courses, which cover different areas each term, are announced during the preceding term.

AREA STUDIES

A. Studies in Ancient and Medieval History

32100: The Ancient World: The Near East and Greece

Examines the rise and fall of civilizations in the ancient Near East and the Greek world to the Hellenistic Age. (W) 3 HR./WK.; 3 CR.

32200: The Ancient World: Rome

Surveys the history of classical antiquity from the Hellenistic Age to the fall of the Western Empire. (W) 3 HR./WK.; 3 CR.

32300: The Early Middle Ages

The decline of the ancient world, the rise of Christianity and the papacy, the rise of Islam, the Carolingian Renaissance, and the development of feudalism. Assimilation and modification of the elements which were to become medieval culture. (W) 3 HR./WK.; 3 CR.

32400: The High Middle Ages

The formation and institutional development of the feudal monarchies. Art and culture. The Crusades, collapse of the Holy Roman Empire, the Hundred Years' War, the Duchy of Burgundy, and emergence of national states. (W) 3 HR./WK.; 3 CR.

B. Studies in Modern European History

21800: Social History of Modern France

Surveys the important political, economic and social developments in France since 1815. 3 HR./WK.; 3 CR.

21900: Constitutional and Political History of England

The development of the English constitution from the Anglo-Saxon period to the Glorious Revolution, emphasizing the political and legal aspects of English

history, with special attention given to the rise of Parliament and the influence of Common Law. 3 HR./WK.; 3 CR.

22100: History of England Since 1688

Surveys the major social, political and intellectual developments. Emphasizes such subjects as the Industrial Revolution, the growth of a party system, the Victorian and Edwardian eras, and the development of the welfare state. 3 HR./WK.; 3 CR.

22200: Italy Since 1815

A study of life and thought in Italy from the Congress of Vienna through the Risorgimento, the liberal monarchy, and Fascism, to the establishment of the Republic. 3 HR./WK.; 3 CR.

22300: Germany from the Eighteenth Century to the Present

Unification, industrialization and social change. Major trends in intellectual life. The two wars, Nazi totalitarianism, anti-Semitism, and the Holocaust. Post-1945 recovery and the division and reunification of Germany. 3 HR./WK.; 3 CR.

22500: The History of Russia from Earliest Times to 1855

The beginning of the great reforms. The totalitarian pyramid was already intact and all that was needed to turn Russia into a world power was the coming revolutions which modernized her technology yet left her an apparatus-run society. 3 HR./WK.; 3 CR.

22600: The History of Russia Since 1855

Emphasis on the great reforms liberalizing the Tsarist state, but also paving the way for a new form of autocratic bureaucracy. The revolutions of 1905 and 1917, Lenin, Trotsky, Stalin, Khrushchev, Brezhnev, are discussed in detail. 3 HR./WK.; 3 CR.

32500: Life, Art and Learning in the Renaissance

Using original works (in translation), we shall examine early modern European conceptions of love, culture, politics, and destiny in the context of major social, intellectual, and artistic developments of the period. Humanism and the formation of the state; individualism in life, letters and art. (W) 3 HR./WK.; 3 CR.

32700: Europe in the Revolutionary Era: 1760–1815

The rapid transformation of political, legal, and social institutions, as well as of attitudes and ideas under the pressure of war, revolution and economic change. The crisis of the Old Regime; development and spread of the Revolution; the Napoleonic system and its legacy. (W) 3 HR./WK.; 3 CR.

32800: Europe, 1815–1914

The political triumphs of the middle classes and their troubled hegemony; the factory system, free trade, parliamentarianism; the transformations of 1848; the Second Empire; Italian and German unifications; movements of reform; democratic currents; socialism; the new imperialism. (W) 3 HR./WK.; 3 CR.

32900: Twentieth-Century Europe

The coming of the First World War, the War and the Peace, the Russian Revolution, Italian Fascism, the Weimar Republic and Nazism, the Democracies between the wars, the diplomacy of appeasement, the Second World War, and the Cold War. (W) 3 HR./WK.; 3 CR.

33000: Europe since 1945

The causes of World War II, the Cold War, and the factors leading to the policy of detente. A question to be probed is: can states with distinctly different notions of politics genuinely coexist in the power-political arena? (W) 3 HR./WK.; 3 CR.

C. Studies in American History

33100: Early America: From Settlement to the Great Awakening

This course examines the formation of early American society on the Atlantic seaboard. Particular attention is given to the establishment of four distinct regional socio-political cultures in New England, the Middle Colonies, the Chesapeake, and the Deep South. Other topics include the impact of European settlement and trade on Amerindian life and culture, the emergence and rise of slavery, and the role of women and the family in early American society. (W) 3 HR./WK.; 3 CR.

33200: The Era of the American Revolution

This course details the causes, events, and consequences of one of the first and most important revolutionary movements of the Enlightenment, down to the creation and ratifications of the United States Constitution. Particular attention is devoted to the social and political causes of the uprising, as well as its cultural meaning for the different participants in the American scene. (W) 3 HR./WK.; 3 CR.

33300: The New Nation, Slave and Free, 1783 to 1840

Republicanism and the democratization of politics, industrialization of an American working class, social reform and the making of the middle class, westward expansion and the removal of the Native Americans, sectional conflict and slave culture. (W) 3 HR./WK.; 3 CR.

33400: The Era of Civil War and Reconstruction, 1840–1877

The causes and consequences of the American Civil War, focusing on the reasons for sectional conflict, emancipation, the role of Abraham Lincoln, the conflict over Reconstruction and the new status of emancipated slaves. (W) 3 HR./WK.; 3 CR.

33500: The Response to Industrialization, to 1917

The political, economic, and social phases of the development of the United States from Reconstruction to the First World War. Populism and Progressivism; the industrialization of society and emergence of the labor movement. (W) 3 HR./WK.; 3 CR.

33600: The United States in the Twentieth Century

America and World War I, the Roaring Twenties, the Depression and New Deal, Roosevelt's leadership, World War II, and the beginnings of the Cold War. (W) 3 HR./WK.; 3 CR.

D. Studies in Asian, African, and Latin American History

25100: Traditional Civilization of China

The early formation of the Chinese state, the intellectual foundation that has sustained its long history, the shaping of the Confucian way of life, and the cultural sophistication and its decline on the eve of the modern world. (W) 3 HR./WK.; 3 CR.

25300: Modern China

Change and continuity in the Chinese tradition across the 19th and 20th centuries. The encounter with the West, social and political disruptions, efforts to industrialize, and especially the evolution and outcome of the Chinese revolution will be stressed. 3 HR./WK.; 3 CR.

25400: Traditional Civilization of Japan

Japanese history from its origins to the nineteenth century, i.e., the "classic" Heian period, "medieval" Kamakura to Sengoku periods and the "early modern" Tokugawa world. Topics: Japan's contacts and borrowings from other civilizations, especially China; Shinto and Buddhism; women and the family; the rise and transformation of bushi or warriors; artistic traditions. (W) 3 HR./WK.; 3 CR.

25500: Modern Japan

Survey of the building of the modern Japanese state, society and economy from 1868 to the present, with focus on continuity and change, the social costs of rapid

industrialization and the emergence of Japan in the global economy. 3 HR./WK.; 3 CR.

26200: The Middle East Under Islam

The rise of Islam and Arab conquests of the Middle East and North Africa through the Crusades and Mongol invasion. Covering the period 600 to 1500, we will focus on politics, culture, and society. (W) 3 HR./WK.; 3 CR.

26300: Traditional Civilization of India

The history and culture of Indian civilization before modern times; major emphasis will be on its formation and classical age, its continuity and change, and the coming of Islam. 3 HR./WK.; 3 CR.

26400: History of Modern India

Surveys the elements which have shaped the characteristic institutions of India; the disintegration of the Mogul empire and the rise of the British to dominance; political, economic, cultural, and social developments during the British period and the changes wrought by the republic. 3 HR./WK.; 3 CR.

28100: Colonial Latin America

A study of the impact and meaning of colonial rule in Latin America and the Caribbean, focusing on the interaction between European goals and institutions, and indigenous American and African strategies of socio-cultural survival. (W) 3 HR./WK.; 3 CR.

28200: Modern and Contemporary Latin America

Contemporary economic, social and political problems of Latin America and the Caribbean studied in historical perspective. Themes include foreign economic and political intervention; labor systems and patterns of land ownership; class, ethnic, and racial relations; the politics of reform, revolution and authoritarianism. (W) 3 HR./WK.; 3 CR.

38100: Modern Brazil

A study of the economic, social and political development of Brazil from the late nineteenth century to the present. Topics include abolition and racial relations; industrialization and the labor movement; urban and rural social protests; populism, authoritarianism and "redemocratization"; the debt crisis. (W) 3 HR./WK.; 3 CR.

38200: Latin America: A Comparative Study of Twentieth-Century Revolutionary Movements

A comparative historical analysis of the Mexican, Bolivian, Cuban, Chilean and Nicaraguan revolutions. The focus will be on both the roots of revolution (including land tenure systems, socio-economic structures, foreign intervention, and

national political and ideological traditions) and the evolution of these revolutions over time. (W) 3 HR./WK.; 3 CR.

TOPICS IN HISTORY

A. Africa

34100: Africa and the Modern World

A social history of Africa from the 19th century to the present, with emphasis on state formation, impact of the slave trade, and resistance to colonialism. (W) 3 HR./WK.; 3 CR.

34200: History of African Nationalist Thought

A historical treatment of African nationalist thought with special emphasis on the social movements and processes that stimulated the ideological development of the nationalist leaders. Readings will include the writings of these leaders. (W) 3 HR./WK.; 3 CR.

B. Europe

34800: The Theory and Practice of Genocide in the Twentieth Century

Comparison of several instances of systematic mass killing, including Armenians, European Jews, Kurds, American Indians, and Hereros and Hutus in Africa. Emphasis on historical circumstances, national sentiment, the state apparatus, and the contemporary implications of genocide. (W) 3 HR./WK.; 3 CR.

34900: The Third Reich

Hitler, Nazism and Nazi Germany. Topics include: social, economic, and political preconditions to the Nazi takeover; anti-semitism; cultural and artistic policies of Nazi Germany; the churches; the film industry; varieties of resistance; concentration camps; the conquest of Europe; mass murder; fall of the Third Reich. (W) 3 HR./WK.; 3 CR.

35000: Conservatism and The New Right in Europe since the French Revolution

Examines various conservative ideologies and movements, their social and intellectual bases, and historical interconnections. Special attention to the renewal of the Right in the late nineteenth and early twentieth centuries, and the Right's relation to fascism and national socialism. (W) 3 HR./WK.; 3 CR.

35100: The Age of Enlightenment

The eighteenth century's project of applying reason to experience and to the improvement of social existence. Main topics: retrieval of exotic cultures; meditation on happiness and pleasure; problem of luxury; discovery of the market; secular

society and its history; the French Revolution; reform and violence. (W) 3 HR./WK.; 3 CR.

35200: Intellectual History of Nineteenth-Century Europe

Dominant political and social ideas as manifested in romanticism, rationalism, progressivism, liberalism and socialism. (W) 3 HR./WK.; 3 CR.

35300: Intellectual History of Twentieth-Century Europe

Emphasis on the ideological challenges to the heritage of the eighteenth-century Enlightenment and nineteenth-century liberalism embodied in modern irrationalist schools of thought, and the rise of contemporary psychological-existential images of humanity. (W) 3 HR./WK.; 3 CR.

35600: Social History of Modern Europe

Social history's special techniques, methodologies and approach are demonstrated by example. Topics include: the peasantry, industrialism, urbanism, family structure, popular culture. The relative importance of distinct historical experience, differing productive forces and political change on the structure, culture and people of Europe. (W) 3 HR./WK.; 3 CR.

35700: History of Socialism

The growth of the socialist movement in the nineteenth and twentieth centuries and its main ideological expressions: utopian, Marxist, revisionist, syndicalist. The relations between ideology and concrete historical circumstances; trade unionism; revolution; working class growth and change; Bolshevism; national liberation. (W) 3 HR./WK.; 3 CR.

36000: Women in Modern History

Interrelations between women and society from the French Revolution to post-cold war Europe. Includes family, cultural and political life, plus the growth of women's movements for change. (W) 3 HR./WK.; 3 CR.

C. America

36200: Immigration and Ethnicity in American Life

Topical and chronological treatment of the American immigration experience, with emphasis on the ghetto, culture and community, patterns of work, social mobility, assimilation, the relation of class and ethnicity, and America's reception of immigrants. Comparative analysis of different ethnic groups. (W) 3 HR./WK.; 3 CR.

36400: The History of American Labor

Focuses on the period since 1850. Discusses industrialization and the worker,

immigration, the impact of social reformers and radicals. Considerable attention to the labor movement, which is viewed within the broader context of American society. (W) 3 HR./WK.; 3 CR.

36500: African-American History from Emancipation to the Present

The post-slavery experience of African-Americans: the creation and destruction of a black peasantry, the growth of a black working class, and the resulting change in black politics and culture. (W) 3 HR./WK.; 3 CR.

36600: The American Women's Movement

The emergence of women's movements in U.S. History. Includes many facets of American political, social, economic, intellectual and sexual life from colonial times to the present. Role of social class, education, law, technology, religion and reform movements in the gradual improvement of women's status from one of subordination to one approaching equality. (W) 3 HR./WK.; 3 CR.

36700: American Urban History

Economic, social, and physical development to the present. Merchant, industrial, and corporate stages of urbanization and their distinctive architectural expressions. Slides and walking tours to examine urban forms and spatial arrangements. Major objective is analysis of physical consequences of market decisions. (W) 3 HR./WK.; 3 CR.

36800: A Social History of American Architecture

Beginning with the architecture of late medieval Europe, this course will trace architectural ideology and its interaction with material reality up to the present, focusing on both vernacular and professional work in order to examine the social objectives and values of those who construct the physical environment. (W) 3 HR./WK.; 3 CR.

37000: The American Legal Tradition

Examines the basic features of English Common Law, then shifts to America to explore how our nation (1) dealt with this inheritance and (2) formed its own legal structure. A broad range of topics, with emphasis upon eighteenth and nineteenth-century legal developments. (W) 3 HR./WK.; 3 CR.

37100: History of American Foreign Relations

Traces the interrelationship between basic domestic forces and their manifestation in the objectives of United States foreign policy. Emphasis is on Puritanism,

Messianism, the rise of corporate capitalism, and twentieth-century attempts to shape the American imperium. (W) 3 HR./WK.; 3 CR.

37200: Progressivism and Radicalism in Twentieth-Century America

An examination of progressive and radical forces on the national and local scenes; their roots in the 1890s, development, failures, and impact upon contemporary political and social movements. (W) 3 HR./WK.; 3 CR.

37500: The Mass Media in Recent American History

The development of print and electronic media as major forces in twentieth-century America. Primary emphasis on national circulation magazines since 1900, radio since 1920, and television since 1947. Students will use the serials collections at the Cohen Library, and radio and television tapes at the Museum of Broadcasting. (W) 3 HR./WK.; 3 CR.

37700: Comparative Slavery

Slavery, a relationship in which one man held property in another's person, existed in many societies, ancient and modern. By examining the role of slavery in various cultures over time, characteristics useful in understanding the development of New World slavery will be explored. The course will begin with slavery in ancient civilizations (e.g., Greece, Rome, Africa), and then examine the New World societies created after 1492. Finally, the sources and character of emancipation and abolition will be considered. (W) 3 HR./WK.; 3 CR.

38000: The Writing of American History

The aim of this course is to study selected writings of major American historians who have thought perceptively and written eloquently about the past. Readings will stress ideas that have challenged, and continue to challenge, thinking people. (W) 3 HR./WK.; 3 CR.

D. Science and Technology

38300: History of Science I

The origins and development of science from classical antiquity to the sixteenth century. Changing views of nature. Scientific Revolution. Emphasis on developments in physics and astronomy. (W) 3 HR./WK.; 3 CR.

38400: History of Science II

The culmination of the Scientific Revolution of the sixteenth and seventeenth centuries. The effect of scientific theories on views of humanity and of the universe. The impact of the scientific rev-

olution of the twentieth century on views of the nature of science and of the universe. (W) 3 HR./WK.; 3 CR.

38500: Health Care and the Health Professions from the 17th Century

The magical, empirical and scientific traditions in medical care, and their impact on the development of medical science and the health professions. Changing patterns of health care. Biomedical research, the pattern of epidemics, and the evolution of public health services. (W) 3 HR./WK.; 3 CR.

38600: The American Health Care System

The development of modern medicine, and the politics, economics, and organization of the current American health care system. Issues include whether the health care system favors the wealthy over the poor, discriminates against women, and results in the overutilization of drugs, surgery and hospitals. 4 HR./WK.; 4 CR.

38700: Technology and Society, 1450-1870

The reciprocal influence of technological innovations and social developments; the nature of technology and its relation to other human activities; intended and unforeseen consequences of technological change; cross-fertilization of European and non-Western technologies; development of industry from wind, water and muscle power to steam. (W) 3 HR./WK.; 3 CR.

38800: Technology and Society, 1870 to the Present

How technical and social developments have affected each other: automation and computerization; medical and biological technologies; shifts of capital and technical know-how; different cultural approaches to technology; reconsideration of the nature and limits of technology. (W) 3 HR./WK.; 3 CR.

COMPARATIVE HISTORY

41100: Comparative History of Revolutions

A study of major modern revolutions, stressing the literature and problems of each, for the purpose of learning to what extent they follow similar patterns. New and unusual insights for historical inquiry, prompted BY a comparative approach. (W) 3 HR./WK.; 3 CR.

41300: Nationalism in the Modern World

The meaning, origin, development, and growing significance of nationalism in the nineteenth and twentieth centuries.

Nationalism discussed as (1) a stabilizing and destabilizing factor, (2) a challenge to multi-national empires, and (3) a major factor in the anti-colonial movements. (W) 3 HR./WK.; 3 CR.

41400: Modern Imperialism

The building of empires during the nineteenth and twentieth centuries in the name of national and international principles as well as economic and political interests. The extension of power over weaker regions by England and France, the U.S.A., the U.S.S.R, and China. Rivalries among imperial powers. (W) 3 HR./WK.; 3 CR.

41700: The Old and New Working Classes in Europe and the United States

Compares the development of working classes in Europe and the United States since the late eighteenth century. Includes workers in industry, agriculture and commerce, particularly white collar workers. Studies changes in conditions of work, occupations and workers' organizations. (W) 3 HR./WK.; 3 CR.

41800: Jewish History: Ancient and Early Medieval

The origin and growth of the Jewish people against their Near Eastern background; monarchy, prophecy and priesthood; the making of Biblical literature; the Jews in the Persian, Greek and Roman worlds; the Jews under Christianity and Islam. (W) 3 HR./WK.; 3 CR.

41900: Jewish History: Late Medieval and Modern

The Jews in European and Oriental countries: the rise of Jewries in Eastern Europe, the Ottoman Empire, and the Americas; the modernization of Judaism and the development of political and social ideologies; emancipation, anti-Semitism and the fate of European Jewry; the rise of the State of Israel. (W) 3 HR./WK.; 3 CR.

SPECIAL TOPICS IN HISTORY

These courses are intended for students who have completed at least two elective courses in history or other Social Science and Humanities and Arts disciplines. These course offerings, some of which are conducted as seminars or colloquia, vary from term to term, and students should consult the Department's published list to determine which courses are being offered in any semester.

31100-32000: Selected Topics in History

Special study in topics not covered in the usual department offerings. Topics vary from semester to semester, depending upon student and instructor interest. (W) USUALLY 3 HR./WK.; 3 CR.

ADVANCED RESEARCH IN HISTORY

30100-30300: Honors I-III

A program of individual reading and research under the guidance of faculty members specializing in various areas of historical study. Ordinarily the three-term sequence culminates in the writing of an honors thesis. The Departmental Honors Committee also conducts informal colloquia on problems of historical method and criticism, and on important books on history. Approval of Dean and the Departmental Honors Committee is required. Apply no later than December 10 in the Fall term and May 1 in the Spring term. (W) CREDIT FLEXIBLE BUT USUALLY 3 CR./SEM.

31000: Independent Study in History

Designed to meet the needs of students for work not covered in regular offerings. The student will pursue a reading program, with periodic conferences, under the direction of a member of the Department, and with the approval of the Department Chair; limited to juniors and seniors with an adequate background for the work to be pursued. (W) CREDIT FLEXIBLE, BUT WILL NOT EXCEED 4 CREDITS. CREDIT WILL BE DETERMINED BY THE INSTRUCTOR WITH THE APPROVAL OF THE CHAIR.

FACULTY

Harriet Alonso, Professor

B.S., New York Univ.; M.A., Sarah Lawrence; Ph.D., SUNY (Stony Brook)

Beth Baron, Professor

B.A., Dartmouth College; M.A., Univ. of London; Ph.D., Univ. of California (Los Angeles)

Susan K. Besse, Associate Professor

Certificat, Institut d'Etudes du Developpement, Geneva, Switzerland; B.A., Smith College; Ph.D., Yale Univ.

Barbara Brooks, Associate Professor

B.A., Yale Univ.; Ph.D., Princeton Univ.

Frank D. Grande, Associate Professor

B.A., The City College; M.A., Columbia Univ.; D.Phil, Oxford

Venus Green, Associate Professor

B.A., Hunter College; M.A., Columbia Univ., Ph.D.

Henry Huttenbach, Professor

B.A., Gonzaga Univ.; Ph.D., Univ. of Washington

David Jaffee, Professor

B.A., Harvard Univ., M.A., Ph.D.

David Johnson, Associate Professor

B.A., Univ. of Sussex, England, M.A., Univ. of London, Ph.D.

Ravi Kalia, Professor

B.A., Univ. of Delhi, M.A.; Ph.D., Univ. of California (Los Angeles), M.B.A.

Andreas Killen

B.A., Reed College (English); M.A., New York Univ., Ph.D.

Thomas H.C. Lee, Professor

B.A., National Taiwan Univ.; Ph.D., Yale Univ.

James I. Lewis, Lecturer

B.A., American Univ.; M.A., Washington Univ., Ph.D.

Barbara Naddeo, Assistant Professor

B.A., Univ. of Chicago; Ph.D. Princeton Univ.

Gerardo Renique, Associate Professor

B.S., Universidad Nacional Agraria (Peru); M.A., Columbia Univ., Ph.D.

Clifford Rosenberg, Assistant Professor

B.A., Carleton College; M.A., Princeton Univ., Ph.D.

Richard Skolnik, Professor

B.A., Dartmouth College; M.A., Yale Univ., Ph.D.

Darren Staloff, Associate Professor and Chair

B.A., The City College; M.A., Columbia Univ., Ph.D.

Judith Stein, Professor

B.A., Vassar College; Ph.D., Yale Univ.

Robert C. Twombly, Professor

B.A., Harvard Univ.; M.A., Univ. of Wisconsin, Ph.D.

J. F. Watts, Professor

B. S., SUNY (Oneonta); M.A., Univ. of Missouri, Ph.D.

PROFESSORS EMERITI

Bernard Bellush

Fred L. Israel

Lawrence Kaplan

Radmila Milentijevic

Dante A. Puzzo

George Schwab

Conrad M. Schirokauer

Herbert A. Strauss

Walter Struve

Arthur Tiedemann

Martin Waldman

Joel Weiner

Irwin Yellowitz

Oscar Zeichner

History and Philosophy of Science and Technology Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Frank D. Grande, Director • Program Office: NAC 5/137 • Tel: 212-650-7479

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

In a world dominated by scientific advancement and technological change, no person unfamiliar with the nature and role of science and technology can be regarded as having had a comprehensive education. The objective of this program is to provide courses for students who are interested in the basic nature of science and technology, and in better understanding the logical foundations and the social and cultural consequences of the development of these fields.

The program offers and coordinates courses for the following purposes:

- Interdepartmental specialization in the history and philosophy of science and technology, as a preparation for graduate study in these fields;
- Sub-specialization for engineering students in the context of their Humanities and Arts-Social Science electives (see School of Engineering section of this bulletin);
- Electives for pre-professional programs in medicine, law, teacher education;
- Electives or sub-specialization for students doing advanced work in a scientific discipline;
- Electives or sub-specialization for students of liberal arts and science who want to enhance their general education through a better understanding of the role of science and technology in the world.

REQUIREMENTS FOR SPECIALIZATION

Philosophy Majors

In addition to their major requirements, Philosophy majors specializing in History and Philosophy of Science and Technology must complete the following:

Required Courses

History and Philosophy of Science and Technology:

20100: Development and Analysis of Ideas in Classical Science	3
20200: Development and Analysis of Ideas in Contemporary Science	3

History:

38300: History of Science I	3
38400: History of Science II	3

Philosophy:

20200: Introduction to Logic	3
32200: Philosophy of Science	3

Elective Courses

Choose courses from those listed below:

Anthropology:

20500-20510: Historical Archaeology (8 cr.)	
33100: History of Anthropological Theory (3 cr.)	

Classics:

34100: Science in Antiquity (3 cr.)	
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History:

35200: Intellectual History of 19th Century Europe (3 cr.)	
35300: Intellectual History of 20th Century Europe (3 cr.)	
38600: The American Health Care System (3 cr.)	
38700: Technology and Society, 1450-1870 (3 cr.)	

38800: Technology and Society, 1870-Present (3 cr.)	
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Mathematics:

34200: History of Mathematics (3 cr.)	
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Philosophy:

30500-30600: History of Philosophy I and II (6 cr.)	
32300: Philosophy of Mind (3 cr.)	
33000: Philosophy of Mathematics (3 cr.)	
33100: Philosophy of Biology (3 cr.)	
33300: Philosophy of Technology (3 cr.)	
33400: Philosophy of Artificial Intelligence (3 cr.)	
33600: Philosophy of Space and Time (3 cr.)	

Psychology:

33100: Evolution of Modern Psychology (3 cr.)	
34100: Contemporary Psychological Viewpoints (3 cr.)	

Sociology:

23700: Foundation of Sociological Theory (3 cr.)	
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Total Credits

44

All Other Majors

All other majors interested in a sub-specialization in History and Philosophy of Science and Technology should take:

Required Courses

History and Philosophy of Science and Technology:

One of the following two:

20100: Development and Analysis of Ideas in Classical Science	3
20200: Development and Analysis of Ideas in Contemporary Science	3

History:

One of the following two:

38300: History of Science I 3

38400: History of Science II 3

Philosophy:

32200: Philosophy of Science 3

Elective Courses 12

Courses normally totaling 12 credits from the list of electives above.

ADVISEMENT

Students planning to specialize in History and Philosophy of Science and Technology should, in their upper sophomore term, seek the advice of a specialization advisor in the program who will help them plan their course of study in the junior and senior years.

Specialization Advisor

Professor Frank D. Grande (History)

NAC 5/137; 212-650-7479

COURSE DESCRIPTIONS

20100: Development and Analysis of Ideas in Classical Science

Major concepts in physics, chemistry and biology. The emergence of the theories and the methodology governing their acceptance or rejection. Theories will be considered in historical context from the seventeenth century to the beginning of the twentieth century. Prereq.: an introductory course in one of the natural sciences. (W) 3 HR./WK.; 3 CR.

20200: Development and Analysis of Ideas in Contemporary Science

Major concepts in contemporary science, conditions for their introduction, and grounds of their acceptance. The relation of these to a new conception of nature and principles of methodology and explanation, e.g. causality and determinism. Prereq.: an introductory course in one of the natural sciences. (W) 3 HR./WK.; 3 CR.

31000: Independent Study and Research

A planned program of reading to meet special needs of individual students, under guidance of a member of the Program. Permission of the instructor and Director of the Program required before registration. VARIABLE CR.

International Studies Program

(DIVISION OF SOCIAL SCIENCE)

Professor Marina Wikramanayake Fernando, Director • Program Office: NAC 6/141 • Tel: 212-650-5842

GENERAL INFORMATION

The City College offers the following undergraduate degree in International Studies:

B.A.

PROGRAMS AND OBJECTIVES

The International Studies program is an interdisciplinary program in which students may specialize in one of the following areas:

- International Relations
- Education
- Global Environment
- Comparative Public Policy
- Comparative Civilizations
- Culture and Communication
- Comparative Political Economy
- Development
- Area Studies: Africa, Asia, Europe, Latin America and the Caribbean, Middle East and Eastern Europe

For non-majors, the International Studies Program offers a minor in International Studies. Students may also select International Studies as one major in a double major.

International Studies is an appropriate major for those seeking an internationally oriented career in either the public or private sector. A B.A. in International Studies can qualify students for entry-level positions in branches of the U.S. government, although an appropriate master's degree is recommended. International agencies in the private sector recruit students who have acquired both a broad liberal arts education and specialized skills during their undergradu-

ate years. As the globalization of the market has accelerated, the demand for such graduates has also increased. Employment possibilities also exist in private and international organizations concerned with social issues such as the protection of human rights or the development of third world countries, as well as with institutions involved in research and philanthropy.

Opportunities for study abroad are available to students in the program.

Internships

As upperclassmen, students are eligible to participate in internships in diplomatic missions to the United Nations, international businesses, research institutes, non-governmental organizations and other arenas of international issues. Interns normally spend up to ten hours per week in their on-the-job activities, meet with fellow interns at the College, and regularly consult a faculty supervisor. Interns learn about the policies of an international agency, as well as to contribute to its operations.

Secondary School Teaching

Students wishing to teach Global Studies in secondary schools must be certified in the area of Social Studies. General social science distributional requirements for such certification are listed under the Secondary Educational Department listings in this Bulletin. Students should consult with their departmental advisor about which courses must be included within the International Studies major.

REQUIREMENTS FOR MAJORS

Required Courses

International Relations:
20100: International Studies: A Global Perspective 3

English:
21002: Writing for the Social Sciences 3
One of the following three courses: 3

International Studies:
20200: Comparative Political Economy (3 cr.)

31103: Social Foundations of International Studies (3 cr.)

Political Science:
25200: Approaches to International Relations (3 cr.)

One of the following quantitative skills courses: 4

Economics:
29000: Principles of Statistics (4 cr.)

Psychology:
21500: Applied Statistics (4 cr.)

Sociology:
23200: Methods and Techniques of Sociological Research (4 cr.)

25100: Internship in International Studies 3

32100: Senior Seminar in International Studies 3

32200: Senior Essay in International Studies 3

Elective Courses

Advanced electives: 14-15
[Students choose a concentration from the list of nine in the introductory text above and then select five courses from at least three different departments within that concentration.]

Advanced language courses 6

Total Credits 42-43

ADDITIONAL REQUIREMENTS

All International Studies majors must complete the following courses:
 New Student Seminar, unless exempt (0 cr.)
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

All CCNY students must complete either four years of foreign language in high school or a fourth semester-level course at City College (except for students in the School of Engineering). Majors in International Studies are required to complete three years of college level study or the equivalent in a foreign language. Alternatively students may substitute a year of overseas study for the third year of college-level foreign language study.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

College Core Curriculum

Requirement: Students planning to major in International Studies are strongly advised to complete as much of the college core curriculum requirement as possible before taking courses beyond International Studies 20100.

Overseas Study: Students (with prior approval of the Program Director) may earn up to fifteen cred-

its toward their major through overseas study and may also be exempted from the requirement of a third year of foreign language.

REQUIREMENTS FOR THE MINOR

Required Courses

International Studies:
 20100: International Studies: A Global Perspective 3
One of the following three courses: 3
 Political Science:
 20200: Comparative Political Economy (3 cr.)
 25200: Approaches to International Relations (3 cr.)
 International Studies:
 30500: Social Foundations of International Studies (3 cr.)

Elective Courses

Five elective courses in one concentration 15
 [Students choose a concentration from the list of nine in the introductory text above and then select five courses from at least three different departments within that concentration. See lists below.]

Total Credits for the Minor 21

Additional Requirements

Students must obtain an average grade of B or better in courses for which credit is given to obtain a minor in International Studies.

Foreign Language: Students must demonstrate intermediate competency in a foreign language.

ELECTIVE COURSES

All majors are required to choose 15 credits in advanced courses organized around a particular international or global subject or area of the world. These 15-credit tracks must consist of courses in at least three different disciplines within that concentration. Some possibilities for the concentration are listed below. [Please note that some of these courses may not be available in a given year.]

International Relations

Asian Studies

21000: Sino-American Relations Since 1784
 11300: Contemporary Asia

Black Studies

12800: The United Nations and the New Nations
 12300: African Politics

Economics

23000: International Trade Theory
 23200: International Environment of Business
 25100: Contemporary International Economic Problems

History

34100: Africa and the Modern World
 32008: Vietnam and Cold War
 31700: Japanese Empire
 37100: History of American Foreign Policy
 41300: Nationalism in the Modern World
 41400: Modern Imperialism

Latin American and Caribbean Studies

23600: Latin American Political Systems
 28200: Contemporary Latin America

Political Science

22300: American Foreign Policy
 25300: International Law
 25400: International Organization
 25600: Contemporary International Conflict
 25700: International Relations in Selected Areas

Global Environment

Anthropology

22800: Anthropology of Urban Areas

Architecture

38700: Tropical Architecture

Biology

32800: Environmental Crisis

Economics

25100: International Economic Problems

History

38700: Technology and Society 1870-1939
 38800: Technology and Society Since 1940

Sociology

25500: Population and Human Ecology

Urban Legal Studies

31600: Environmental Law and Policy

Comparative Civilizations/Culture and Communication**Anthropology**

22500: Social Organization

22900: Culture Change and Modernization

23000: Political Mobilization and Change

23100: Conformity and Conflict

23200: World View, Religion and Mythology

23400: Comparative Kinship Systems

23500: Comparative Music Systems

25100: Peasant Societies

25600: Women in Cross-Cultural Perspective

26000: Linguistic Anthropology

Asian Studies

10213: Asian People and Cultures

25100: Traditional Chinese Civilization

31500: Asian Art

Black Studies

14900: Religion and Survival

Comparative Literature

35000: Introduction to Comparative Literature

English

38100: Modern Literature

39200: Literature and Other Disciplines

History

25400: Traditional Civilization of Japan

31303: Modern Mexico

31311: Nations and Nationalism in Latin America

31601: Ethno-Politics and Ethno-Nationalism

35700: Social History of Modern Europe

Jewish Studies

10411: Psychology of Religion

Latin American and Latino Studies

12300: Dominican Heritage

22600: Literature of the Spanish Antilles

29200: Healthcare: Hispanic Experience

31500: Hispanic Women

Music

10200: Introduction to World Folk Music

Philosophy

24600: Philosophy of Language

26000: Ethics

26100: Social and Political Philosophy

26700: Ethics for Policy Decisions

Political Science

27500: Political Theory 1848 to the Present

Sociology

23700: Foundations of Social Theory

23800: Contemporary Social Theory

24000: Personality and Social Structure

25000: Theory of Mass Culture and Mass Communication

25300: Ethnic Minority Groups

25700: Studies in Collective Behavior

26000: Theories of Social Change

26200: Political Sociology

26300: Contemporary Social Issues

26700: Social Change in Developing Countries

26800: Social Forces and Mass Movements

27200: Religion and Religious Groups

31606: Immigration

Comparative Political Economy**Anthropology**

22900: Cultural Change and Modernization

23100: Conformity and Conflict

25100: Peasant Society

Asian Studies

20500: Contemporary China

31400: Political Systems in Asia

Economics

23000: International Trade Theory

24000: Economic Development

24600: Comparative Economic Systems

25100: Contemporary International Economic Problems

28200: Comparative Labor Movements

History

38700: Technology and Society 1870 to 1939

38800: Technology and Society 1939 to Present

31404: Twentieth Century Britain

41100: Comparative History of Revolutions

Philosophy

25600: Philosophy of Technology and Society

Political Science

23500: Development and Underdevelopment

23900: Developing Political Systems in Africa

27600: Marxism

Sociology

26000: Theories of Social Changes

26700: Social Change in Developing Nations

26800: Social Forces and Mass Movements

31205: Politics of Africa

Area Studies

Choose one area of the world and then choose five courses from at least three disciplines within that area. [Additional courses may be offered from time to time.]

Africa**Anthropology**

24000: Peoples of Africa

34000: Seminar on South Africa Art

28300: Art of Black Africa

Black Studies

12300: African Politics

12400: Nation Building and Development in Africa

History

31302: African Labor History

31301: Power and Consciousness in South Africa

34100: Africa and the Modern World

Political Science

24000: Politics in Southern Africa

25700: International Relations: Africa

Sociology

31205: Politics of Africa

Asia**Art**

28400: Oriental Art I

28500: Oriental Art II

Asian Studies

11300: Contemporary Asia

20100: Introduction to East Asian Culture and Science

20200: Introduction to Chinese Studies
 20500: Contemporary China
 20900: Chinese Communism and its World Wide Impact
 30500: Contemporary Asian Problems
 33200: Modern Chinese Literature (in translation)

Economics

24500: Asian Economic Development

English

38000: Oriental Literature

History

25300: Modern China
 25500: Modern Japan
 26300: Traditional India
 31910: Religion and Ethnic Conflict in India
 31912: South East Asia: Colonialism to the Present

Political Science

23700: Political Systems of Asia
 25700: International Relations: Asia

Europe

Art

27700: Art of the 19th Century
 27800: Art of the 20th Century

Economics

24300: European Economic Development

English

35900: 20th Century English Literature

History

21500: The Age of European Liberalism 1815-1900
 21600: 20th Century Europe
 21800: Social History of Modern France
 22100: History of England since 1815
 22200: Italy since 1815
 23300: Germany from 18th Century to the Present

Music

34100: Classical and Romantic Era
 34200: Romanticism to the Present

Political Science

23100: British and French Political Systems
 25700: International Relations: Europe

Romance Languages

French:
 42100: French Poetry
 42500: French Theatre
 42700: French Novel
 45100: French Civilization
 Italian:
 43200: 20th Century Italian Literature
 45000: Italian Culture and Civilization
 Portuguese:
 35100: Luso-Brazilian Literature

Spanish:

22400: Modern Readings (Spanish)
 43200: Literature of the 20th Century (Spanish)
 45100: Spanish Civilization

Latin America and the Caribbean

Anthropology

24200: Peoples of the Caribbean
 24300: Latin American Peoples
 25600: Women in Cross Cultural Perspective

Art

28100: Art of Meso-America, The Andes and the Caribbean

Black Studies

10100: Caribbean and Brazilian Religious Belief
 16300: Race and Politics in the Caribbean
 16600: Caribbean Immigration
 16900: Creole Languages in the Caribbean

History

28200: Modern and Contemporary Latin America: 1825 to Present
 28500: Latin America: The Emergence of Modern Brazil
 28600: Latin America: A Comparative Study of 20th Century Revolutionary Movements

Latin American and Latino Studies

12200: Puerto Rican Heritage: 1898-Present
 12300: Dominican Heritage

Music

27402: Latin American and Caribbean Folk Music

Political Science

23600: Latin American Political Systems
 24500: Caribbean Politics
 25700: International Relations: Latin America

Romance Languages - Portuguese

35100: Luso-Brazilian Literature
 44406: Spanish American Novel

Middle East

Anthropology

24600: Peoples of the Middle East

History

20100: Ancient Near East and Greece
 22800: Jewish History: Late Medieval and Modern
 26200: Middle East Under Islam
 31903: Modern Middle East

Jewish Studies

21100: Contemporary Israeli Society
 31100: Peoples of the Middle East

Political Science

25600: Contemporary International Conflict
 25700: International Relations of the Middle East

Sociology

26200: Political Sociology
 31200: Sociology of the Middle East

Eastern Europe

Economics

24700: Socialist Economics

History

22600: History of Russia Since 1855
 31512: Cold War and Aftermath
 31601: Ethno-Politics and Ethno-Nationalism
 41100: Comparative Historical Revolutions

Political Science

25900: International Relations: Communist Systems
 27600: Marxism

ADVISEMENT

Program Director

Professor Marina Fernando

PROGRAM RESOURCES

All IS majors receive individual advising from the Program Director each semester prior to registration and as opportunities develop for participation in Study Abroad, national seminars, fellowships and scholarships.

International Studies Majors are eligible for fellowships administered by the Program to support Study Abroad.

The Rosenberg/Humphrey Program, which offers specific courses in public policy, provides financial support and internship opportunities in New York and Washington, D.C. to deserving students, including IS majors.

The Model United Nations Program is popular among IS majors who constitute the majority of its participants; students also participate in other Model United Nations simulations.

The Students Association of International Studies (SAIS), run by students in the Program (but open to non-majors as well), organizes guest lectures, international crisis simulations, cultural fairs, publishes an electronic newsletter, and offers opportunities for leadership among students.

When time permits, IS majors are provided training in cross-cultural mediation; this is a valuable skill which prepares them for the challenges they will encounter in their careers.

IS majors are assigned mail boxes in NAC 6/109 and may use it as a mailing address. Room 6/109 is also a lounge for IS majors where they may meet or leave messages for their friends or study.

AWARDS, MEDALS AND PRIZES

The Ward Medal for Excellence and Distinguished Service

The Nizar Ahmed Prize for Excellence in International Studies

The Thomas Karis Prize for Research in International Studies

The June Nash Prize for Excellence in Cultural Studies

COURSE DESCRIPTIONS

INTRODUCTORY SURVEY COURSE

20100: International Studies: A Global Perspective

Global problems, including the danger of war, imbalances in the international political economy, and the importance of Africa, Asia, and Latin America are examined. Competing world views are evaluated in light of key concepts, e.g., state power, race, ethnicity, class, imperialism and revolution, and developed through case studies. The future of world order as well as alternative strategies for global transformation are considered. Prereq.: World Civilizations and two courses in social science. Normally taken in the sophomore year. (W) 3 HRS./WK.; 3 CR.

INTERMEDIATE COURSES

20200: Comparative Political Economy

An examination of the relationship between political and economic systems in selected industrialized and developing countries. Introduction to theories of political economy as they apply at the domestic and international levels. Preparation for advanced courses dealing with applications of such theories in particular problem or area settings. Prereq.: International Studies 20100 or Political Science 12200. (W) 3 HR./WK.; 3 CR.

30500: Social Foundations of International Studies

The focus of this course is the cultural interaction among diverse groups in the world. Intercultural relations are examined through key themes such as religion and value systems, racial and ethnic relations, cultural identity, women's experience in different cultural settings, intercultural communication and forms of contemporary artistic expression. Students seeking a concentration in Culture and Communication, Comparative Civilizations, Area Studies and Education may substitute this course for the core course 20200: Comparative Political Economy. Prereq.: International Studies 20100. (W) 3 HRS./WK.; 3 CR.

ADVANCED COURSES

25100-25200: Internship in International Studies

Service as an intern engaged in research and other independent work in governmental or non-governmental organizations

concerned with international affairs. Students will write an analytical term paper on a topic related to their internship. A second semester internship may be taken as an elective. Students may also work as interns during the summer for 3 or 6 credits with faculty supervision. Prereq.: approval of the instructor. HTBA; 3 CR.

32100: Senior Seminar in International Studies

This seminar has two purposes. First, it is the capstone of the International Studies major. It brings to bear on one or more major international or global problems the approaches and insights of the several disciplines that comprise the major. Second, students will also begin the preparation of their senior thesis under the supervision of the instructor and, in some cases, a faculty mentor with particular expertise in the student's area of inquiry. Prereq.: senior standing, completion of English 21002 and quantitative skills courses; approval of the instructor and the Program Director. (W) 3 HR./WK.; 3 CR.

32200: Senior Essay in International Studies

An essay dealing with an international or global problem or issue that demonstrates breadth of background, skill in research and critical evaluation of relevant literature. Normally the work on the essay will extend over two semesters, beginning in the fall semester of the senior year with International Studies 32100. Prereq.: senior standing, completion of writing course and English proficiency requirements, and approval of the Program Director. The senior essay requirement may also be satisfied by completion of the three-semester, nine-credit Research Honors Program. (W) INDEPENDENT WORK; 3 CR.

FACULTY

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the major.

Italian Studies Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Frank D. Grande, Director • Program Office: NAC 5/137 • Tel: 212-650-7479

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

This non-degree program offers courses intended to provide an introduction to the cross-cultural legacy of Italian-Americans. For Italian language courses, see the Department of Foreign Languages and Literatures.

ADVISEMENT

Professor Frank D. Grande

History, NAC 5/137; 212-650-7479

Professor Vittorio Rotella

Foreign Languages and Literatures,
NAC 5/223; 212-650-7937

COURSE DESCRIPTIONS

20100: Italian-American Heritage

The European legacy of the Italians and its transformation in the New World. A comparison of family life, social customs and manners, religion, working habits and skills, and cultural and political attitudes and thought. Emphasis will be on the period since the 1880s. 3 HR./WK.; 3 CR.

31000: Independent Study and Research

A planned program to meet special needs of individual students, under guidance of a member of the Program. Permission of the instructor and Director of the Program required before registration.
VARIABLE CREDIT

36104: Italian-American Novelists

The contribution to American literature by Italian-American authors, with special attention to those using recognizably Italian-American themes and characters. 3 HR./WK.; 3 CR.

Jewish Studies Program

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Roy Mittelman, Director • Program Office: NAC 5/223 • Tel: 212-650-7522

GENERAL INFORMATION

The City College offers the following undergraduate degree in Area Studies:

B.A.

PROGRAMS AND OBJECTIVES

Jewish Studies offers a wide range of courses that examine the literature of the Jews, their history, philosophy, mysticism, sociology, and nationalism.

The Program in Jewish Studies is developing a series of courses to explore the links of American Jews to other ethnic minorities and speak to the vitality of Jewish culture from antiquity to the present. In cooperation with other departments in Humanities and the Arts, Jewish Studies courses, seminars and lectures will speak to the role of minority cultures in shaping and reacting to national identity. A major concern of Jewish Studies is the study of ethics in society, art and literature. In particular, Jewish Studies will address the philosophical, political and religious questions posed by racism and genocide in present and past centuries.

For the past few years, Jewish Studies has offered a number of new classes in the 30000 series, cross listing them with the Departments of English, History and Comparative Literature. These courses are not reflected in the present catalogue, but they have included such offerings as American Jewish Writers, the Bible, the Bible and its Stories, Biblical Myth in the Modern Novel, the History and Psychology of Religion, Kabbalah, the Arab-Israeli Conflict, the Modern Middle East, Confessional Urban

Literature, Ethnic and Religious Minorities, Theory and Practice of Genocide in the Twentieth Century, and History of the Afterlife.

The Program coordinates a study abroad program for undergraduates and graduates at Tel Aviv University and Ben Gurion University. Financial assistance is available to qualified students.

REQUIREMENTS FOR MAJORS

Students are urged to acquire an elementary knowledge of Hebrew. It is not a requirement of the program but study of the language makes it possible to do independent scholarly research. Although there are presently no course offerings in the study of the Yiddish language, tutorials can be arranged for those interested.

Students majoring in Jewish Studies must complete the following:

Required Course

Jewish Studies:
10000: Introduction to Jewish Life and Religion 3

Elective Courses

All courses to be chosen in consultation with the program advisor 21

Total Credits 24

Recent faculty in Jewish Studies have included Elie Wiesel, Rabbi Irving Greenberg, H. Z. Szubin, Rabbi Meyer Fund, and Paul Ritterband. Distinguished Jewish writers like Harold Brodkey, Cynthia Ozick, Grace Paley, Jakov Lind, Joseph Heller and Barbara Solomon have also taught in Humanities and the Arts Division on the City College campus.

ADDITIONAL REQUIREMENTS

All majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)

English 11000: Freshman Composition (3 cr.)

English 21000 or equivalent: Second Level Writing Course (3 cr.)

Core Curriculum for the intended degree

Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

REQUIREMENTS FOR MINORS

Students who choose to minor in Jewish Studies must complete the following:

Required Courses

Jewish Studies
10000: Introduction to Jewish Life
and Religion 3

Elective Courses 12

Students must select four electives
that the Director approves as Jewish
Studies courses.

Total Credits 15

ADVISEMENT

Students wishing to major in Jewish
Studies should consult Professor Roy
Mittelman; NAC 5/223E; 212-650-7522.

COURSE DESCRIPTIONS**10000: Introduction to Jewish Life and Religion**

The traditional life and religion of the Jews
and the ways that they have changed dur-
ing the modern period. The ideals of Jewish
religion; the nature of man, creation, revela-
tion and redemption. The pattern of life
in the premodern and modern worlds in
relation to changes in the values held by
Jews. 3 HR./WK.; 3 CR.

11100: Jewish History: An Introduction

The Exodus, Sinai Covenants, and the
Biblical world; exile and restoration; the
destruction of the Temple; the rabbinical
social order; the medieval synthesis and
the medieval ghetto; the impact of emanci-
pation and modernization; the Holocaust
and the nation of Israel. 3 HR./WK.; 3 CR.

15500: Hasidism: Selected Texts

The origins of Hasidism; its masters, known
and unknown; their lives, their thoughts,
their mysteries. 3 HR./WK.; 3 CR.

21100: Contemporary Israel

Society and culture in the State of Israel.
Contemporary social accomplishments and
problems; the conflict of national liberation
and normalization; the integration of eth-
nic Jewish groups; creation of a mixed
economy; the coexistence of religion and
secularity; the relation of the State of
Israel to Jews elsewhere. 3 HR./WK.; 3 CR.

24100: The Jew in Literature

The Jew as a symbolic figure and real per-
son in the imaginative writings of the
West. Particular attention will be given to
contemporary American Jewish writers.
Prereq.: World Humanities 10100. (W)
3 HR./WK.; 3 CR.

25100: Studies in Judaism and Christianity

The origins of Christianity and its separa-
tion from Judaism; comparative beliefs
and practices; the Messiah in Judaism and
Christianity; theologies and strategies of
mutual relationships; medieval exclusiv-
ness and tolerance; modern attempts at
reformulating relationships; Christian
teachings; anti-Semitism and the
Holocaust; ecumenism and dialogue.
3 HR./WK.; 3 CR.

27100: Human Development in Classical Jewish Sources

Emergence of the physical-societal matrix
of humanity; life, birth control and abor-
tion, interpersonal communication, sexual-
ity, parent-child relationships, friendships,
rites of passage, old age, death. 3 HR./
WK.; 3 CR.

27300: The Jewish Woman

The role of Jewish women in traditional
and contemporary societies. The position
of women within the Halacha; marriage
and divorce laws; laws of family purity;
wifeness and motherhood and the life
cycle. The role of women in synagogue rit-
ual, Jewish history and literature. 3 HR./
WK.; 3 CR.

28100: The Holocaust

Nazism's rise to power; the process of
destruction; human and psychological
aspects of the destruction process; Jewish
life under the Nazis; the problem of resis-
tance; Jewish and world response; moral,
literary and religious reflections of the
Holocaust. 3 HR./WK.; 3 CR.

32100: The Modernization of Judaism

The shift from traditional Judaism; the rise
of modern Orthodox, Conservative and
Reform Judaism; the triumph of modern-
ization in values, theology and practice;
Reconstructionism, the impact of the
Twentieth Century, and the critique of
modernism; postmodern religious trends.
(W) 3 HR./WK.; 3 CR.

30100-30300: Honors I-III

Approval of Dean and program required.
Apply not later than December 10 in the
Fall term or May 1 in the Spring term. (W)
VARIABLE CR., USUALLY 3 CR./SEM.

31000: Independent Study

Research on topics not covered by regular
Departmental offerings, by individual
arrangement with the instructor and with
program permission. 1-4 CR.

31100-32000: Selected Topics in Jewish Studies

From semester to semester the Department
offers elective courses not listed in the

bulletin. Topics to be covered and names
of instructors will be announced during
the preceding semester. (W)

Elective Courses in Other Departments

The following courses are regularly
offered through various departments
throughout the College that are
approved Jewish Studies elective
courses. For a full description, see the
appropriate Departmental listing in
this Bulletin or on the web at
www.cuny.cuny.edu.

English

38030: The Bible as Literature I
38040: The Bible as Literature II

Foreign Languages and Literature

12100: Elementary Hebrew I
12200: Elementary Hebrew II

History

34800: The Theory and Practice of
Genocide in the 20th Century
34900: The Third Reich
35000: Conservatism and the New
Right in Europe Since the French
Revolution
37700: Comparative Slavery
41900: Jewish History: Late, Medieval
and Modern

Philosophy

32700: Philosophy of Religion

Political Science

35700: International Relations in the
Middle East
37700: Judeo-Christian Political
Thought

FACULTY

The faculty of the program includes
those professors who teach the pro-
gram's courses and those whose
departmental courses may be credited
to the major.

PROFESSOR EMERITUS

Nathan Suskind



Labor Studies Program

(DIVISION OF SOCIAL SCIENCE)

Program Office: NAC 5/144B • Tel: 212-650-5403

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

The Labor Studies Program focuses on the nature and history of the American work force, the relationship between labor and the total society, the impact of changes in industry and technology, and the history and current activities of the American labor movement.

A specialization in labor studies contributes significantly to the preparation of students who wish to pursue graduate study in the fields of industrial and labor relations. It also educates all students about workers and the labor movement within the American context. These considerations led the International Ladies' Garment Workers' Union to establish the Sol C. Chaikin Fund to offer financial aid to selected students in the labor studies specialization.

REQUIREMENTS FOR SPECIALIZATION

Students taking a specialization in Labor Studies should complete credits in the following areas:

Industry, Technology, and Society	6
The Labor Movement and the Worker	12
Advanced Studies	0-6
Total Credits	18-24

Students will choose courses in each area from those listed below. Other appropriate courses and selected topics offerings in each department may also be chosen with approval of the Policy Committee.

Industry, Technology, and Society

Two courses (3 cr. each) from the following:

Anthropology

25400: American Cultural Patterns

Asian Studies

21400: Chinese Experience in America

Black Studies

13500: Economic Development of the Black Community

Economics

24400: American Economic Development
 24600: Comparative Economic Systems
 25000: Contemporary Domestic Economic Problems
 25400: Urban Economics

History

37200: Progressivism and Radicalism in Twentieth Century America
 38600: Technology and Society, 1450-1870
 38700: Technology and Society, 1870-1939
 38800: Technology and Society, 1939-present
 41200: The Industrial Revolution

Latin American and Hispanic Caribbean Studies

27200: Social Welfare in the Puerto Rican Community II

Philosophy

25600: Philosophy of Technology and Society Seminar

Political Science

21600: Political Parties and Interest Groups
 22600: Ethnic and Racial Politics in the U.S.

Psychology

26900: Behavior in Organizations
 Sociology
 25200: Social Class
 26100: Sociology of Industry
 26800: Studies in Social Forces and Mass Movements

The Labor Movement and the Worker

Four courses (3 cr. each) from the following:

Economics

28000: Economics of Labor
 28100: Trade Unionism in the United States
 28200: Comparative Labor Movements
 28500: Economics of Economic and Social Security

History

36200: Immigration and Ethnicity in American Life
 36400: The History of American Labor
 41700: The Old and New Working Classes in Europe and the United States

Advanced Studies

Students involved in the internship program and those holding research grants (see below) receive up to six credits through their participation in 39800-39900: Seminar in Labor Studies.

ADVISEMENT

All students who wish to take labor studies as a specialization must meet with Professor Galatin, (NAC 5/144B) 650-5403. Without such consultation, students are not eligible for the grants described below.

GRANTS TO STUDENTS

To the extent possible, able and committed students receive firsthand experience with labor unions through paid internships or prepare a major research paper with the aid of a research grant.

Research Awards

The Chaikin Fund makes available research grants to students in the labor studies specialization. The purpose of the awards is to enhance the interest of students and to encourage serious and meritorious study of the subject. Awards are made on the basis of academic ability, commitment and interest in the field of labor studies.

The recipients prepare research essays. Each year one of the essays is selected for special recognition and the author receives the Sol C. Chaikin Prize in Labor Studies. Students receive academic credit for their research activities through the Seminar in Labor Studies (39800-39900).

Internships

The Chaikin Fund provides grants to support internships for students in the labor studies specialization. The major thrust is to teach the interns about the policies, structure and operations of a union. Interns receive academic credit through the Seminar in Labor Studies.

COURSE DESCRIPTIONS

39800-39900: Seminar in Labor Studies

Reading, discussion and research on an advanced level. Required for students holding research grants and internships under the labor studies specialization. Other students admitted with the approval of the policy committee of the labor studies specialization. 3 HR./WK.; 3 CR./SEM.

FACULTY

The faculty consists of the Director plus the current instructors of the courses listed above.

Latin American and Latino Studies Program

(DIVISION OF SOCIAL SCIENCE)

Professor Gabriel Haslip-Viera, Director • Program Office: NAC 6/108 • Tel: 212-650-7493/6763

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Area Studies:

B.A.

PROGRAMS AND OBJECTIVES

Students examine the culture, economics, politics, history, society and other crucial life experiences of the peoples of Latin America and their diaspora in the United States. Students also receive the necessary skills to obtain employment or enter graduate schools to pursue advanced degrees in anthropology, economics, history, political science, sociology, ethnic studies, international studies, law and international law, Latin American studies, social work, bilingual education, health and other disciplines.

To permit students to complement their education in other majors with a knowledge of Latin America and the Latino communities of the U.S., the program also offers a minor in Latin American and Latino Studies.

The following list of courses should be viewed as a helpful guide but not the only courses offered each semester that are relevant for Latin American and Latino Studies. Students majoring or minoring in LALS should consult with the Program Director and the Schedule of Classes each semester.

REQUIREMENTS FOR MAJORS

Students must complete the following:

Required Courses

10200: Latin American and Caribbean Civilizations 3

31000: Independent Study in Latin America and Latino Studies 4

Electives

At least eight additional courses chosen in consultation and with the approval of the program advisor 24

Total Credits 31

ADDITIONAL REQUIREMENTS

While students may choose to have a disciplinary concentration within LALS, no more than four courses in any particular discipline (e.g., Anthropology, History, etc.) may be credited toward that concentration.

All students must complete the following courses:

New Student Seminar unless exempt (0 cr.)

English 11000: Freshman Composition (3 cr.)

English 21000 or equivalent: Second Level Writing Course (3 cr.)

Core Curriculum for the intended degree

Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination: Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

All students must complete either four years of foreign language in high school or a fourth semester-level course at City College. Majors should demonstrate a proficiency in Spanish and/or Portuguese adequate for ordinary conversation and research. Students must take intermediate level language courses (through 22400) by their senior year.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

REQUIREMENTS FOR MINORS

Students wishing to complement their learning in other majors with a knowledge of Latin America and the Latino community in the U.S. may minor in LALS.

One introductory Latin American History/civilization/heritage course 3
Four electives 12

Total Credits for the Minor 15

ELECTIVES

Anthropology

21403: Peoples of the Caribbean (3 cr.)

24300: Peoples of Latin America (3 cr.)

Art

21043: Ancient Art of Mesoamerica, the Andes, and the Caribbean (3 cr.)

Black Studies

16100: Caribbean and Brazilian Heritage (3 cr.)

16300: Race and Politics in the Caribbean (3 cr.)

16600: Caribbean Emigration (3 cr.)

21200: Caribbean Area Studies (3 cr.)

21300: Brazilian and Afro-Latin American Area Studies (3 cr.)

English

36300: Latino Literature in the U.S.
(3 cr.)

History

28100: Colonial Latin America (3 cr.)
28200: Modern and Contemporary
Latin America (3 cr.)
38100: Modern Brazil (3 cr.)
38200: Latin America: A Comparative
Study of Twentieth Century
Revolutionary Movements (3 cr.)

**Latin American and Hispanic
Caribbean Studies**

10100: The Heritage of the Spanish
Antilles (3 cr.)
10200: Latin American and Hispanic
Caribbean Civilizations (3 cr.)
12200: Puerto Rican Heritage: 1898
to Present (3 cr.)
12300: Dominican Heritage (3 cr.)
12600: Hispanics in the United
States: Migration and Adjustment
(3 cr.) (W)
13100: The Hispanic Child in the
Urban Environment (3 cr.) (W)
13200: The Contemporary Hispanic
Family (3 cr.) (W)
22600: Antillean Literature (3 cr.)
23800: Dominican Republic: Trujillo to
Present (3 cr.)
27100: Social Welfare in the Hispanic
Community (3 cr.)
29100: Culture and Health: The
Hispanic and Other Minorities
(3 cr.) (W)
29200: Health Care Planning and the
Hispanic Experience (3 cr.) (W)

Music

27104: Latin Popular Music (3 cr.)
27402: Survey of Music from Latin
America (3 cr.)

Political Science

23600: Latin American Political
Systems (3 cr.)
24500: Caribbean Politics (3 cr.)
25704: International Relations in
Selected Areas: Latin America
(3 cr.)
35500: Environmental Politics (3 cr.)

Spanish and Portuguese

28300: Masterworks of Latin American
Literature (3 cr.)

31000: Independent Studies in
Spanish American Literature
(1-4 cr.)
35300: Studies in Spanish American
Literature (3 cr.)
43600: Spanish American Colonial
Literature (3 cr.)
43800: Spanish American Literature of
the 19th Century (3 cr.)
44100: The Literatures of Social
Protest in Spanish America (3 cr.)
44200: The Spanish American Essay
(3 cr.)
44400: Studies in 20th Century
Spanish American Literature (3 cr.)
44600: Literature of the Spanish
Caribbean (3 cr.)
45200: Topics in Spanish American
Civilization (3 cr.)
45400: Latino Culture and Literature
in the U.S.

COURSE DESCRIPTIONS**INTRODUCTORY
ELECTIVES****10100: The Heritage of the Spanish
Antilles**

The historical, cultural and ethnic forces that have shaped the character of the Hispanic people of the Caribbean. The variety of societies and cultures of the Hispanic Caribbean in their historical and contemporary setting up to and including the migration of Caribbean people to urban North America. 3 HR./WK.; 3 CR.

**10200: Latin American and Caribbean
Civilizations**

A survey of Latin America's economic, social, political, and cultural development from the Pre-Columbian era to the present. The course will focus on selected topics and themes including: colonization and resistance to colonization; the formation of social structures and labor systems; patterns of dependent development; reform, revolution, and counter-revolution. 3 HR./WK.; 3 CR.

**12200: Puerto Rican Heritage: 1898 to
Present**

A survey of the cultural history of Puerto Rico. Special attention will be given to cultural conflicts and assimilative influences, as well as the existing relations between Puerto Rico and the United States. 3 HR./WK.; 3 CR.

12300: Dominican Heritage

A survey of the cultural development of the Dominican Republic from pre-Columbian times to the present. Special consideration will be given to socio-economic and political developments and the relationship that exists between the Dominican Republic and the United States. 3 HR./WK.; 3 CR.

ADVANCED ELECTIVES**12600: Hispanics in the United States:
Migration and Adjustment**

The socioeconomic and political origins of migration and the impact that American society has had on mainland Hispanic communities in areas of housing, employment, education, family structure, social mobility, and community development. 3 HR./WK.; 3 CR.

**13100: The Hispanic Child in the
Urban Environment**

A survey of the sociological, psychological and educational needs of Hispanic children in the New York City public schools. Emphasis will be given to the study of language problems, family structure, race relations and community life. (W) 3 HR./WK.; 3 CR.

**13200: The Contemporary Hispanic
Family**

A study of change in Hispanic family structure from the early colonial period to the present day. Stress will be placed on moral values, religious beliefs, interpersonal relations, and family organization. 3 HR./WK.; 3 CR.

22600: Antillean Literature

Comparative study of literature in the Spanish Antilles. Special emphasis on contemporary works. Class conducted in Spanish. 3 HR./WK.; 3 CR.

**23800: Dominican Heritage: From
Trujillo to the Present**

An in-depth study of the sociocultural and historical realities of the Dominican Republic from 1930 to the present. The course will also cover the Dominican migration and the growth of the Dominican community in the United States. 3 HR./WK.; 3 CR.

**27100: Social Welfare in the Hispanic
Community**

A study of the social welfare system as it affects Hispanics and other minorities. Changing concepts of social welfare in the United States, Spain and Latin America from Juan Luis Vives to the present. (W) 3 HR./WK.; 3 CR.

29100: Culture and Health: Hispanics and Other Minorities

Different cultural values and beliefs will be examined as they relate to illness, treatment of the sick, readjustment, rehabilitation, health maintenance, and prevention. Emphasis on case studies of culture clash. Incorporating or rejecting cultural beliefs in planning health education and change. (W) 3 HR./WK.; 3 CR.

29200: Health Care Planning and the Hispanic Experience

The economic, social, political and ethical issues involved in planning health programs. Comparison of health care programs as they affect Hispanics and other minorities. (W) 3 HR./WK.; 3 CR.

30100-30400: Honors

Advanced independent work for outstanding majors in their upper junior and senior years. Honors will be granted to graduating seniors on the basis of research and a comprehensive written examination. Admission to the Honors course requires (a) a 3.2 average in courses taken in the Latin American and Hispanic Caribbean Studies Program since the freshman year and (b) approval of the Honors Supervisor. Application for admission must be made no later than December 10 in the Fall term and May 1 in the Spring term. VARIABLE CR.

31000: Independent Studies

Independent research under the supervision of LALS faculty. Open to students in their senior year only, or with permission of LALS advisor. HRS. TO BE ARRANGED; 1-4 CR.

31100-32000: Selected Topics

Advanced study in selected topics related to Latin American and Hispanic Caribbean Studies. Prereq.: to be established by the instructors. 3 HR./WK.; 3 CR.

FACULTY ADVISORY COMMITTEE

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the major.

PROFESSOR EMERITUS

Federico Aquino-Bermudez

Department of Mathematics

(DIVISION OF SCIENCE)

Professor Edward Grossman, Chair • Department Office: NAC 8/133 • Tel: 212-650-5346

GENERAL INFORMATION

The City College offers the following undergraduate and combined degrees in Mathematics:

- B.A.**
- B.S.**
- B.A./M.A. (Combined Degree)**

PROGRAMS AND OBJECTIVES

The Mathematics Department offers programs of study that enable students to prepare for graduate study in pure and applied mathematics, and careers in industry and education. Majors may choose to specialize in one of the following areas:

- Pure Mathematics
- Applied Mathematics
- Secondary School Education

Students enrolled in major programs in other departments can obtain a Minor in Mathematics by completing the requirements listed below.

HONORS

Students planning to attend graduate school in mathematics are urged to apply for admission to the department Honors Program, which may lead to a degree with honors. Candidates should see the departmental Honors Advisor no later than the beginning of their junior year to plan a program of study.

REQUIREMENTS FOR MAJORS

Pure Mathematics (B.A. or B.S.)

In addition to completing the calculus sequence (20100, 20200 and 20300),

students must complete a minimum of nine courses of mathematics including the following:

Required Courses

Mathematics:

30800: Bridge to Advanced Math	3
32300: Advanced Calculus I	4
32400: Advanced Calculus II	3
32500: Advanced Calculus III	3
34600: Elements of Linear Algebra	3

One of the following: 4

34700: Elements of Modern Algebra (4 cr.)	
44900: Introduction to Modern Algebra (4 cr.)	

Elective Courses

Students must choose three additional courses to complete the nine course minimum requirement from among the following: 9-12

Mathematics:

32800: Methods of Numerical Analysis (3 cr.)	
34500: Theory of Numbers (3 cr.)	
36000: Introduction to Modern Geometry (3 cr.)	
36500: Elements of Combinatorics (4 cr.)	
37500: Elements of Probability Theory (3 cr.)	
37600: Mathematical Statistics (4 cr.)	
39100: Methods of Differential Equations (3 cr.)	
43200: Theory of Functions of a Complex Variable (4 cr.)	
43400: Theory of Functions of a Real Variable (4 cr.)	
43500: Partial Differential Equations, Integral Equations, Boundary Value Problems (4 cr.)	
44300: Set Theory (4 cr.)	
44400: Mathematical Logic (4 cr.)	
46100: Differential Geometry (4 cr.)	
46300: Topology (4 cr.)	

47700: Probability Theory II (4 cr.)

47800: Mathematical Statistics II (4 cr.)

51100: Selected Topics in Pure Mathematics (4 cr.)

51200: Selected Topics in Classical Analysis (4 cr.)

51300: Selected Topics in Probability and Statistics (4 cr.)

Total Credits for Specialization

29-32

Additional Requirements

Students are also required to fulfill a minor concentration of two advanced courses with mathematical content from an allied discipline (e.g., Physical Sciences, Computer Science, Philosophy, Economics or Engineering) to be approved by the Assistant Chair.

Applied Mathematics (B.S.)

In addition to the Calculus sequence 20100, 20200, 20300, students must complete eight required courses plus one of the specialization options.

Required courses

Mathematics:

34600: Elements of Linear Algebra	3
36500: Elements of Combinatorics	4
36600: Introduction to Applied Mathematical Computation	2
37500: Elements of Probability Theory	3
37600: Mathematical Statistics	4
37700: Applied Statistics and Probability	2
39100: Methods of Differential Equations	3
46700: Mathematical Modeling	3

Option 1: Statistics

Mathematics:

47800: Mathematical Statistics II 4

Option 2: Financial Mathematics
Mathematics:

38100: Discrete Time Models in Financial Mathematics	3
38200: Continuous Time Models in Financial Mathematics	3

**Total credits for
Specialization** **28-30**

**Secondary School Education
(B.A.)**

In addition to completing the calculus sequence (20100, 20200 and 20300), students must complete the major requirements listed below. Pedagogical requirements for NYS certification are listed in the School of Education section of this Bulletin.

Required Courses

Mathematics:

30800: Bridge to Advanced Mathematics	3
32300: Advanced Calculus I	4
34500: Theory of Numbers	3
34600: Elements of Linear Algebra	3
36000: Introduction to Modern Geometry	3
37500: Elements of Probability Theory	3
<i>One of the following two:</i>	<i>4</i>
34700: Elements of Modern Algebra (4 cr.)	
44900: Introduction to Modern Algebra (4 cr.)	
<i>Two of the following:</i>	<i>6-8</i>
32400: Advanced Calculus II (3 cr.)	
32500: Advanced Calculus III (3 cr.)	
32800: Methods of Numerical Analysis (3 cr.)	
34200: History of Mathematics (3 cr.)	
36500: Elements of Combinatorics (4 cr.)	
37600: Mathematical Statistics (4 cr.)	
38100: Discrete Models of Financial Mathematics (3 cr.)	
38200: Continuous Time Models in Financial Mathematics (3 cr.)	

**Total credits for
Specialization** **29-31**

**ADDITIONAL
REQUIREMENTS**

All Mathematics majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)
English 11000: Freshman Composition (3 cr.)
English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College (B.A.) or two years of foreign language in high school or a second semester-level course at City College (B.S.)

Mathematics majors who plan to go to graduate school are advised to select a foreign language from among French, Russian, and German.

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

Grades: Mathematics majors must maintain at least a C average in all Mathematics courses above calculus. No advanced undergraduate course may be taken unless a C is obtained in all prerequisite courses (or permission is received from the Assistant Chair).

**FOUR YEAR B.A./M.A.
PROGRAM**

Students enrolled in the Honors Program may, with the permission from the Honors Office and the graduate advisor in the Department of Mathematics, participate in a special course of study culminating in the simultaneous awarding of Bachelor's and Master's degrees in Mathematics

in four years. Details for this special course of study are available from the Assistant Chair of Mathematics.

**REQUIREMENTS FOR
THE MINOR**

Students enrolled in major programs in other departments can also obtain a minor in Mathematics by completing the following requirements:

Required courses

I. A calculus sequence through Math 20300

II. A total of twelve credits at the City College in 30000-level courses (excluding 30500), which includes one of the following:

34600: Elements of Linear Algebra (3 cr.)

39200: Linear Algebra and Vector Analysis for Engineers (3 cr.)

Electives for Non-Majors

Students wishing to take courses beyond 20300 are advised to consult with the Assistant Chair on the selection of appropriate courses.

ADVISEMENT

Assistant Chair, Majors Advisor

Professor Thea Pignataro
NAC 8/133; 212-650-5175

Undergraduate Advisors

Professor Joseph Bak
NAC 8/133; 212-650-5105
Professor Vicki Chuckrow
NAC 8/133; 212-650-5105

Graduate Advisor

Professor Thea Pignataro
NAC 8/133; 212-650-5175

Honors Advisor

Professor Jacob E. Goodman
NAC 6/280; 212-650-5141

**Math Computer Laboratories
Supervisor and Placement Advisor**

Mr. Mark Turner
NAC 6/272; 212-650-5229

TUTORING

The Mathematics Help Desk (J418S) offers free tutoring in courses from the elementary level through calculus and differential equations.

EXEMPTION CREDIT

Students can earn exemption credit in any Mathematics course by taking an exemption examination arranged by the Assistant Chair's office. Exemption from the course is awarded for a grade of 70 or above; credit is granted for a grade of 80 or above. Students who have registered for a course or who have previously failed an exemption examination in a course may not take an exemption examination for that course. The Mathematics Department awards credit for the College Board Advanced Placement Examinations according to the following:

- AP Calculus (AB) score 4 or 5; credit for Math 20100 or 20500
- AP Calculus (BC) score 4 or 5; credit for Math 20100 and 20200 or 20500
- AP Calculus (BC) score 3; credit for Math 20100 or 20500
- AP Statistics; score of 3 or higher; credit for Math 17300

DEPARTMENTAL ACTIVITIES

The Mathematics Club is open to all mathematics majors. The club plans and organizes lectures, discussions and social functions.

The Mathematics Colloquium meets regularly for talks by invited guests as well as Department faculty.

Various seminars meet regularly and discuss selected topics in mathematics.

AWARDS AND SCHOLARSHIPS

The Mathematics Department awards several medals, prizes and scholarships to outstanding students.

The Belden Medal

To the student or students who complete the Advanced Calculus sequence with distinction.

The Israel E. Drabkin Memorial Award

To a promising mathematics student with broad cultural interests.

The Bennington P. Gill Memorial Award

To the most promising graduating senior committed to graduate study in Mathematics.

The Emil L. Post Memorial Award

To the graduating senior or seniors judged most promising in Mathematics.

The Dr. Barnett and Jean Hollander Rich Mathematics Scholarships

Awarded annually to talented and needy undergraduates who have demonstrated superior ability in mathematics and who are preparing for careers in mathematics or math related fields.

The Harry Schwartz Fellowship

To a Mathematics Major who has shown promise in Mathematics.

In addition to the medals and prizes listed above, the Mathematics Department annually awards prizes to the students turning in the best final examinations in calculus or related courses over the preceding two semesters.

COURSE DESCRIPTIONS

INTRODUCTORY COURSES

There are two calculus sequences: Math 20100, 20200, and 20300; and Math 20500 and 20900. Entry to the above sequences is determined by the placement examination or completion of the course prerequisites.

Math 20500 and 20900 may be taken by students who do not intend to study more advanced mathematics (e.g. Biology, Economics, and Architecture majors and students in the Program for Premedical Studies). Students who seek a B.S. degree should check the requirements of their major to determine which calculus sequence is appropriate.

Math 20300 is a prerequisite for all advanced courses. After Math 20500, students may take 20200 with the permission of the Assistant Chair. Without prior approval by the Assistant Chair no credit is allowed for an introductory course if a more advanced course has previously been completed.

15000: Mathematics for the Contemporary World

Bombarded by statistics, assailed by advertisers and advocates of all persuasions, the average person needs mathematics to make sense of the world. This course aims to give students the tools needed to critically examine the quantitative issues of our times. Students will learn the basics of logical reasoning, the use of graphs and algebra to create quantitative models, and the role of statistics and probability in analyzing data. We will apply these ideas to assess the quantitative claims raised in contemporary case studies commonly discussed in the media. 3 HR./WK.; 3 CR.

17300: Introduction to Probability and Statistics

Descriptive statistics and frequency histograms; measures of location and dispersion; elementary probability; permutations and combinations; multiplication rule and conditional probability; Bayes' Theorem; independent events; random variables, expected values; applications to binomial, hypergeometric, uniform and normal distributions; the Central Limit Theorem; testing statistical hypotheses; correlation; linear regression and least squares. Prereq.: placement by the Department. Credit will be given for only one of the following courses: Math 17300, Eco 29500, Psy 21500, Soc 23100. 4 HR./WK.; 4 CR.

18000: Quantitative Reasoning

Investigation of the basis for elementary operations in concrete situations, diagrams, and symbolic representation. Understanding of, and problem-solving in, the following areas: numerical operations, ratios and percents, linear and exponential growth in situations, formulas, and graphs; rate of change; mensurational geometry; units, dimension, and scaling. Prereq.: placement by the Department. 4 HR./WK.; 3 CR.

18500: Basic Ideas in Mathematics

Problem solving, sets, operations with sets, functions, numerical systems with different bases, topics in number theory, probability and geometry. Includes writing exercises and collaborative work. This course is for potential education majors only. Prereq.: a grade of C or higher in Math 18000 or placement by the department. 4 HR./WK.; 3 CR.

19000: College Algebra and Trigonometry

Introduction to functions, rational expressions and their applications, rational exponents, conic sections, Gaussian elimi-

nation and determinants, nonlinear systems of equations, introductions to trigonometric functions. Prereq.: placement at college entry or by subsequent examination. 4 HR./WK.; 2 CR.

19500: Precalculus

Intervals, inequalities, operations on functions, inverse functions, graphing polynomial and rational functions, binomial theorem, exponential and logarithmic functions, trigonometric functions and formulas. Prereq.: a grade of C or higher in Math 19000 or placement by the department. 4 HR./WK.; 3 CR.

20100: Calculus I

Limits, derivatives, rules of differentiation, trigonometric functions and their derivatives, Newton's Method, differentials, graph sketching, maximum and minimum problems, related rates, introduction to integration, areas. Prereq.: grade of C or higher in Math 19500 or placement by the Department. Credit will be given for only one of the following courses: Math 20100 (part of sequence 20100, 20200, 20300) or 20500. 4 HR. LECT./WK.; 3 CR.

20200: Calculus II

Volumes of solids of revolution; integration of trigonometric, exponential and logarithmic functions, analytical and numerical methods of integration, improper and infinite integrals, conic sections, polar coordinates; parametric representation of curves, vectors in the plane. Prereq.: grade of C or higher in Math 20100 or placement by the Department. After completion of Math 20900, only 3 credits will be given for Math 20200. (Part of sequence 20100, 20200, 20300.) 4 HR. LECT./WK.; 3 CR.

20300: Calculus III

Vectors, infinite series, Taylor's theorem, solid analytic geometry, partial derivatives, multiple integrals with applications. Interpretations and calculations using *Matlab* software. Prereq.: Grade of C or higher in Math 20200 or placement by the Department. 4 LECT., 1 LAB. HR./WK.; 4 CR.

20500: Elements of Calculus

Limits, derivatives, rules of differentiation, differentials, graph sketching, maximum and minimum problems, related rates, exponential and logarithmic functions, differential equations, anti-derivatives, area, volume, applications to economics. Prereq.: grade of C or higher in Math 19500 or placement by the Department. Credit will be given for only one of the following courses: Math 20100 or 20500. (Recommended for Architecture and Economics majors.) 4 HR./WK.; 4 CR.

20900: Elements of Calculus and Statistics

Introduction to differential equations including numerical methods; qualitative analysis of solutions; phase plane analysis for systems; biological applications; analysis of univariate and bivariate data; regression and correlation; random variables; the normal, Poisson and binomial distributions; statistical inference. A spreadsheet program such as *Excel* is used throughout the course. Prereq.: Math 20500 or placement by the Department. (Part of sequence 20500, 20900 for Biology majors.) 4 HR./WK.; 4 CR.

ADVANCED COURSES

30500: Mathematics: Language and Symbol

Intended as a third course in the science CORE sequence for non-science majors, this course is built around the use of a graphing calculator. First, assumptions and meaning of the symbolism in arithmetic and elementary algebra are investigated. This viewpoint is used to introduce—in an accessible way—ideas in selected topics from number theory, geometry, calculus, dynamical systems theory and statistics. Prereq.: Science 10300 and Science 10400. 3 HR./WK.; 3 CR.

30800: Bridge to Advanced Mathematics

This course explores the logical and foundational structures of mathematics, with an emphasis on understanding and writing proofs. Topics include set theory, logic, mathematical induction, relations and orders, functions, Cantor's theory of countability, and development of the real number system. 3 HR./WK.; 3 CR.

32300: Advanced Calculus I

Sequences, properties of continuous functions, derivatives and differentials, functions defined by series, integrability and integrals, convergence of function sequences. Prereq.: Math 30800 or departmental permission. 4 HR./WK.; 4 CR.

32400: Advanced Calculus II

Sequences, continuity, and completeness in metric spaces, contraction mappings and fixed point theorems, applications to differential equations; Fourier analysis, differentiation in n -space. Prereq.: Math 32300 and 34600. (Part of sequence 32300, 32400, 32500.) 3 HR./WK.; 3 CR.

32500: Advanced Calculus III

Integration in n -space, implicit and inverse function theorems, change of variables in multiple integrals, vector fields, line and surface integrals, theorems of

Green, Stokes, and Gauss. Prereq.: Math 32400 and 34600. (Part of sequence 32300, 32400, 32500.) 3 HR./WK.; 3 CR.

32800: Methods of Numerical Analysis

Solution of equations by iteration techniques; Lagrange and Newton interpolation, Neville's method, divided differences, cubic splines; numerical integration, Romberg integration; systems of linear equations and pivoting techniques; Runge-Kutta methods for initial value problems. Prereq.: Math 34600, or 39200, and knowledge of *Matlab* or other high level programming language. Pre- or Coreq.: Math 39100. 3 HR./WK.; 3 CR.

34200: History of Mathematics

Historical development of mathematical ideas and methods in geometry, theory of numbers, algebra, and analysis. Prereq.: Math 30800. (W) 3 HR./WK.; 3 CR.

34500: Theory of Numbers

Divisibility, primes, fundamental theorem of arithmetic, congruences, number theory from an algebraic viewpoint, quadratic reciprocity, number theoretic functions, diophantine equations. Prereq.: Math 30800 or departmental permission. 3 HR./WK.; 3 CR.

34600: Elements of Linear Algebra

Vector spaces, basis and dimension, matrices, linear transformations, determinants, solution of systems of linear equations, eigenvalues, and eigenvectors. Prereq.: Math 20300; coreq.: Math 20300 and departmental permission. (After completion of Math 39200 only 2 credits will be given for Math 34600.) 3 HR./WK.; 3 CR.

34700: Elements of Modern Algebra

Sets, mappings, rings, isomorphisms, integral domains, properties of integers, fields, rational numbers, complex numbers, polynomials, groups. Prereq.: Math 30800 and 34600. With departmental permission, partial credit may be given for Math 44900 after completion of Math 34700. Recommended for prospective teachers and others who want a basic course in abstract algebra. 4 HR./WK.; 4 CR.

36000: Introduction to Modern Geometry

Logical deficiencies in Euclidean geometry, Euclid's parallel postulate, introduction to non-Euclidean geometry, the logical consistency of the non-Euclidean geometries, Hilbert's Axioms. Prereq.: Math 30800. 3 HR./WK.; 3 CR.

36500: Elements of Combinatorics

The three problems of combinatorics (existence, counting, optimization), basic

counting rules, graph theory, generating functions, principles of inclusion and exclusion, pigeonhole principle, selected additional topics. Prereq.: Math 20300. 4 HR./WK.; 4 CR.

36600: Introduction to Applied Mathematical Computation

Calculus, linear algebra, elements of probability theory and combinatorics are examined through use of *Matlab*. Topics selected from symbolic and numerical problems in analysis; matrices, linear mappings, eigenvalues and applications; queueing theory; random numbers and simulations; graphics. Prereq.: Math 34600. 3 HR./WK.; 2 CR.

37500: Elements of Probability Theory

Permutations and combinations, conditional probability, independent events, random variables, probability distributions and densities, expectation, moments, moment generating functions, functions of random variables, Central Limit Theorem, sampling, confidence intervals. Prereq.: Math 20300. 3 HR./WK.; 3 CR.

37600: Mathematical Statistics

The gamma, chi-square, T, F, and bivariate normal distributions; Central Limit Theorem; confidence intervals and tests of hypothesis; the Neyman-Pearson Theorem; likelihood ratio test; estimation; sufficiency, unbiasedness, completeness; the Rao-Blackwell Theorem; the Rao-Cramer inequality; the method of maximum likelihood; the chi-square test; introduction to the analysis of variance and regression. Prereq.: Math 37500. 4 HR./WK.; 4 CR.

37700: Applied Statistics and Probability

Introduction to *SPSS*; organization of data; various descriptive statistics such as measures of variability and location; categorical variables; sampling distributions with *SPSS*; statistical inference, linear regression models; regression analysis; analysis of variance; the jackknife methodology of computer based estimation, discriminant analysis, factor analysis, cluster analysis. Prereq.: Math 37600 or departmental permission. 3 HR./WK.; 2 CR.

38100: Discrete Models of Financial Mathematics

Definitions of options and exotic options on stocks, interests rates and indices; binomial trees; volatility and methods to estimate volatility; continuous models and Black-Scholes; hedging; bond models and interest rate options; spreadsheet methods and computational methods including difference methods and Monte Carlo simulations. Prereq.: Math 20200. 3 HR./WK.; 3 CR.

38200: Continuous Time Models in Financial Mathematics

Review of discrete time models and binomial trees. Cox, Ross, Rubinstein approach to the Black-Scholes model; Black-Scholes equation and option pricing formulae; Brownian motion and stochastic differential equations; Ito's calculus and Ito's lemma; stopping times; the heat equation; option pricing and the heat equation; numerical solution of parabolic partial differential equations; interest rate models; simulation and financial models. Prereq.: Math 38100 or departmental permission. 3 HR./WK.; 3 CR.

39100: Methods of Differential Equations

First order equations; higher order linear equations with constant coefficients, undetermined coefficients, variation of parameters, applications; Euler's equation, series solutions, special functions; linear systems; elementary partial differential equations and separation of variables; Fourier series. Prereq.: Math 20300. 3 HR./WK.; 3 CR.

39200: Linear Algebra and Vector Analysis for Engineers

Matrix theory, linear equations, Gauss elimination, determinants, eigenvalue problems and first order systems of ordinary differential equations, vector field theory, theorems of Green, Stokes, and Gauss. Prereq.: Math 20300; Pre- or coreq.: Math 39100. No specialization credit will be given for both Math 32500 and 39200. (After completion of Math 34600 only 2 credits will be given for Math 39200.) 3 HR./WK.; 3 CR.

43200: Theory of Functions of a Complex Variable

Cauchy-Riemann equations, conformal mapping, elementary, entire, meromorphic, multiple-valued functions, Cauchy integral theorems, series expansion. Prereq.: Math 32500. 4 HR./WK.; 4 CR.

43400: Theory of Functions of a Real Variable

Lebesgue measure and integration on the real line, differentiation of real functions and the relation with integration, classical L_p spaces. Prereq.: Math 32500. 4 HR./WK.; 4 CR.

43500: Partial Differential Equations, Integral Equations, Boundary Value Problems

First order equations, shock waves; classification and canonical forms of higher order equations, characteristics, the Cauchy problem for the wave equation; Huygens' principle; the heat equation;

Laplace's equation; the Dirichlet and Neuman problems; harmonic functions; eigenvalue expansions; Green's functions. Prereq.: Math 32500 and 39100 or permission of the instructor. 4 HR./WK.; 4 CR.

44300: Set Theory

Axioms of Zermelo-Fraenkel set theory; relations, functions, equivalences and orderings; cardinal numbers and cardinal arithmetic; well-ordered sets; ordinal numbers, transfinite induction and recursion; the Axiom of Choice and the Continuum Hypothesis. Prereq.: Math 32300 or permission of the instructor. 4 HR./WK.; 4 CR.

44400: Mathematical Logic

The propositional calculus, the sentential calculus, normal forms, first order theories, consistency, categoricity, decidability, Godel's incompleteness theorem, the Loewenheim-Skolem theorem. Prereq.: Math 32300, or permission of the instructor. 4 HR./WK.; 4 CR.

44900: Introduction to Modern Algebra

Groups, rings, fields. Prereq.: Math 32300 and 34600. With departmental permission, partial credit may be given for Math 44900 after completion of Math 34700. 4 HR./WK.; 4 CR.

46100: Differential Geometry

The theory of curves and surfaces in three-dimensional space: frames, fundamental forms, geodesics; curvature of surfaces; surface area; surfaces with boundary, the Gauss-Bonnet Theorem; introduction to Riemannian metrics. Prereq.: Math 32500 or permission of the instructor. 4 HR./WK.; 4 CR.

46300: Topology

A course in general topology. Sets of points on the real line and in general abstract spaces, relations between sets of points and between a set and the space containing it, operations with sets, open sets, countability, compactness, connectedness, maps, continuity, metric spaces, general topological spaces. Prereq.: Math 32500 or permission of the instructor. 4 HR./WK.; 4 CR.

46700: Mathematical Modeling

Problems from industry, mathematical models, process of mathematical abstraction, problem-solving techniques, application of solutions. Prereq.: Math 34600, 36600, 37500, 39100. 3 HR./WK.; 3 CR.

47700: Probability Theory II

Special topics in probability such as stochastic processes, Markov chains. Prereq.: Math 34600, 37500; pre- or coreq.: Math 32500. 4 HR./WK.; 4 CR.

47800: Mathematical Statistics II

The multivariate normal distribution, multiple and partial correlation, regression and least squares, the analysis of variance. Prereq.: Math 34600 and 37600. 4 HR./WK.; 4 CR.

51100: Selected Topics in Pure Mathematics

Topics to be chosen from the areas of algebra, analysis, topology, geometry, and logic. Prereq.: to be determined by the instructor. 3 HR./WK.; 4 CR.

51200: Selected Topics in Classical Analysis

Topics to be chosen from applied mathematics and related fields. Typical subjects are: asymptotic methods, wave propagation, mathematical biology. Prereq.: Math 34600, 39100, and 32500, and other requirements to be determined by the instructor. 3 HR./WK.; 4 CR.

51300: Selected Topics in Probability, Statistics, and Operations Research

Topics to be chosen from the areas of probability, statistics, game theory, combinatorial analysis, etc. Prereq.: to be determined by the instructor. 3 HR./WK.; 4 CR.

HONORS AND SPECIAL COURSES**30100-30400: Honors I-IV**

Approval of Department Honors Advisor required. CREDIT FLEXIBLE BUT USUALLY 3 CREDITS PER TERM.

31000: Independent Study

A program of independent study under the direction of a member of the Department with the approval of the Assistant Chair. CREDIT MAY BE FROM 1-4 CREDITS, AS DETERMINED BEFORE REGISTRATION BY THE INSTRUCTOR WITH THE APPROVAL OF THE ASSISTANT CHAIR.

31100-32000: Selected Topics in Mathematics

Topics not covered in the usual department offerings. Topics vary from semester to semester, depending on student and instructor interest. Prerequisites as determined by the instructor. CREDITS AND HOURS WILL BE DETERMINED BY THE INSTRUCTOR AND THE DEPARTMENT, WITH A MAXIMUM OF 4 CREDITS PER COURSE.

GRADUATE COURSES OPEN TO UNDERGRADUATES

Qualified students may take, with departmental approval, any course

available in the master's program in Mathematics or the first year of the doctoral program in Mathematics. These courses are described in the appropriate catalogs.

FACULTY**Ethan Akin, Professor**

B.S., The City College; Ph.D., Princeton Univ.

Joseph Bak, Associate Professor

B.A., Yeshiva Univ., M.A., Ph.D.

Jacob Barshay, Professor

A.B., Princeton Univ.; M.A., Brandeis Univ., Ph.D.

Gilbert Baumslag, Distinguished Professor

B.S., Univ. of Witwatersrand (South Africa), D.Sc.; Ph.D., Univ. of Manchester (England)

Mark Brown, Professor

B.S., The City College, M.S.; Ph.D., Stanford Univ.

Isaac Chavel, Professor

B.A., Brooklyn College; M.S., New York Univ.; Ph.D., Yeshiva Univ.

Vicki Chuckrow, Associate Professor

B.S., The City College; M.S., New York Univ., Ph.D.

Sean Cleary, Associate Professor

A.B., Cornell Univ.; Ph.D., Univ. of California (Los Angeles)

Jacob Eli Goodman, Professor

A.B., New York Univ.; A.M., Columbia Univ., Ph.D.

Edward Grossman, Professor and Chair

A.B., New York Univ., Ph.D.

Alberto Guzman, Professor

B.S., The City College; M.S., Univ. of Chicago, Ph.D.

Raymond Hoobler, Professor

A.B., Oberlin College; M.A., Univ. of California (Berkeley), Ph.D.

Karel M. Hrbacek, Professor

RNDr., Charles Univ. (Prague)

Jay Jorgenson, Professor

B.S., Univ. of Minnesota; M.S., Stanford Univ., Ph.D.

Lee Kaminetzky, Associate Professor

B.S.E., George Washington Univ.; M.S., New York Univ., Ph.D.

Stanley Kaplan, Professor

B.A., Cornell Univ.; Ph.D., Harvard Univ.

Ralph D. Kopperman, Professor

A.B., Columbia Univ.; Ph.D., M.I.T.

Zeph Landau, Assistant Professor

A.B., Harvard Univ., A.M.; Ph.D., Univ. of California at Berkeley

Michael Marcus, Professor

B.S., Princeton Univ.; M.S., M.I.T., Ph.D.

Daniel Mosenkis, Lecturer

B.S., The City College; M.S., Univ. of Wisconsin

Stanley Ocken, Professor

A.B., Columbia Univ.; M.A. Princeton Univ., Ph.D.

Thea Pignataro, Associate Professor

B.S., Polytechnic Inst. of New York; M.A., Princeton Univ., Ph.D.

Rochelle Ring, Associate Professor

B.S., The City College; M.S., New York Univ., Ph.D.

David Schwinger, Lecturer

B.A., Queens College; M.A., Columbia Univ.; M.B.A., New York Inst. of Technology

Niel Shell, Professor

B.S., Polytechnic Inst. of New York, M.S., Ph.D.

Vladimir Shpilrain, Professor

M.A., Moscow State Univ., Ph.D.

William Y. Sit, Professor

B.A., Univ. of Hong Kong; M.A., Columbia Univ.; M.Sc., The City College; Ph.D., Columbia Univ.

PROFESSORS EMERITI**Harry W. Appelgate****Sherburne F. Barber****Harvey Cohn****Morton Davis****Michael Engber****John Landolfi****Jonah Mann****John Miller****Bernard Sohmer****Fred Supnick****Norman Wagner**

Department of Media and Communication Arts

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Andrzej Krakowski, Chair • Department Office: Shepard 280 • Tel: 212-650-7167

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Media and Communication Arts:

B.A. in Communications
B.F.A. in Film and Video

PROGRAMS AND OBJECTIVES

Established in 1984, the Department of Media and Communication Arts combines history, theory, and critical analysis with hands-on practical experience. This liberal-arts based, professionally-oriented department offers a broad education in media studies and writing and research in media studies with specializations in the following:

Advertising and Public Relations (B.A.)
Film and Video Production (B.F.A.)
Print and Broadcast Journalism (Minor)

Advertising and Public Relations

The emphasis of this specialization is two-fold: current theories in marketing, advertising, corporate communications, public relations, and communications management are combined with practical hands-on projects and external experience. Students are introduced to the techniques of writing and producing campaigns that market an idea, service, product or institution to specific audiences. We explore theories of consumer behavior and the cultural, political, and economic impact both have on society.

While students have hands-on experience in creating their own advertising and public relations campaigns and

marketing proposals, research, writing, critical analysis skills and presentation skills are strongly emphasized in all classes. Student assignments also include market research reports, integrated marketing communications proposals, new business proposals, media kits, and corporate image and communications management case studies.

In the senior workshop, students create an integrated communication campaign for an actual client and graduate with a professional portfolio of their work in advertising and public relations.

We highly encourage our majors to apply for one or two internships, particularly in their senior year. Developed specifically for Media and Communication Arts majors, this program places students in a wide variety of well-known and respected agencies, firms and corporations. Students can receive up to six credits for their internship experiences.

Our Department hosts student member chapters of the American Advertising Federation (AAF) and Public Relations Society of America (PRSSA). We receive scholarships and fellowships annually from professional organizations.

Graduates frequently pursue entry-level positions in advertising and public relations agencies as junior account executives, copywriters, publicity assistants, media buyers, and in institutions and corporations as public relations representatives, special events coordinators or market research assistants to name a few. Others pursue graduate study in writing, design, marketing and business management.

Film and Video

Mission Statement of the Program

The mission of the BFA Film & Video program is to educate students in the history, art, craft and technology of fiction and documentary media production. Embedded in a Liberal Arts academic environment, our courses explore the history of film and video, teach the art and craft of filmmaking, and provide intensive hands on production experience with the latest technology and experienced professionals. The program nurtures students to discover their own creative voice grounded in a concentrated knowledge base that will provide them with the diverse skills and resources to enter an ever-changing media world, or to continue their studies in a Masters Program.

Program Description

First established in 1941 as The Institute of Film Techniques, the Film & Video program in the Department of Media & Communication Arts at CCNY is the oldest continuous film program in the country. In addition, it is the only program in the CUNY system to offer a BFA degree in Film & Video.

The BFA in Film & Video program provides a broad range of fundamental production skills in the areas of fiction and documentary media production. Courses in screenwriting, production, and editing prepare students to produce their own projects in both 16mm film and digital video. In addition to production courses, students must also take courses in history, theory, and aesthetics of film to complement and contextualize the production skills they learn. The program's emphasis is on single camera fiction and documentary field production.

Admission

Admission to the BFA in Film & Video program requires you to be a student already admitted to CCNY. If you are not currently a student at CCNY or you are a transfer student, application forms to the college are available through the Admissions Office. Students must apply separately to the BFA program through a second application process. Application forms to the BFA program are available in the Department of Media & Communication Arts.

Admissions to the program are limited to 25 students, once a year and only in the Fall semester. Therefore, you must apply in the Spring semester preceding the Fall semester you wish to enter. You must be at least an "upper" freshman to enter the program and you must have completed, or be in the process of completing, MCA 10500, 20200, and 12100.

Transfer students must get a transcript evaluation of their core courses and requirements through the academic advisors in the Division of Humanities and Arts. Media courses, if any, must be evaluated through the academic advisors of the BFA program in MCA.

Admissions Criteria and Creative Portfolio

Students are evaluated and admitted to the program based on 4 criteria:

- Creative Portfolio*
- 1 page Personal Statement
- Passing grade of "C" or better in MCA 10500, 20200, and 12100
- 2.7 cumulative G.P.A. (B-)

*The creative portfolio must consist of film/video work that you have had major creative input on. The portfolio work can be established in several ways:

- Work created in MCA 105 Introduction to Media Production.
- Work created at other colleges (transfer students).
- Independently produced work outside of college.

Curriculum

The BFA degree in Film & Video requires a minimum of 54 credits with

the majority of courses in the curriculum being completed in a 4 semester (Fall-Spring), 2-year cycle. The 54 credit total includes MCA 10500, MCA 12100, and MCA 20200 and these courses should be completed before a student applies to the program. The department is not open during the summer although the program will occasionally offer a critical studies course during the summer session. Please be aware that not all courses in the curriculum are offered every semester, and a student who misses or fails a course will be "out of sequence" and may have to wait for another year for the course to be offered again.

Evaluation and Maintaining Matriculation

Two mechanisms are used to evaluate a student's progress and to maintain matriculation in the program.

GPA - Students must have 2.7 cumulative GPA (B-) to enter the program and must maintain a 3.0 GPA within the major to remain matriculated in the program. The BFA Review Committee may make exceptions to the minimum GPA requirements only after a thorough assessment of individual cases.

Faculty Review - A BFA Review Committee will review and assess the academic and creative work of students at the end of each academic year (fall-spring). This assessment, along with the student's GPA, will determine if the student is qualified to continue matriculating in the program. This assessment will also be an opportunity for the faculty to identify students who may need more academic support so that they may maintain matriculation and progress through the program with success.

Advisement

Each student will be assigned a full-time faculty advisor who will oversee and support the student's academic and creative progress in the program until graduation. The advisor will be the "advocate" for the student during the annual assessment by the BFA Review Committee.

Graduation Criteria

A thesis project is required of all students who to graduate with a BFA degree in Film & Video. You may choose one of the following three options as your thesis project:

- a thesis film or video production that is no longer than 10 minutes
- a fiction screenplay no longer than 30 pages
- a 25-50 page research paper in an area of critical studies

These options allow you to create a thesis project that reflects your personal interest and strengths whether it is in production, as a writer, or in the area of critical studies. Your advisor must approve your thesis project and the BFA Review Committee reserves the right to determine the final number of thesis projects in each category.

Equipment & Facilities

Undergraduate students in the BFA Film and Video program use Bolex, CP-16, Arri-S 16mm film cameras and Mini-DV video cameras. Location and studio lighting equipment are available as well as sound recording and audio equipment. Editing facilities consists of non-linear digital editing labs with Final Cut Pro editing software and Macintosh computer systems. In addition, the department has film and video projection theatres, two production studios, and a "black box" theatre space.

Print and Broadcast Journalism

Students learn the essentials of reporting and writing in the areas of print, radio and television production. The program is geared for students interested in an interdisciplinary approach to education. Using the research and reporting techniques of journalism, students are encouraged to use New York City as a laboratory, exploring the City's people, communities, government, art and culture. In addition to its full time teaching staff, the program attracts leading journalists as lecturers and teachers.

The specialization provides instruction in the principals and practices of journalism, emphasizing the develop-

ment of strong writing skills, with emphasis on the intellectual and ethical issues they will face in the profession. Through the six required courses and electives, students learn how to write and produce features, hard news stories, and profiles that can be part of their portfolios in each medium. At the end of the sequence students take either a print or broadcast workshop where they produce their highest quality of work.

As part of the curriculum students also work at WHCR ("The Voice of Harlem"), the College's community radio station, where they learn both production and radio journalism.

Students are encouraged to do one or two journalism internships before they graduate taking advantage of the numerous opportunities that exist, living and studying in the media capital of the world. Upon graduating, students are prepared to pursue entry-level jobs in journalism in all forms of media, or graduate level studies in either journalism or other disciplines.

REQUIREMENTS FOR ALL MAJORS

The following requirements apply to all students entering the College in the Fall 2005 semester or thereafter. Currently enrolled students are subject to the requirements in effect when they declared their major. Students reentering the college or transferring from other institutions with credits in the major should consult the appropriate Program Director for applicability of those courses to the current requirements.

Requirements for the B.A. in Advertising and Public Relations

Program Director: Prof. Lynn Appelbaum

All majors in the B.A. in Advertising and Public Relations must maintain an overall GPA of 2.3 and 2.5 in the major to remain in the major.

Required Courses

Media and Communication Arts:
10100: Introduction to Media Studies 3
20900: Introduction to Public Relations 3

21000: Introduction to Advertising 3
35000: Corporate Communications 3
36200: Public Relations Writing 4
36300: Advertising Copywriting 4
37500: Advertising Management I 3
37600: Advertising Management II 3
40100: Ethics and Values in Communications 3

One of the following two: 4
46800: Advertising & Public Relations Workshop I (4 cr.)
47800: Advertising & Public Relations Workshop II (4 cr.)

Electives:

Media Communication Arts: 3
21100: Advertising and Public Relations Production (3 cr.)
29900: Internship I (1-6 cr.)
39900: Internship II (1-6 cr.)
36000: Marketing Research (3 cr.)

Total Credits for the B.A. Degree 36

Requirements for the B.F.A. Degree

Program Director: Prof. Herman Lew

Required Courses

Media and Communication Arts:
10500: Introduction to Media Production 3
12100: Introduction to Film Studies 3
20000: Introduction to Film Production 3
20500: Editing 3
21500: Sound Production & Design 3
22100: History & Theory of Film I 3
22200: History & Theory of Film II 3
22300: Critical Approaches to Independent Cinema 3
23200: Documentary Workshop I 4
32100: Motion Picture Production Workshop I 4
32300: Screenwriting Workshop I 3
32400: Screenwriting Workshop II 3
32500: Directing for Film & Video 3
32600: Digital Post Production 3

One of the following two: 4
32200: Motion Picture Production Workshop II
33200: Documentary Workshop II

One of the following four: 3
30200: Critical Approaches to Film Directors
30300: The Documentary in Film & Television

30400: Studies in Film History & Aesthetics
31000: Internship

Total credits for the B.F.A. 51

ADDITIONAL REQUIREMENTS

All MCA majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)
English 11000: Freshman Composition (3 cr.)
MCA 20200, English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

Requirements for the Minor in Journalism

Program Director: Prof. Curtis Simmons

Required Courses

Media and Communication Arts:
23300: Introduction to Journalism 3
33300: Reporting and Writing I 3
33500: Reporting and Writing II 3
34100: Radio Journalism 3
34300: TV Journalism I 4
One of the following two: 4
43800: Print Journalism Workshop (4 cr.)

44800: Broadcast Journalism
Workshop (4 cr.)

**Total credits for the Journalism
Minor** 20

ELECTIVES FOR NON-MAJORS

B.A. courses in the Department are open to non-majors with the approval of the program directors, provided prerequisites have been met. Students should see the appropriate program director for information.

10100: Introduction to Media Studies
12100: Introduction to Film Studies
20900: Introduction to Public Relations
21000: Introduction to Advertising
23300: Introduction to Journalism

INTERNSHIPS

Students who are declared Media and Communication Arts majors or journalism minors may apply for internship credit if they meet the following qualifications: a total GPA of 2.5 or above; completion of a minimum of 15 credits toward the major with a C grade or better; completion of a minimum of 70 academic credits. Life experience or previous internship credit not acceptable.

Students can earn one, two, or three credits per internship and may take two internships during their undergraduate training. The number of credits per internship is determined by the Internship Director.

Internships usually require students to work on-site 8-20 hours per week for 15 weeks.

All internships must be approved by the Internship Director in advance.

Internships are available through the MCA Department and the College's Career Services Center located in NAC. Students must apply through the Department and be approved before starting an internship. The number of credits earned is decided by the Director. Applications are available in Shepard 472A, the office of the Internship Director.

ADVISEMENT

Upon enrolling as a major, each student is assigned a faculty advisor. For new majors and those who do not have an assigned advisor, see the appropriate Program Director.

Advertising and Public Relations

Professor Lynn Appelbaum
B.A. Program Director
Shepard 472A; 212-650-6561

Film and Video Production

Professor Herman Lew
B.F.A. Program Director
Shepard Hall 473; 212-650-6558

Journalism

Professor Curtis Simmons
Program Director
Shepard 471; 212-650-6560

Facilities and Equipment

Located in historic Shepard Hall, the Department of Media and Communication Arts provides a wide variety of equipment and facilities for film and video production, advertising and public relations, and journalism. Students enrolled in the appropriate courses have access to equipment and facilities that will support their education in the department as well as prepare them for industry standards when they graduate.

WHCR-FM (90.3)

The College's low-power FM radio station, reaching all of upper Manhattan, serves the Harlem community especially and functions as a laboratory for Communications majors.

The Richard S. Cohen Resource Center

The Richard S. Cohen Resource Center is a comfortable setting for individual viewing of film and video, and reading and studying magazines, journals and newspapers.

The holdings include a few hundred VHS and DVD format films, a selection of film, advertising, PR and new media journals, political commentary magazines and the major metropolitan newspapers.

Computer Labs

Three labs with networked computers for word processing, data research, telecommunications, and simple desktop publishing and advanced graphics design programs.

The Picker Center

The Picker Center brings to the Department of Media and Communication Arts distinguished scholars, artists, and media professionals. The Center sponsors events that promote a knowledge of the roles that the media arts play in contemporary society. No less important, the events serve to put students in contact with practitioners from the media professions. These encounters range from visits to small classes to gatherings open to the entire community. In the past, for example, Academy Award winning director Jonathan Demme offered a master class to directing students while producer Maggie Renzi and director John Sayles previewed a feature film for the college community. The Picker family now includes several generations of distinguished film professionals. For many years, their philanthropy supported the department's BFA program which trained such filmmakers as Julie Dash (*Daughters of the Dust*) and Joseph Vasquez (*Hangin' with the Homeboys*).

AWARDS AND SCHOLARSHIPS

Ernest Boynton Memorial Award

For excellence in communications.

Communications Alumni Award

For excellence in Media and Communication Arts.

L.L. Richard Guylay Class of 1934 Prize

For a member of the editorial staff who has demonstrated outstanding commitment to The Campus paper throughout the year.

New York Women in Film and Television

For an outstanding (woman) graduate film student.

Norman Jonas Journalism Prize

To an outstanding student planning a career in business or economics reporting.

Sidney Meyers Award

Prize for excellence in film or video.

Irving Rosenthal Award

For an outstanding journalism student.

Bert Saperstein Award

For an outstanding film student.

Joseph Vasquez Memorial Award

For excellence in graduate film or media arts.

Women Executives in Public Relations Foundation Scholarships

For outstanding juniors or seniors with plans to pursue a career in public relations.

COURSE DESCRIPTIONS**COURSES FOR ALL MCA MAJORS****10100: Introduction to Media Studies**

The first of two MCA introductory courses. This survey course aims to acquaint students with the various mass media and support industries. In the first half of the semester, students look at newspapers, magazines, radio, TV, film, advertising, and public relations from an historic, technological, economic, and social perspective. In the second half of the semester, they focus on more general issues, such as who owns the media, the media's effect on audience, and laws governing the media. Required of all MCA majors; open to other students as an elective. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

20200: Research and Writing for Media Studies

This course aims to teach students research, analytical and communication skills. Through discussion and practice, students learn their way around libraries, become familiar with various databases, learn interviewing techniques and sharpen their writing. The skills are then used to compose a research paper on a media topic chosen in consultation with the instructor. This course is equivalent to English 21000. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

31100-32000: Selected Topics

Advanced study in selected topics in the areas of film and video, advertising and public relations and journalism with emphasis upon aspects not treated in regular courses. HOURS AND CREDITS TO BE ARRANGED.

ADVERTISING AND PUBLIC RELATIONS**20900: Introduction to Public Relations**

This course, open to MCA majors and non-majors, introduces students to the fundamental concepts and theories behind persuasive communications and the application to public relations. Public opinion, audience research, media relations and tools for effective communications using the Internet and traditional methods are also explored. Students develop and present a public relations proposal, incorporating research, objectives, strategy and tactics and evaluation techniques as a culmination to the course. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

21100: Advertising and Public Relations Production

In this course, students learn the art and science of preparing typography, graphic design, illustration and photography for printed documents used in the advertising and public relations professions. This is an essential skill for entry-level positions in this communications specialization. Students work on personal computers to learn the basic applications of electronic layout and design as a means of creating a cohesive visual message for an organization or business through documents and advertisements. Coreq.: MCA 20200 (or Eng 21000), 21000. 3 HR./WK.; 3 CR.

35000: Corporate Communications

This class familiarizes students with planning and implementing communications strategies for corporations and institutions. Through case studies, students examine communications issues for internal and external audiences, and learn how to conduct research, set objectives and effectively communicate through a variety of tactics. Topics include creating brand value through public relations, integrated marketing communications, media relations, and crisis communications. Prereq.: Eng 11000, MCA 20900. 3 HRS./WK.; 3 CR.

36000: Marketing Research

This course examines how to identify the necessary information to satisfy customers' needs and interests and make the marketing plan work. Students examine the role

of marketing research in the advertising or public relations firm, different research designs, data collection procedures, sampling issues, data analysis techniques and how to write a research report. Prereq.: MCA 20200 (or Eng 21000), 20900, 21000. 3 HR./WK.; 3 CR.

36200: Public Relations Writing

Students learn how to create persuasive messages and effectively communicate them to audiences through a variety of written and spoken tactics. Communicating with the media through press releases, media kits, press conferences, features, backgrounders, photo captions, video news releases and PSA's are explored. In addition, students learn the fundamentals of good business writing for memos, letters, direct mail, brochures, proposals and oral presentations. Internet and web public relations are covered. Prereq.: MCA 20900, 21000 or permission of the instructor. (W) 4 HR./WK.; 4 CR.

36300: Advertising Copywriting

In this course, students learn how to generate ideas that help solve marketing problems and to execute those ideas through copywriting. The class will write, edit and evaluate advertising copy, including print, radio, television, direct mail and promotional materials. Students work individually and in teams on assignments that involve both word and image. Prereq.: MCA 20900 and 21000. (W) 4 HRS./WK.; 4 CR.

36400: Advertising and Public Relations Portfolio Production

A continuation of MCA 21100. Students learn advanced skills and uses of graphic software programs to create business and promotional presentations. The focus of this course is to provide students with the skills necessary to create an entry-level portfolio according to industry standards. Students produce graphic presentations of graphs charts, brochures, ad campaigns, proposals and other forms of printed communications. Prereq.: MCA 21100. 3 HR./WK.; 3 CR.

37500: Advertising Management I

An introduction to the basic management principles of the advertising business. Readings and discussions on the economic, social and legal aspects of the industry with an emphasis on advertising's role in a marketing plan, consumer behavior, market segmentation, and position strategy. Prereq.: MCA 21000 or permission of the instructor. 3 HR./WK.; 3 CR.

37600: Advertising Management II

Application of advertising management principles to specific problems and case studies. Focus is on developing advertising strategies, budgets and media plans. Attention will be given to national and international marketing environments. Prereq.: MCA 37500. 3 HR./WK.; 3 CR.

40100: Ethics and Values in Communication

A senior seminar in the moral issues of communications, professional ethics. Materials are presented through films, literature, and readings in philosophy and social commentary, directed discussions. Prereq.: MCA 20900 and MCA 21000, Junior or Senior status. 3 HR./WK.; 3 CR.

46800: Advertising and Public Relations Workshop I

This senior course is the capstone for the advertising/public relations program. Students work individually and in teams to complete a campaign for a client from research through execution. Professional presentation skills are emphasized throughout. The course culminates in a project portfolio. Students must receive approval of the instructor. Prereq.: MCA 35000, 36200, 36300 and 37600. 4 HR./WK.; 4 CR.

47800: Advertising and Public Relations Workshop II

For senior Media and Communication Arts majors specializing in advertising and public relations only. This is a concept, writing, and design intensive workshop that culminates in a completed professional portfolio. Under the supervision of a faculty member, students work individually and in teams to complete a variety of assignments that will include several advertising and public relations campaigns. Students integrate concept and copy with the graphic component which is completed in the department's computer graphics lab. Prereq.: MCA 35000, 36200, 36300 and 37600 and approval of the instructor. 4 HR./WK.; 4 CR.

FILM AND VIDEO**10500: Introduction to Media Production**

This course introduces the fundamental elements of video production and is the "gateway" into the BFA program. Projects produced in this course are used to evaluate a student's candidacy into the program. Using digital video cameras, students learn basic organizational, writing, camera, and editing skills through short group and individual exercises and pro-

jects. Visual storytelling and narrative structure in fictional and non-fictional forms are examined. Prereq.: Eng. 11000. 3 HR./WK.; 3 CR.

12100: Introduction to Film Studies

This course examines the artistic and social power of film as a medium of audiovisual communication. The course emphasizes the analysis of narrative feature films, but also examines non-fiction and experimental forms. The course offers a systematic view of how cinema tells stories, organizes information, patterns, light and sound, and creates unique aesthetic and social experiences. Aspects treated by the course include sound, editing, cinematography, film style, narrative and non-narrative forms, the organization of film production, and the relations of film to broader artistic, social, and historical contexts. Attention is given to the ways film is now related to television, video, and new computer technologies. Prereq.: MCA 10500, Eng. 21000. 4 HR./WK.; 3 CR.

20000: Introduction to Film Production

This course introduces the student to the fundamentals of film production and builds on previously learned production skills in MCA 10500. Students learn how to use a 16mm film camera, the light meter and gain practical experience with B&W film stock and exposure control. Prereq.: MCA 10500, Eng. 21000; coreq.: MCA 20500. 3 HR./WK.; 3 CR.

20500: Editing

This course examines the theoretical aspects and the practical techniques of editing picture and sound. Narrative structure, storytelling strategies, and problem solving are explored. Using "Final Cut Express" software, students will learn basic computer editing, media management, and organizational skills needed in post-production. Prereq.: MCA 10500, Eng. 21000; coreq.: MCA 20000. 3 HR./WK.; 3 CR.

21500: Sound Production & Design

This course introduces the technology, equipment and skills necessary for the acquisition of sound in film and video productions. In addition, the course will explore the theory and role of sound design in both fiction and non-fiction productions. Particular attention will be given to sound production and design as it relates to the films and videos that the student will make in the program. Prereq.: MCA 10500, 12100, 20000, 205000; coreq.: MCA 23200. 3 HR./WK.; 3 CR.

22100: History and Theory of Film I

A chronological survey of the history and theory of cinema from its origins to World

War II. Topics include the work of major directors, aesthetic theories, movements, technical innovations, methods of production and distribution, the influences on cinema from the other arts and contemporary ideologies. Prereq.: MCA 12100. 4 HR./WK.; 3 CR.

22200: History and Theory of Film II

A chronological survey of the history and theory of cinema from World War II to present. Topics include the work of major directors, aesthetic theories, movements, technical innovations, methods of production and distribution, the influences on cinema from the other arts and contemporary ideologies. Prereq.: MCA 12100, 22100. 4 HR./WK.; 3 CR.

22300: Critical Approaches to Independent Film

This course covers the history, theory, and practice of American independent film, particularly as it has evolved since 1975. This course investigates how the film and filmmaker contribute to a redefinition of American society that incorporates a broader spectrum of voices and experiences. Attention is paid to earlier artists such as Maya Deren and John Cassavettes as well as to such contemporary trends as digital technologies, mixing genres, and the globalization of production and distribution. Prereq.: MCA 12100. 4 HR./WK.; 3 CR.

23200: Documentary Workshop I

This course is an introduction to documentary filmmaking and covers the various stages of non-fiction storytelling including research, script development/treatment, pre-production planning, production and post-production editing. The course will also examine work that falls outside of the traditional documentary form, including work that incorporates significant non-fictional components. Students develop, shoot and edit short documentary exercises and learn basic interview techniques, lighting, and sound recording techniques. Prereq.: MCA 10500, 12100, 2000, 20500; coreq.: MCA 21500. 4 HR./WK.; 4 CR.

30200: Critical Approaches to Film Directors

Studies of major filmmakers from American & world cinema such as Griffith, Eisenstein, Ford, Kurosawa, Buñuel, Fellini, Altman, Sembene, and Varda. Emphasis is given to detailed analysis of films within their cultural, historical, and industrial contexts. Prereq.: MCA 22100 or 22200 or permission of instructor. 4 HR./WK.; 3 CR.

30300: The Documentary in Film & Television

An investigation of the theory and practice of documentary in its diverse forms as film, television, video, and digital media. Screenings of historically important works are analyzed in light of different theories about documentary practice. Prereq.: MCA 22100 or 22200 or permission of instructor. 4 HR./WK.; 3 CR.

30400: Studies in Film History and Aesthetics

Studies of specialized topics in film history and aesthetics. Topics change from year to year. Previous topics have included *Film Noir*, *Women & Film*, *New Asian Cinemas*, and *Cinemas of the African Diaspora*. Prereq.: MCA 22100 or 22200 or permission of instructor. 4 HR./WK.; 3 CR.

32100: Motion Picture Production Workshop I

Building on the student's basic knowledge of film, exposure, cameras, and cinematic language, this production course emphasizes visual storytelling and control of the motion picture frame. Visual strategies, technical, and aesthetic application of lighting in support of the narrative are covered. In addition, basic organizational elements needed in pre-production for students to produce, direct, and shoot their films are developed. Prereq.: MCA 20000, 20500, 21500, 23200; coreq.: MCA 32300, 32500. 4 HR./WK.; 4 CR.

32200: Motion Picture Production Workshop II

This course is one of two production courses that students may choose to shoot their thesis project in. Building on all previous production courses in the program, it is a course for students who wish to further their mastery of filmmaking in 16mm film or digital video. Students will refine and apply their knowledge of visual storytelling, pre-production, lighting, and sync-sound production through class exercises and group projects. Projects produced in this course are edited in MCA 32600. Prereq.: MCA 32100, 32300, 32500; coreq.: MCA 32400, 32600. 4 HR./WK.; 4 CR.

32300: Screenwriting Workshop I

This course examines the fundamental principles and forms of narrative storytelling and their expression through the screenplay format. Emphasis is placed on the elements that create drama and conflict, and particular attention will be given to visual storytelling. The course will also examine the similarities and differences between the short and long narrative forms

and compare various storytelling models and strategies. Extensive outside writing assignments and rewrites are required for this course. Prereq.: MCA 20000, 20500, 21500, 23200; coreq.: MCA 32100, 32500. 3 HR./WK.; 3 CR.

32400: Screenwriting Workshop II

Building on the knowledge and skills learned in Screenwriting I, students refine their screenwriting skills through longer screenplays and extensive rewrites. This course offers the opportunity for students to write a screenplay that will qualify as a thesis writing project. Extensive outside writing assignments and rewrites are required for this course. Prereq.: MCA 32300; coreq.: MCA 32600, 32200 or 33200. 3 HR./WK.; 3 CR.

32500: Directing for Film and Video

This course explores the aesthetics, basic principles and skills needed to direct film and video productions. Through various exercises and analysis, students learn how to work with actors and the use of different techniques and strategies to elicit performances. Pre-production responsibilities, scene analysis, blocking, and shot breakdowns are also covered. Prereq.: 20000, 20500, 21500, 23200; coreq.: MCA 32100, 32300. 3 HR./WK.; 3 CR.

32600: Digital Post Production

This course covers advanced topics in digital editing, motion graphics, filters and sound design using Final Cut Pro editing software. In addition to class exercises, students edit material produced in their MCA 32200 or 33200 courses. Prereq.: MCA 20000, 20500, 21500, 23200, 32100, 32300; coreq.: MCA 32400, 32200 or 33200. 3 HR./WK.; 3 CR.

33200: Documentary Workshop II

This course is one of two production courses that students may choose to shoot their thesis project in. Building on all previous production courses in the program, it is a course for students who wish to further their mastery of documentary filmmaking and the non-fiction form. Students develop, shoot, and edit documentaries that are more in-depth and complex, and explore alternative aesthetic approaches to non-fiction storytelling. Projects produced in this course are edited in MCA 32600. Prereq.: MCA 32100, 32300; coreq.: MCA 32400, 32600. 4 HR./WK.; 4 CR.

JOURNALISM**23300: Introduction to Journalism**

This course introduces students to the basics of reporting and writing for the

print and broadcast media. A hands-on course, students learn the rigors of journalism through covering stories. Guest speakers from newsrooms across the city regularly address the class. Prereq.: Eng 11000; coreq.: MCA 10100 or permission from the instructor. 3 HR./WK.; 3 CR.

33300: Reporting and Writing I

Instruction and practice in the basic techniques of reporting, including, interviewing and public affairs research, and writing news for mass audiences. It includes discussions on libel, freedom of information, fairness, and balance. Assignments involve real people and events. Prereq.: MCA 23300 or permission of the instructor. 3 HR./WK.; 3 CR.

33500: Reporting and Writing II

Emphasis divided evenly between reporting and writing. Students are encouraged to use a variety of writing techniques, including the setting of scenes and development of character, to strive to clarify public affairs for the public, to develop a sense of mass "audience," to aim for the ethical goals of fairness and balance in their work, and to develop a portfolio of quality work in journalism. Intended primarily for those specializing in journalism but open to other writers. Prereq.: MCA 33300 or permission of the instructor. 3 HR./WK.; 3 CR.

33700: Art of Interviewing

Instruction in interviewing techniques used in both print and broadcast journalism. This course is designed to teach students how to choose and focus on a subject or topic, research that area or individual and finally, how to conduct interviews with individuals that will be both solidly formulated and revelatory. Prereq.: MCA 23300. 3 HR./WK.; 3 CR.

34100: Radio Journalism

This is a basic course in radio reporting and production. Students learn to write for the ear and incorporate the creative uses of sound in telling a news story. Production techniques are an integral part of the course. Students receive actual on-air experience in the news department of WHCR, the college's community radio station. Prereq.: MCA 23300 or permission of the instructor. 3 HR./WK.; 3 CR.

34200: Topics in Reporting

Instruction in specialized areas of reporting and study of news media serving specific audiences. Additional topics may be offered from time to time. Students should consult the Department's course offerings each semester to determine topics scheduled. Prereq.: MCA 33300. 3 HR./WK.; 3 CR.

34201: Reporting Politics and Government

Instruction in researching and reporting news of government and politics. Various approaches to this important function of democratic journalism are employed. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

34203: International Reporting

New York is used as a microcosm of the world as students report on the various nationalities, neighborhoods and ethnic groups that make this the most international of cities. Students learn about the role of the foreign correspondent, the United Nations and the U.S. government in the coverage of international news. The need for cultural sensitivity and historical perspective is addressed, along with the concept of the global village. Some knowledge of journalism, political science, or international affairs is preferred. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

34300: Television Journalism

Instruction in reporting, writing, and production for television news. Students learn to adapt their reporting and writing skills to the medium of television and the use of visuals in conveying a news story to the viewer. Students learn electronic news gathering through field work in crews and are introduced to the basics of newscast through exercises in the television studio. Prereq.: MCA 23300. 4 HR./WK.; 4 CR.

43800: Print Journalism Workshop

A senior project for communication majors specializing in journalism, this workshop is the culmination of training in print media. Students build on skills acquired in earlier journalism courses to produce quality work suitable for publication. Students from other disciplines with substantial journalistic writing experience may be allowed in the course with permission of the instructor. Prereq.: MCA 33300 and MCA 33500 or permission of the instructor. 4 HR./WK.; 4 CR.

44800: TV Journalism Workshop

In this workshop, the culmination of training in broadcast journalism, students produce television newscasts building on the electronic newsgathering skills and performance skills acquired in earlier classes. In addition, students learn to read from a teleprompter and refine other on-air skills using the department's state-of-the-art television studio. Students in other MCA specializations with substantial broadcast writing or production skills may be allowed in the course with permission of the instructor. Prereq.: MCA 33300 and 34100. 4 HR./WK.; 4 CR.

INTERNSHIP EDUCATION**29900: Internship in Communications I**

Introductory supervised experience. Assignment in entry-level position of employment. Prereq.: Permission of the Department and acceptance into Internship Program. 1-6 CR.

39900: Internship in Communications II

A more advanced supervised assignment. Prereq.: Permission of the Department and successful completion of 29900. 1-6 CR.

49900: Internship in Communications III

Advanced supervised assignment. Prereq.: Permission of the Department and successful completion of 29900 and 39900. 1-6 CR.

INDEPENDENT STUDY**31001-31003: Independent Study**

Open to advanced students only, with permission of the Department. 1-3 CR.

39501-31003: Group Independent Study

A cooperative project, assigned to more than one student. Open to advanced students only, with permission of the instructor. 1-3 CR.

FACULTY

Lynn Appelbaum, Associate Professor
B.M., Ithaca College; M.A., Indiana Univ.

Jerry Carlson, Associate Professor
B.A., Williams College; M.A., Univ. of Chicago, Ph.D.

Campbell Daghish, Assistant Professor
B.A., Univ. of Colorado; B.F.A., Yale School of Drama

David Davidson, Professor
B.A., Univ. of Illinois; M.F.A., New York Univ.

Edward Keller, Assistant Professor
B.A., Columbia Univ., M.B.A.

Andrzej Krakowski, Associate Professor and Chair
M.F.A. (Equiv.), Polish State Film School, American Film Institute.

Herman Lew, Assistant Professor
B.A., California State Univ. (Los Angeles); M.F.A., New York Univ.

Linda Prout, Associate Professor
B.F.A., New York Univ.; M.S., Columbia Univ.

Babak Rassi, Assistant Professor
B.A., George Mason Univ., M.F.A., Florida State Univ.

Andrea Weiss, Associate Professor
B.A., State Univ. of New York at Binghamton; Ph.D. (American History), Rutgers Univ.

PROFESSOR EMERITUS

Dennis DeNitto



Department of Music

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Stephen Jablonsky, Chair • Department Office: Shepard 72 • Tel: 212-650-5411

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Music:

B.A.
B.F.A.

DEPARTMENTAL MISSION

The mission of the Music Department is to offer high quality undergraduate major programs concentrating on music history, theory, and composition leading to the Bachelor of Arts degree (B.A.); and professional training in classical and jazz performance, music education, and music & audio production technology, leading to the Bachelor of Fine Arts degree (B.F.A.). As need be, these specialization programs may be customized according to the post-collegiate objectives of individual students. To that end free electives are recommended not only as a supplement to the specialization program but also as an opportunity to pursue other interests and to broaden intellectual and cultural perspectives.

REQUIREMENTS FOR THE B.A. DEGREE

B.A. students must complete or exempt Music 10100, 13100, and 16100 before taking theory, musicianship or music history classes.

Required Music Courses:

Theory I - IV	12
Musicianship Lab I - IV	8
Music History I - IV	12
Orchestration I	3
Ensemble or Large Performing Group	4
Chorus	2
Music elective	1
Total Credits	42

REQUIREMENTS FOR THE B.F.A. DEGREE

B.F.A. students must complete or be exempt from Music 10100, 13100, and 16100 before being admitted to any of the programs listed below.

For Classical Instrumentalists

Required Music Courses:

Ensembles (6 semesters)	6
Private Instruction (6 semesters)	12
Class Instruction in Piano I - II (required only of non-pianists)	2
Theory I - III	9
Musicianship Lab I - IV	8
Music History (3 semesters)	9
Orchestration I	3
Music electives	15

Total credits 64

For Classical Vocalists

Students in this program must take or be exempt from Voice Class I and II before taking Private Instruction.

Required Music Courses:

Chorus (4 semesters)	4
Vocal Ensemble (4 semesters)	4
Private Instruction (6 semesters)	12
Class Instruction in Piano I - II	2
Theory I - III	9
Musicianship Lab I - IV	8
Music History (3 semesters)	9
Music electives	16

Total credits 64

For Jazz Instrumentalists

Students in this program must take or be exempt from Theory I and Musicianship I before taking Jazz Harmony & Improvisation or Music 49000.

Required Music Courses:

Private Instruction (6 semesters)	12
Large Jazz Ensemble (4 semesters)	4

Small Jazz Ensemble (4 semesters)	4
Jazz Harmony and Improvisation I-IV	16
Jazz Piano I - II	2
Jazz Repertory and Performance	12
Practice I - IV	
Jazz History I - II	6
Music electives	8

Total Credits 64

For Jazz Vocalists

Students in this program must take or be exempt from Theory I and Musicianship I before taking Jazz Harmony & Improvisation. Also, they must take or be exempt from Voice Class I and II before taking Private Instruction.

Required Music Courses:

Private Instruction (6 semesters)	12
Jazz Vocal Workshop (4 semesters)	8
Jazz Harmony and Improvisation I - IV	16
Jazz Piano I - II	2
Musicianship Lab II - IV	6
Jazz History I - II	6
Chorus (4 semesters)	4
Vocal Ensemble (4 semesters)	4
Music electives	6

Total Credits 64

For Jazz Instrumental/Music Education Students

Students in this program must take or be exempt from Theory I and Musicianship I before taking Jazz Harmony & Improvisation and Music 49000.

Required Music Courses:

Jazz History I - II	6
Music History (2 semesters)	6
Jazz Harmony & Improvisation I-IV	16
Jazz Piano I - II	2
Private Instruction (4 semesters)	8

Large Jazz Ensemble (2 semesters)	2
Ensembles (2 semesters)	2
Jazz Arranging I	3
Jazz Repertoire & Performance Practice I - IV	12
Music electives	7

Total Credits 64

For Jazz Vocal/Music Education Students

Students in this program must take or be exempt from Theory I and Musicianship I before taking Jazz Harmony & Improvisation. They must also pass or be exempt from Voice Class I and II before taking Private Instruction.

Required Music Courses:

Jazz History I - II	6
Music History (2 semesters)	6
Jazz Harmony & Improvisation I-IV	16
Jazz Piano I - II	2
Private Instruction (4 semesters)	8
Chorus (2 semesters)	2
Vocal Ensemble (2 semesters)	2
Musicianship Lab II - IV	6
Jazz Vocal Workshop (4 semesters)	8
Music electives	4

Total Credits 64

For Music & Audio Technology Students (Sonic Arts)

At the end of the Fall semester, eighteen candidates for this program are chosen from among those students who have taken or been exempted from the prerequisites: Music 10100, 13100, 16100, and 21700.

Required Music Courses:

Introduction to MIDI & Audio Technologies I - II	6
Synthesis & Sound Design I - II	6
Digital Audio I - II	6
Microphone Applications I - II	6
Multi-Track Production Techniques I-II	6
Audio for Moving Images	3
Theory I - IV*	12
Musicianship Lab I - IV*	8
Orchestration I	3
Class Instruction in Piano I - II	2
Music History or Jazz History (one of which must be chosen from the Music History Sequence)	6

* Students may substitute the equivalent number of credits of Ensembles or Large Performing Groups, for which they qualify, instead of taking Theory IV and/or Musicianship IV—with permission of the Department.

Advanced Recording, Mixing & Mastering (3 cr.), though not required, is highly recommended for all fourth-year students in the program.

Total credits 64

TEACHING MUSIC (K-12)

Theory I - III	9
Music Lab I - IV	8
Music History (3 semesters)	9
Jazz History (1 semester)	3
Orchestration I	3
Class Instruction in Voice I-II	2
Class Instruction in Piano I-II	2
Ensembles (6 semester including at least two in a vocal group. For Instrumentalist, at least two in an instrumental group)	6
Theory IV and Conducting, though not required, are highly recommended for all students in this program.	

Total Credits 64

Music 33100 and Music 36200 are highly recommended for all students intending to teach grades K-12. Some keyboard fluency is required.

Additional Requirements

All Music majors must complete the following courses:

New Student Seminar unless exempt (0 cr.)	
English 11000: Freshman Composition (3 cr.)	
Music 21000, English 21000 or equivalent: Second Level Writing Course (3 cr.)	
Core Curriculum for the intended degree	
Speech 11100 (3 cr.) or pass the Speech Proficiency test.	

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

EXEMPTION CREDIT

Students who feel they are eligible to be exempt from required or elective courses may elect to take placement exams, which are given during registration each semester. All students (majors and non-majors) with strong backgrounds in any area are urged to take the exemption exams in order to be placed in more advanced courses that will be appropriately challenging. Interested students should call the Music Office to obtain the dates of the next placement exam.

ELECTIVES FOR NON-MAJORS

All courses except Private Instruction are open to students who meet the prerequisites. Students with an interest in a particular aspect of music may elect courses from among the following:

Basic Music

Introduction to Music	3
Elementary Musicianship	2
Beginning Keyboard Techniques I	1
Class Instruction in Piano I	1

Vocal Classes

Class Instruction in Voice I	1
Chorus	1
Jazz Vocal Workshop	2
Pop Vocal Workshop	2
Vocal Ensemble	1

Music History

Jazz History I: From the Beginning to 1950	3
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Jazz History II: From the 1950 to the Present	3
Antiquity through the Renaissance	3
The Baroque through the Early Classic Era	3
The Classic-Romantic Era	3
Late Romanticism through the Present	3

Instrumental Ensembles

The following ensembles are open to non-majors by audition only:

Chamber Music	1
Large Jazz Ensemble	1
Latin Band	1
Percussion Ensemble	1
Small Jazz Ensemble	1
Brass Ensemble	1

ADVISEMENT

A pamphlet is available in the Music Office (Shepard 72) detailing the B.A. and B.F.A. curricula. All students should meet with a department advisor at registration each semester.

Students who have questions regarding special areas of study should contact the appropriate advisors:

B.A. Program

Prof. B. Hanning
Shepard 78C; 212-650-6702

B.F.A. Program

Prof. S. Reeves
Shepard 72B; 212-650-7651

Concert Coordinator

Prof. A. Deane
Shepard 78D; 212-650-7657

Graduate Program

Prof. S. O'Donnell
Shepard 82B; 212-650-7683

History and Literature

Prof. J. Graziano
Shepard 76B; 212-650-7654

Jazz Studies

Prof. D. Carillo
Shepard 76C; 212-650-7661

Music Education

Prof. J. Steele
Shepard 80D; 212-650-7662

Music and Audio Technology

Prof. P. Kozel
Shepard 82D; 212-650-8217

Private Instruction

Prof. S. Reeves
Shepard 72B; 212-650-7651

Theory and Musicianship

Prof. Jonathan Pieslak
Shepard 78C; 212-650-7665

Non-Majors

Students interested in taking any of the electives for non-majors, other than MUSIC 10100, but not wishing to major in the field, must inquire at the Music Office (Shepard 72) before registering. For recommended courses, see the lists under electives above.

FACILITIES

In 1993 the Music Department relocated to totally renovated quarters in historic Shepard Hall. In addition to new offices, studios, rehearsal rooms and an electronic piano lab, the state-of-the-art facilities include the following specialized locations:

Recital Hall

A new, beautifully appointed, natural acoustic concert hall (Shepard 95) is the site of performances by soloists and small ensembles. Seating one hundred and fourteen, it features audio recording and playback capabilities, and film and video projection systems. Its warm ambiance makes it the ideal location for important lectures and symposia.

Practice Rooms

Individual and group practice rooms are available to students registered in music major courses. Apply at the beginning of each semester in the Music Office (Shepard 72).

The Music Library

The Music Library (Shepard 160) has a collection of over 18,000 recordings, 17,600 scores, and 11,800 books about music, as well as 70 current periodicals subscriptions. All areas of music, including European and American art music, non-Western music, folk, jazz, and popular music, are represented. In addition to Internet work stations and playback facilities for recordings and videos, students have access to 10 Mac stations for computer-aided instruction.

The Sonic Arts Center

A cutting-edge facility consisting of four Production Studios, a Sound Lab, a Control Room/Classroom, and an Isolation Room. The Sonic Arts Center is the site for courses and student projects in sound design and synthesis, digital audio, audio for film and video, music production, and acoustic recording techniques.

Aaron Davis Hall

Located on the South Campus is the well-known Aaron Davis Hall of the Davis Center for the Performing Arts. Its stunning architecture houses an innovative three-theatre performing arts complex that presents public performances and exhibitions by students as well as professional artists, and serves as the cultural hub of upper Manhattan.

DEPARTMENT ACTIVITIES

Performing Groups

Chorus, jazz and Latin ensembles, and chamber and vocal ensembles are open to all qualified students. Consult the director of each group for information about application and audition procedures.

Concert Series

Faculty members, students and visiting performers present concerts in Aaron Davis Hall or in the Recital Hall (Shepard 95). Performances are also given at the CUNY Graduate Center. A schedule of events is published every semester and is available from the Music Office.

CUNY Jazz Festival

The CUNY Jazz Festival is held every spring at Aaron Davis Hall. Presented in cooperation with Jazz at Lincoln Center, it is a showcase for the best student bands from CUNY and selected area high schools. Each year a world-class artist is invited to perform with the student ensembles as well as their own group. Recent guest artists have included Wycliffe Gordon, Victor Goines, Luciana Souza, and Adam Rogers.

Visiting Artist Series

- **Fred Hersch Master Class:** Each semester a traditional master class is conducted by the gifted teacher and renowned pianist Fred Hersch, a unique artist who *Downbeat* magazine referred to as “one of the small handful of brilliant musicians of his generation.”
- **Master Class Series:** Each semester two master classes are given by a variety of invited jazz artists such as Dave Liebman, Maria Schneider, Jim McNeely, The Stockholm Jazz Orchestra, Dick Oatts, Norma Winstone, Dave Gilmore, Tim Ries, Jon Gordon, Charles Pillow, Pete McGuinness, Scott Wendholt, and John Stowell.
- **Musicians’ Accord** visits the campus twice each semester to read the works of student composers.
- **Village Vanguard Orchestra:** The music department is the rehearsal home of the world-famous Village Vanguard Orchestra. At these open rehearsals students have the opportunity to ask questions, watch “the books,” and listen to music that is at the core of big band repertoire, including charts by Thad Jones, Jim McNeely, Bob Brookmeyer and Slide Hampton. Students also get to observe their teachers at work since seven of the band members are CCNY private instructors. Formerly known as The Thad Jones/Mel Lewis Orchestra, The Village Vanguard Orchestra has been performing every Monday night at the Village Vanguard since 1965.

Friends of Music

Friends of Music is an organization, open to all students, whose purpose is to promote and stimulate the performance of live music, and coordinate student tutoring.

Student Representatives

Once a year, the Music majors elect representatives to participate, with full voting rights, on the Executive Committee.

AWARDS

The Acoustic Recording Award

Provides an opportunity for selected BFA performance majors to record a CD with third and fourth year students in the Music and Audio Technology program.

The ASCAP-Chappell/City College Gershwin Award

For composing, arranging, or presenting music for the theater.

The Jerome Ash Scholarship

To a deserving Sonic Arts student.

The Lisl Barnett Award

To a talented pianist.

The Mark Brunswick Award

To undergraduate and graduate students, for excellence in music composition.

The Israel Edward Drabkin Award

To a promising sophomore or junior music major.

The Doris Field Scholarship

To a deserving B.A. sophomore or junior.

The Friar Foundation Award

For an entering student on the basis of the audition for the B.F.A. program.

The Ivan Gillis Memorial Scholarship

To a promising music major, for private instruction in his or her primary performing medium.

The Max E. Greenberg Scholarship

For the private study of an instrument or voice.

The Victor Herbert Foundation Scholarships

For upper-level students in need of tuition assistance.

The Ben Jablonsky Scholarship

To a sophomore or junior who demonstrates promise in the composition or arranging of popular music or jazz.

The Fritz Jahoda Award

To a talented pianist

The Rosalind Joel Scholarship

To a talented entering student.

The Seymour Peck Scholarships and Creative Awards

To help a student complete a creative project.

The Presser Foundation Scholarship

To an outstanding music major about to enter the senior year.

The Pro Musica Awards

To senior music majors, for distinguished service to the cause of music at the College.

The Edward Rensin Memorial Award

To a senior music major, for outstanding service in music.

The Sidney Zolot Award For Excellence in Music

To a senior music major who has demonstrated excellence as a performer, composer or scholar.

COURSE DESCRIPTIONS

CORE COURSE

10100: Introduction to Music

Concepts underlying the understanding and enjoyment of music. Examples from around the world highlight matters of form and content. Attendance at concerts, both on and off campus, as well as guided classroom listening aid in the development of listening and communication skills. Pre- or coreq.: English 11000. 3 HR./WK.; 3 CR.

PREPARATORY COURSES

13100: Elementary Musicianship

Ear-training, sight-singing; intervals, rhythm, basic writing skills. Use of tapes and programmed materials. For potential Music majors and students continuing in music theory. Not for elective concentration for Music majors. Prereq: permission of the department. 3 HR./WK.; 2 CR.

15200: Fundamentals of Music for Elementary School Teachers

Acquiring basic skills. Singing, piano, recorder, principles of notation and tonality, conducting, ear training, simple harmony. Not for elective concentration for Music majors. 3 HR./WK.; 2 CR.

15400: Beginning Piano

Basic music notation, styles and trends explored while learning to play the piano.

No previous musical training necessary. Those who wish to become Music majors should take Music 13100 and 16100. 2 HR./WK.; 1 CR.

16100: Beginning Keyboard Techniques

Cannot be included in elective concentration credits of Music major. For potential music majors. Prereq: permission of the department. 2 HR./WK.; 1 CR.

21000: Writing About Music

Intended to help music majors and others interested in exploring the different strategies and styles pertaining to reading, thinking, and writing about music. This course satisfies the requirement of the second level writing course. Prereq.: English 11000 and Music 10100. 3 HR./WK. PLUS CONF.; 3 CR.

THEORY AND COMPOSITION COURSES

13200: Theory I - Introduction to Harmonic Analysis

Materials of harmonic analysis in tonal music; triads, seventh chords, chord symbols and functional labels, non-harmonic tones, voice leading, diatonic and chromatic chord usages, cadences, melody construction, phrasing. Emphasis primarily on analysis; some writing exercises. Prereq.: Music 13100 and 16100 and permission of the department.. 3 HR./WK.; 3 CR.

23100: Theory II - Diatonic Harmony and Counterpoint

Continuation of Music 13200, stressing writing. Usages of diatonic functional harmony; soprano-bass counterpoint, inner voices, composing and harmonizing melodies. Writing for voice and piano. Models from American folk songs, pop songs and excerpts from classical literature. Prereq.: Music 13200. 3 HR./WK.; 3 CR.

23200: Theory III - Chromatic Harmony and Counterpoint

Continuation of Music 23100; introducing chromatic harmony and key changes. 19th century harmonic usages. Harmonic structure and musical form. Models from classical literature, American standard songs and jazz. Prereq.: Music 23100. 3 HR./WK.; 3 CR.

33100: Theory IV - Late 19th and 20th Century Harmony

Continuation of Music 23200; increasing emphasis upon structural and functional analysis of and composition in late Romantic and 20th century styles, including American standard songs and jazz. Prereq.: Music 23200. 3 HR./WK.; 3 CR.

33300: Twentieth Century Techniques

Analysis, composition, readings from major theorists of the 20th century. Breakdown of tonality, atonality, 12-tone composition, recent innovations. Prereq.: Music 33100 or 33200; pre- or coreq.: Music 34200. 3 HR./WK.; 3 CR.

36200: Orchestration I

Score reading and writing. Individual range, tone quality, and expressiveness of orchestral instruments; use of various instrumental combinations. Performance of student orchestrations. Prereq.: Music 23200. 3 HR./WK.; 3 CR.

43000: Composition

Intensive work in composition of complete pieces, in imitative or free style, according to student's abilities and interests. May be taken twice. Prereq.: permission of the Department. 3 HR./WK.; 3 CR.

43200: Tonal Counterpoint Analysis

Analysis of appropriate models and intensive work in composition of canon, choral prelude, invention, fugue, etc. Prereq.: Music 23200 and permission of the department. 3 HR./WK.; 3 CR.

43300: Advanced Analysis

Studies of complete works of the 18th and 19th centuries, with consideration of both micro- and macrocosmic relationships. Readings from the works of influential theorists. Prereq.: Music 33100. (W) 3 HR./WK.; 3 CR.

46200: Orchestration II

Continuation of Orchestration I. Emphasis on orchestrating for large ensemble. Prereq.: Music 33400 and permission of the Department. 3 HR./WK.; 3 CR.

MUSICIANSHIP COURSES

Musicianship Sequence

16200: Musicianship Lab I

Sight-singing, rhythm and keyboard skills. Prereq: Permission of the Department. 3 HR./WK.; 2 CR.

16300: Musicianship for the Jazz Musician

A preparatory course in jazz practices and ear training. Topics will include how to practice jazz, the psychology of music, jazz notation, transpositions, lead sheet preparation, ear-training (exercises such as call/response, chord recognition, sight-singing of jazz tunes, singing and playing, and melodic/harmonic/rhythmic dictation), as well as a brief overview of jazz theory. (7th chords, chord/scale relationships and

forms). Students should bring their instruments on selected days. Prereqs: Music 13100, Music 16100 and Music 13200 or permission of the instructor. 2 HR./WK.; 1 CR.

26100: Musicianship Lab II

Continuation of sight-singing and rhythm. Added emphasis on dictation and keyboard. Prereq.: Music 16200 or equivalent. 3 HR./WK.; 2 CR.

26200: Musicianship Lab III

Continuation of Musicianship Lab II. Keyboard includes playing and singing American standards. Prereq.: Music 26100 or equivalent. 3 HR./WK.; 2 CR.

36100: Musicianship Lab IV

Continuation of Musicianship Lab III. Keyboard includes score reading. Elementary conducting. Prereq.: Music 26200 or equivalent. 3 HR./WK.; 2 CR.

MUSIC HISTORY COURSES

24100: History I - Antiquity through the Renaissance

Musical thought of the Middle Ages. Evolution of plainchant; origins and organization of polyphony, Ars Nova. Modes, musica ficta, trends toward homophony. Mass, motet, chanson, and madrigal in 15th and 16th centuries. Prereq.: Music 10100 and English 11000. (W) 3 HR./WK.; 3 CR.

24200: History II - The Baroque through the Early Classic Era

Monody and basso continuo. Emergence of opera, oratorio, cantata and Passion. The suite, concerto grosso and baroque sonata. Learned, galant and bourgeois styles. Beginnings of classical sonata, symphony, concerto, chamber music. Prereq.: Music 10100 and English 11000. (W) 3 HR./WK.; 3 CR.

34100: History III - The Classic-Romantic Era

Changing instrumental and vocal styles in the late 18th century. Influences of literature, visual arts in the 19th century. Role of virtuosity. Chromaticism, modality. Opera, symphony, symphonic poem, chamber music and song. National music idioms. Exoticism. Prereq.: Music 10100 and English 11000. (W) 3 HR./WK.; 3 CR.

34200: History IV - Late Romanticism through the Present

Late 19th century. Harmonic changes in the early 20th century. Breakdown and reinterpretation of tonality.

Impressionism, Expressionism, Eastern European and Asiatic influences. Twelve-tone system. Traditional and innovative forms. Aleatoric and electronic music. Prereq.: Music 10100 and English 11000. (W) 3 HR./WK.; 3 CR.

Music History Electives

In addition to the courses listed here, Music 27100 and 27400, listed under preparatory courses, can be used by B.A. and B.F.A. students as electives.

27100 Series: Topics in Jazz and Popular Music

A group of courses dealing with the history and literature of jazz. No prereq., (W) 3 HR./WK.; 3 CR.

27103: A Survey of Popular Music

27104: Latin Popular Music

27105: Gospel Music

27400 Series: Topics in Folk Music

Music in a changing world. Important trends in rural and urban folk music. Prereq.: Music 10100 or permission of the department. (W) 3 HR./WK.; 3 CR.

27401: Survey of Afro-American Music

27402: Latin American and Caribbean Folk Music

27403: Survey of Anglo-American Music

40000: Special Topics in Western Music
Intensive study in a particular genre, composer or historical period. Topics will vary and will be announced prior to registration. Prereq.: permission of the Department. (W) 3 HR./WK.; 3 CR.

44100: Studies in Western Music

Designed for advanced Music majors who wish to pursue specific topics in Western art music, such as composers and genres of various periods; offered on a rotating basis. 3 HR./WK.; 3 CR.

44101: Studies in Medieval and Renaissance Music

Prereq.: Music 24100. (W)

44102: Studies in Baroque Music

Prereq.: Music 24200 and 23100. (W)

44103: Studies in Classic Music

Prereq.: Music 34100 and 23200. (W)

44104: Studies in Romantic Music

Prereq.: Music 34200 and 33100. (W)

44105: Studies in Contemporary Music

Prereq.: Music 34200 and 33100 or 33300. (W)

Jazz Harmony, Composition, and Arranging

33700: Fundamentals of Jazz Composition

Composition and analysis of standard song forms as well as other standard compositional practices and forms idiomatic to jazz. Prereq.: Music 45700 and permission of the instructor. 3 HR./WK.; 3 CR.

35200: Jazz Arranging I

Basic principles of chord voicing; voicing extended chords. Ranges, transpositions, and instrumental characteristics of the instruments of the standard jazz big band. Chord substitution. Arranging for the small jazz ensemble, from two to five horns with rhythm section. Arranging standard songs. Prereq.: Music 25600 and 27600. 3 HR./WK.; 3 CR.

35700: Jazz Harmony and Improvisation I

Principles of Extended Harmony
A practical study of basic principles of extended chord harmony. Voicings and voice leading of extended chords. Examination of basic diatonic and chromatic chord functions. Improvisation techniques based on tonal centers and harmonic targets. Identification and application of nonharmonic tones. Harmonic and melodic ear training. Transcription and analysis. Prereq.: Music 13200, Music 16200. Coreq.: Music 32300, Music 27500. 4 HR./WK.; 4 CR.

35800: Jazz Harmony and Improvisation II

Principles of Functional Harmony
Diatonic and chromatic idioms of tonal organization in standard jazz repertory and "Rhythm Changes." Basic principles of chord substitution and reharmonization. An examination of bebop harmonic and melodic vocabulary and chromatic approach vocabulary. Harmonic and melodic ear training. Transcription and analysis. Prereq.: Music 35700, Music 27500. Coreq.: Music 32400, Music 27600. 4 HR./WK.; 4 CR.

45200: Jazz Arranging II

Arranging for the standard jazz big band. Analysis of form and content of traditional swing and bebop band arrangements. Thickened line, basic chorale, and combination voicings. Line writing and sectional counterpoint. Dynamic shape of the arrangement; thematic exposition and motivic development; repetition and variation. Treatment of texture and climaxes; "shout chorus" and saxophone solo. Preparation of the score and parts. Contemporary and experimental techniques. Prereq.: Music 35200. 3 HR./WK.; 3 CR.

45700: Jazz Harmony and Improvisation III: Advanced Principles of Functional Harmony

Advanced chromatic idioms of tonal organization. An examination of the blues and blues content in related and unrelated forms. Diminished scale harmony and the diminished cycle of chord substitution. Applied chord scale theory and extended harmony. Harmonic and melodic ear training. Transcription and analysis. Prereq.: Music 35800, Music 27600. Coreq.: Music 42300. 4 HR./WK.; 4 CR.

45800: Jazz Harmony and Improvisation IV: Nonfunctional Harmony, Modalism and Bitonality

Nonfunctional idioms and non-tonal harmonic organization. Bitonality and upper-structure triads. Modal jazz and free jazz. Thirds relations and "Coltrane changes." Advanced reharmonization using bass functions including pedal point, ostinato and linear techniques. Harmonic and melodic ear training. Transcription and analysis. Prereq.: Music 45700. Coreq.: Music 42400. 4 HR./WK.; 4 CR.

Jazz Performance Techniques

27500: Jazz Piano I

Elementary techniques for playing piano in jazz style. Chord identifications. Techniques for accompanying with or without melody, and with or without bass. Standards and jazz tunes. Extended chords. Prereq.: Music 13200 and 16200; coreq.: Music 35700 or permission of the Department. 2 HR./WK.; 1 CR.

27600: Jazz Piano II

Continuation of Music 27500. Blues. Altered dominant chords. Stride style. Harmonic complexities. Standards and jazz tunes. Prereq.: Music 27500; coreq.: Music 35800 or permission of the Department. 2 HR./WK.; 1 CR.

32300: Jazz Repertory and Performance Practices I

Basic exercises for developing skills in sight reading and rhythmic execution. Sight reading arrangements and charts. Ear training. Techniques for effective practicing and memorization. Playing in various keys and developing transposition skills. Interpreting meters and related jazz styles. Memorization of standard jazz repertoire. Techniques for combo performance and small ensemble performance. Prereq.: Music 13200, Music 16200. Coreq.: Music 35700, Music 27500. 4 HR./WK.; 3 CR.

32301: Jazz Repertory and Combo Performance 1

Learning standard jazz repertory in various styles through memorization of chosen repertoire and performance. Emphasis on developing skills for small group performance. Prereq.: permission of the Department. 2 HR./WK.; 1 CR.

32400: Jazz Repertory and Performance Practices II

Intermediate exercises for developing skills in sight reading and rhythmic execution. Sight reading arrangements and charts. Ear training. Techniques for effective practicing and memorization. Playing in various keys and developing transposition skills. Interpreting meters and related jazz styles. Memorization of standard jazz repertoire. Techniques for combo performance and small ensemble performance. Prereq: Music 32300, Music 27500. Coreq: Music 35800, Music 27600. 4 HR./WK.; 3 CR.

32401: Jazz Repertory and Combo Performance II

Learning standard jazz repertory in various styles through memorization of chosen repertoire and performance. Emphasis on developing skills for small group performance. Prereq.: Music 32301 and permission of the Department. 2 HR./WK.; 1 CR.

36000: Introduction to Contemporary Vocal Styles

Idioms from jazz, folk, pop and rock singing; musical, theater, avant-garde techniques; recording studio techniques. May be taken up to eight times. Prereq.: permission of the Department. 3 HR./WK.; 2 CR.

36001: Jazz Vocal Workshop**36002: Pop Vocal Workshop****38000: Rhythm Section Seminar**

Performance seminar for advanced jazz rhythm section instrumentalists (bass, guitar, piano and drums). May be taken twice. Prereq.: Music 35800, 42400 and audition, or permission of the instructor. 2 HR./WK.; 1 CR.

38002: Jazz Guitar Styles

An examination of jazz guitar styles and techniques. Transcriptions of masters from all periods, such as Charlie Christian, Wes Montgomery, Jim Hall, Grant Green, Pat Metheny, Ralph Towner, John Abercrombie and others, will be played and analyzed. Performance will focus particularly on the guitar/bass/drums trio, the guitar/bass duo and solo guitar concepts. Some Classical guitar literature will

be introduced and other finger-style techniques employing alternative tunings will be examined. A concert of material drawn from the semester's work will be performed by the students. Prereqs.: Permission of the instructor and the jazz program supervisor. 2 HR./WK.; 1 CR.

42300: Jazz Repertory and Performance Practices III

Advanced intermediate exercises for developing skills in sight reading and rhythmic execution. Sight reading arrangements and charts. Ear training. Techniques for effective practicing and memorization. Playing in various keys and developing transposition skills. Interpreting meters and related jazz styles. Memorization of standard jazz repertoire. Techniques for combo performance and small ensemble performance. Prereq: Music 32400, Music 27600. Coreq: Music 45700. 4 HR./WK.; 3 CR.

42301: Jazz Repertory and Combo Performance III

Learning standard jazz repertory in various styles through memorization of chosen repertoire and performance. Emphasis on developing skills for small group performance situations. In addition to standard performance practices, experimental approaches will be introduced, including playing in odd and changing meters, transposing, and playing in alternative rhythmic approaches. Prereq.: Music 32401 and permission of the Department. 2 HR./WK.; 1 CR.

42400: Jazz Repertory and Performance Practices IV

Advanced exercises for developing skills in sight reading and rhythmic execution. Sight reading arrangements and charts. Ear training. Techniques for effective practicing and memorization. Playing in various keys and developing transposition skills. Interpreting meters and related jazz styles. Memorization of standard jazz repertoire. Techniques for combo performance and small ensemble performance. Prereq: Music 42300. Coreq: Music 45800. 4 HR./WK.; 3 CR.

42401: Jazz Repertory and Combo Performance IV

Learning standard jazz repertory in various styles through memorization of chosen repertoire and performance. Emphasis on developing skills needed for small group performance situations. In addition to standard performance practices, experimental approaches will be introduced, including playing in odd and changing meters, transposing, and playing in alter-

native rhythmic approaches. Prereq.: Music 42301 and permission of the Department. 2 HR./WK.; 1 CR.

Jazz History**24500: Jazz History I: From its Origins to 1950**

Prereq.: Music 10100 and Music 21000 or equivalent. (W) 3 HR./WK., 3 CR.

34500: Jazz History II: From 1950 to the Present

Prereq.: Music 10100 and Music 21000 or equivalent. (W) 3 HR./WK., 3 CR.

PERFORMANCE COURSES**16000: Large Performing Ensembles**

May be taken by B.A. students four times for credit, by B.F.A. students, eight times. Prereq.: audition. 3 HR./WK.; 1 CR.

16002: Chorus**16004: Large Jazz Ensemble****16005: Jazz Ensemble Workshop**

A workshop/ensemble designed to provide opportunities for students to improve the skills required to perform with various City College jazz ensembles. Emphasis will be placed on note reading, rhythms, section playing, intonation, tone production, expression of dynamic and articulation markings, and phrasing. Prereqs.: Permission of the instructor; coreqs.: Music 35700 or higher and Music 32300 or higher. May be repeated for credit. 2 HR./WK.; 1 CR.

26000: Ensemble Performance

Experience in performing in small groups. In addition to ensembles listed, other types of ensembles will be offered to suit the particular interests and abilities of students. Prereq.: permission of the Department and/or audition. 2 HR./WK.; 1 CR.

26001: Chamber Music**26002: Vocal Ensemble****26003: Percussion Ensemble****26004: Small Jazz Ensemble****26005: Latin Band****26008: Brass Ensemble****26009: Collegium Musicum****26010: Bass Ensemble****26011: Brazilian Jazz Ensemble****26012: Improvisational Music Ensemble**

26013: Jazz and World Music Ensemble

26014: Jazz Repertory Ensemble

Performance Techniques

16400: Class Instruction in Piano I

Prereq.: 16100 or 15400. 2 HR./WK.; 1 CR.

16500: Class Instruction in Voice I

2 HR./WK.; 1 CR.

16600: Class Instruction in Strings I

Prereq.: 13100 or 15200. 2 HR./WK.; 1 CR.

16700: Class Instruction in Woodwinds

Prereq.: 13100 or 15200. 2 HR./WK.; 1 CR.

16800: Class Instruction in Percussion

Prereq.: 13100 or 15200. 2 HR./WK.; 1 CR.

26400: Class Instruction in Piano II

Prereq.: 16400 or permission of the department. 2 HR./WK.; 1 CR.

26500: Class Instruction in Voice II

Prereq.: 16500 or permission of the department. 2 HR./WK.; 1 CR.

26600: Class Instruction in Strings II

Prereq.: 16600. 2 HR./WK.; 1 CR.

26700: Class Instruction in Brass

Prereq.: 13100 or 15200. 2 HR./WK.; 1 CR.

26800: Class Instruction in Guitar

2 HR./WK.; 1 CR.

46400: Conducting

Principles and techniques of instrumental and choral conducting. Some experience in conducting college performing groups. Attendance at one rehearsal per week of large performing ensemble also is required. Prereq.: Music 36200. 3 HR./WK.; 3 CR.

46500: Advanced Conducting

A continuation of Music 46400 with more emphasis on score reading. Prereq.: Music 46400 and permission of the department. 3 HR./WK.; 3 CR.

48000: Individual Instruction

The Music Department will assign an instructor, or give permission to study with a teacher not connected with the College. All students must attend the seminars and take all examinations at the College. Designed for B.A. students; B.F.A. students take 49000. May be taken four times. Prereq.: Music 23100 and 24100, and audition. 1 HR. LESSON; 1 CR.

49000: Private Instruction in Instrument or Voice

One hour lesson per week, plus assigned practice. Designed for B.F.A. students; B.A. students take 48000. Coreq.: an Ensemble. May be taken up to eight times. 2 CR.

MUSIC AND AUDIO TECHNOLOGY (SONIC ARTS)

21700: Basic Audio Technology Concepts

Introduction to the basic concepts and technologies of the audio industry. Acoustics (sound generation, frequency and pitch, the overtone series, waveforms, bels and decibels, etc.). Basic electricity (laws of charges, conductors and insulators, voltage/current/resistance, circuits, magnetic induction, etc.). Interfacing audio equipment (impedance standards, balanced and unbalanced interconnections, audio connectors, standard operating levels, etc.). Lecture course. No studio time required. Prereq or Coreq: Music 13100 and 16100 or permission of the department. 3 HR./WK.; 3 CR.

21800: Introduction to MIDI and Audio Technologies I

Components, functions, sections, signal flow, and operation of a mixing console. Digital tape recorder technologies and operation. Complete examination of the MIDI protocol. MIDI sequencing and System Exclusive editing with Logic Audio, Pro Tools, and Sound Diver. Basic operation of software and hardware synthesizers and samplers in a production environment. Students are assigned individual studio time. Prereq: Music 21700 and Prereq/Coreq Music 13200 and 16200 or permission of the department. 3 HR./WK.; 3 CR.

21900: Introduction to MIDI and Audio Technologies II

Introduction to dynamic processing (compressors, limiters, expanders, gates) filtering, and equalization. Introduction to the plug-in environment. MIDI and audio automation. Busing and subgrouping with software mixers. Synchronization with MIDI time code, SMPTE, word clock, MIDI Machine Control, etc. Students are assigned individual studio time. Prereq: Music 21800 or permission of the department. 3 HR./WK.; 3 CR.

32100: Synthesis and Sound Design I

Review of acoustics. Principles of voltage control systems. Subtractive synthesis, additive synthesis, matrix modulation, and sample playback synthesizers.

Examination of both software and hardware synthesizers. Students create original sounds and music for synthesis and sound design projects throughout the semester. Students are assigned individual studio time. Prereq: Music 21800 or permission of the department. 3 HR./WK.; 3 CR.

32200: Synthesis and Sound Design II

Percussion oriented sample playback hardware and software. Amplitude and frequency modulation synthesis. Vector synthesis and wave sequencing. Granular synthesis. Resampling technology. Audio modulation software and plug ins. Students create original sounds and music for synthesis and sound design projects throughout the semester. Students are assigned individual studio time. Prereq: Music 32100. 3 HR./WK.; 3 CR.

32500: Digital Audio I

Basic concepts of audio analog-to-digital and digital-to-analog conversion. Quantization error, dithering, sample rate, word length, normalization. An extensive discussion of two-track and multi-track hard disk recording systems. Destructive and non destructive editing, playlists, files and regions, voice allocation vs. channels. Host based and native DSP. Audio editing in Peak, Pro Tools, and Logic Audio. Students are assigned individual studio time. Prereq: Music 21800 or permission of the department. Coreq: Music 21900. 3 HR./WK.; 3 CR.

32600: Digital Audio II

Working with samples using hardware and software samplers. Drum and percussion loops and loop manipulation. Time and pitch processing plug ins. Audio data compression formats for the web. Downloadable and streaming audio protocols for the web. Archiving and backup. The DVD specification. Students are assigned individual studio time. Prereq: Music 32500. 3 HR./WK.; 3 CR.

32700: Microphone Applications I

Microphone technology (construction, polarity patterns, frequency and transient response). Recording techniques for electric guitar, acoustic guitar, electric bass, and acoustic bass. Students work on recordings during class and during individual studio time. Prereq: Music 32600. Coreq: Music 32701. 3 HR./WK.; 3 CR.

32701: Multi-Track Production Techniques I

Ancillary class to Music 32700. Advanced concepts and application of dynamic processing. Patch bay construction and configurations. Recording session procedures and documentation. Setting up talkback and headphone mixes for a recording session. Prereq: Music 32600. Coreq: Music 32700. 3 HR./WK.; 3 CR.

32800: Microphone Applications II

Recording techniques for piano, drums, woodwinds, brass, strings, vocalists, and

spoken word. Ensemble/band recordings. Students work on recordings during class and during individual studio time. Prereq: Music 32700. Coreq: 32801. 3 HR./WK.; 3 CR.

32801: Multi-Track Production Techniques II

Stereo microphone techniques. Advanced filtering and equalization applications. Basic sound reinforcement concepts and applications. Vocal and style based production techniques. Students are assigned individual studio time. Prereq: Music 32701. Coreq: 32800. 3 HR./WK.; 3 CR.

43500: Audio for Moving Images

Advanced synchronization of audio to moving images. Advanced synchronization of digital audio devices with existing transfer protocols. Introduction to analog and digital video, film, and animation technologies. Video and audio compression codexes. Introduction to video/audio editing software. FX, Foley, narration, dialog replacement, and music bed. QuickTime synchronization and DVD-R authoring. Students are assigned individual studio time. Prereq: Music 32700. 3 HR./WK.; 3 CR.

43600: Advanced Recording, Mixing, and Mastering

Stereo and 5.1/7.1 surround sound mixing concepts. Advanced time and pitch processing. Speaker and amplifier design and construction. Introduction to mastering concepts. Red Book audio specification. Surround codexes including Dolby Digital and DTS. Students will pursue large-scale independent projects in recording, mixing, and mastering to apply techniques learned in class. Students are assigned individual studio time. Make be taken twice. Prereq: Music 32800. 3 HR./WK.; 3 CR.

INDIVIDUAL STUDY

30100-30300: Honors I-III

Approval of Dean and Department representative required. Apply no later than December 10 in the Fall term or May 1 in the Spring term. CREDIT VARIABLE, BUT USUALLY 3 CREDITS PER TERM.

31001-31003: Independent Study

Individual scholarly or creative work under supervision of faculty mentor. 1-3 CR./SEM.

31100-32000: Selected Topics in Music

A changing series of innovative and experimental courses on topics not generally covered in regular courses. Course announcements will be made the preceding semester. HOURS AND CREDITS TO BE ARRANGED.

FACULTY

Daniel Carillo, Assistant Professor

B.A., The City College, M.A.

Alison Deane, Associate Professor

B.M., Manhattan School of Music, M.M.

David Del Tredici, Distinguished Professor

B.A., Univ. of California (Berkeley); M.F.A., Princeton Univ.

John Graziano, Professor

B.S., New York Univ.; B.A., The City College; M.M., Yale Univ., M.Ph., Ph.D.

Barbara R. Hanning, Professor

B.A., Barnard College; Ph.D., Yale Univ.

Michael Holober, Assistant Professor

B.A., SUNY (Oneonta); M.M., SUNY (Binghamton)

Stephen Jablonsky, Associate Professor and Chair

B.A., The City College; M.A., New York Univ., Ph.D.

Paul Koziel, Associate Professor

B.Mus., Cleveland State Univ.; M.A., The City College

Shaugh O'Donnell, Associate Professor

B.A., Queens College, M.A.; Ph.D., CUNY

John Patitucci, Associate Professor

Jonathan Perl, Assistant Professor

B.F.A., CUNY; B.A., SUNY Purchase

Jonathan Pieslak, Assistant Professor

B.A., Davidson College; M.A., Univ. of Michigan (Music Theory), M.A. (Music Composition), Ph.D.

Suzanne Pittson, Assistant Professor

B.A., San Francisco State Univ., M.A.

Scott Reeves, Associate Professor

B.M., Indiana Univ., M.M.

Janet Steele, Assistant Professor

B.M., Univ. of Iowa; M.M., Yale Univ.

PROFESSORS EMERITI

David Bushler

Ronald L. Carter

Constantine Cassolas

William D. Gettel

Fritz Jahoda

Joel Lester

Ruth H. Rowen

Jack Shapiro

Edgar Summerlin

Henrietta Yurchenco

ARTISTS-IN-RESIDENCE

The Vanguard Jazz Orchestra

Musicians' Accord

Ray Gallon

Sheila Jordan

John Motley

Ray Santos

Department of Philosophy

(DIVISION OF HUMANITIES AND THE ARTS)

Professor Nickolas Pappas, Chair • Department Office: NAC 5/144 • Tel: 212-650-7291

GENERAL INFORMATION

The City College offers the following undergraduate degree in Philosophy:

B.A.

PROGRAMS AND OBJECTIVES

The discipline of philosophy is concerned with understanding reality and human action via systematic analysis and argument. It surveys important and influential ideas of the past and present, examines their presuppositions, and provides the student with the instruments of a reflective and responsible life.

REQUIREMENTS FOR MAJORS

After completing their core requirements, students ought to have ample credits left over to distribute between a concentration program and free electives. Students should consult the Department Chair or a Department Advisor to identify a concentration program best suited to their academic interests (e.g. in the philosophy of natural and/or social science, logic and mathematics, ethical theory, law, etc.). Students should choose free electives not only as a supplement to their concentration program, but as an opportunity to pursue their intellectual interests and broaden their perspectives. Students may also jointly major in Philosophy and another discipline, such as English, History, Physics or Psychology.

Required Courses

Philosophy:	
One of the following two:	3
20200: Introduction to Logic (3 cr.)	
20100: Logical Reasoning (3 cr.)	
30500: History of Philosophy I	3
30600: History of Philosophy II	3

Elective Courses

Five additional courses in Philosophy*	15
Two related electives in other departments **	6

Total Credits 30

*The following courses are strongly recommended for sequence A students: Phil 30700: *Metaphysics and Epistemology*; Phil 30800: *Ethics*; Phil 30900: *Social and Political Philosophy*; Phil 32100: *Symbolic Logic*.

** Related courses may be taken in such areas as Art, Biology, Economics, English, History, Political Science, Psychology, and Sociology. Consult the Department Chair or a Department advisor in selecting such courses.

Additional Requirements

All Philosophy majors must complete the following courses:
 New Student Seminar, unless exempt (0 cr.)
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

DUAL MAJOR

The Philosophy Department offers a range of courses on a regular basis specially suited to students wishing to major in both philosophy and law, psychology, English, history, education, and other disciplines. Please read the introductory section on dual majors and contact the Department for specific information on specific programs.

REQUIREMENTS FOR MINOR

The minor in philosophy is recommended for students who wish to improve those critical analytic skills developed by philosophy—and greatly valued by business and the professions—but who have insufficient credit hours available to major in philosophy.

After core requirements:

- a minimum of twelve elective credits in philosophy
- two related electives in other departments

Students should consult the department Chair or a department advisor for advice on courses best suited to their academic and future professional interests.

ADVISEMENT

The department chair and all full-time members of the department serve as department advisors. Their office hours are posted at the beginning of every semester.

DEPARTMENT ACTIVITIES

The Philosophy Department has a student-operated Philosophy Club, which meets regularly during club hours (Thursday 12:00–2:00 p.m.) during the academic year. Information about Philosophy Club activities is listed on the Department Notice Board opposite NAC 5/144. The Philosophy Department also runs its own colloquium series, with talks presented by members of the philosophy department and by visiting speakers.

Tutoring

The Philosophy Department tries to maintain a student-operated tutorial service. Students who feel that they need tutorial help should contact the department secretary for further information.

AWARDS

The department awards prizes (usually to graduating seniors) for excellence in various areas:

Brittain Prize: Moral Philosophy

Felix S. Cohen Prize: Philosophy of Law

Ketchum Prize: History of Philosophy

Sperling Award: Best Student

Ward Medal: General Excellence in Philosophy

For detailed information see, the *Guide to the City College Prizes, Awards, and Medals* in the office of the department chair.

COURSE DESCRIPTIONS

CORE COURSES

Philosophy 30000 or 30001 is required of all students.

30000: The Rational Animal: Dimensions of Understanding

A critical analysis of the nature and relationships between a variety of intellectual disciplines (such as the natural and social sciences, humanities and education) and of a number of contemporary, philosophical problems relating to mind, self and consciousness, and authority, rights and responsibilities. Prereq.: Completion of English 11000 and 15 credits of core courses. 3 HR./WK.; 3 CR.

30001: The Rational Animal: Honors

Open only to Freshman Honor students. 3 HR./WK.; PLUS CONF.; 3 CR.

INTRODUCTORY COURSES

10200: Introduction to Philosophy

An introduction to some of the central questions of philosophy, concerning our knowledge of the external world, causation, God, mind and body, freedom, justice, and moral judgment, via analysis of classical and contemporary philosophers such as Plato, Aristotle, Descartes, Locke, Hume, Mill, Kant, Russell, Wittgenstein and Rawls. (W) 3 HR./WK.; 3 CR.

11100: Critical Thinking

An informal analysis of inference and evidence employed in everyday arguments, including study of the principles held to justify forms of argument in morality, politics, the law and aesthetics. The aim of the course is to develop critical skills in reasoning and the evaluation of arguments, and sensitivity to the distinction between substantive argument and persuasive rhetoric, through a detailed analysis of examples drawn from a wide variety of sources, including the media. Attention will be paid to some elementary but critical distinctions relating to meaning, definition, and implication. 3 HR./WK.; 3 CR.

11200-12000: Special Topics in Philosophy

Selected topics and experimental courses are offered on a variety of topics. No prerequisites. VARIABLE CR.

20100: Logical Reasoning

This course provides students with an introduction to the elements of logical reasoning. Basic rules and methods of assessing validity and proving arguments

as they occur in natural language are introduced (such as truth tables and rules of inference). The goal of the course is to enable students to translate and evaluate arguments in natural language using the basic tools of modern logic. The focus of this course enables it to serve as an excellent form of preparation for SATs, LSATs and other standardized tests, as well as an analytic resource for further academic studies. 3 HR./WK.; 3 CR.

20200: Introduction to Logic

This course introduces students to the basics of modern logic. Topics covered include truth-tables, the rules of inference for the propositional calculus, and introduction to quantification theory. It focuses both on rules for producing formal proofs, and for translating natural language arguments into logical notation. Primarily designed as a preparation for advanced logic (Philosophy 32100: Symbolic Logic), the course would also be very useful for anyone expecting to deal extensively with complex reasoning. 3 HR./WK.; 3 CR.

20600: Philosophy of Science Fiction

An analysis of some of the central questions of philosophy as they are represented in science fiction (and occasionally, science fact). Selections from science fiction works will range over topics such as space and time, infinity and eternity, identity, knowledge of other minds; artificial intelligence; moral dilemmas and technology; the meaning of life. (W) 3 HR./WK.; 3 CR.

ELECTIVES

30100-30400: Honors I-IV

Approval of Dean and Department Honors Supervisor required. Apply no later than December 10 in the Fall term or May 1 in the Spring term. (W) VARIABLE CREDIT, BUT USUALLY 3 CR./SEM.

30500: History of Philosophy I: Ancient

A survey of early Greek philosophy, centered on the figures of Socrates, Plato, and Aristotle. Some attention is paid to pre-Socratic philosophers (e.g. Heraclitus, Parmenides) and to at least one current of thought after Aristotle (e.g. Stoicism, Skepticism, neo-Platonism, or early Christian theology). (W) 3 HR./WK.; 3 CR.

30600: History of Philosophy II: Modern

The formulation of the subjects and methods of modern philosophy in the seventeenth and eighteenth centuries.

Rationalism: Descartes, Spinoza, Leibniz. Empiricism: Locke, Berkeley, Hume. Transcendental idealism: Kant. Topics include the human mind, free will and determinism, knowledge of the external world and God. (W) 3 HR./WK.; 3 CR.

30700: Metaphysics and Epistemology

A survey of classic problems and contemporary theories of reality and knowledge. Includes topics such as appearance and reality; substance and accident; the relation between mind and body; causation; freedom and determinism; the relation between knowledge, belief, and certainty; skepticism, solipsism, relativism, and reliabilism. (W) 3 HR./WK.; 3 CR.

30800: Ethics

Analysis of the concepts employed in moral reasoning, such as good, right, duty, obligation, virtue, freedom and choice. Critical study of various theories of moral justification—such as utilitarianism, deontological ethics, virtue ethics—and of status of moral judgments—such as subjectivism, objectivism, relativism and skepticism. The relation between morality and religion, moral dilemmas, and some problems in practical ethics (abortion, famine, the environment, etc.). (W) 3 HR./WK.; 3 CR.

30900: Social and Political Philosophy

An analysis of the concepts and principles employed in reasoning about the social and political aspects of human life, such as social structure and function, equality and justice, property and rights, social and political obligation. A critical analysis of theories of the state of society, such as liberalism, Marxism, communitarianism, conservatism, and anarchism. (W) 3 HR./WK.; 3 CR.

31000: Independent Study and Research

A planned program of reading in philosophy to meet special needs of individual students, under guidance of a member of the department. Limited to upper seniors able to take a course before graduation when needed for graduate preparation. For advanced or specialized work beyond available offerings already completed. Permission of instructor required before registration. (W) VARIABLE CREDIT, BUT USUALLY 3 CR./SEM.

31100-32000: Special Topics in Philosophy

Special and experimental courses offered on a variety of topics. Consult Department for offerings and prerequisites. VARIABLE CREDIT, BUT USUALLY 3 CR./SEM.

32100: Symbolic Logic

This course extends the work of Philosophy 20200. The focus is on rigorously formulated systems of propositional and predicate logic, with emphasis on theorem-proving and the formalization of natural-language reasoning. Attention will be paid to the theory of relations, definite descriptions, the translation of elementary arithmetical concepts into logic and proofs of the deductive completeness of various systems of logic. Prereq: Phil 20200. 3 HR./WK.; 3 CR.

32200: Philosophy of Science

A critical survey of philosophical theories of scientific explanation and development. The course will focus on topics such as inductive and hypothetico-deductive accounts of scientific method; confirmation and falsification of scientific theories; the logic of scientific explanation; theories and models; the structure of scientific revolutions. (W) 3 HR./WK.; 3 CR.

32300: Philosophy of Mind

Examination of some classical and contemporary problems relating to our concepts and theories of mind, and of psychological phenomena such as intelligence, rationality, and emotion. Topics are likely to include theories of the relation between mind and brain (varieties of dualism and materialism); self-knowledge and knowledge of other minds; psychopathology; artificial intelligence; and personal identity. (W) 3 HR./WK.; 3 CR.

32400: Philosophy of Language

Examination of the relationship between thought, language and the world. The course will cover topics such as meaning, truth, reference, synonymity, necessity, names and descriptions, logical form, and pragmatics. (W) 3 HR./WK.; 3 CR.

32500: Aesthetics: The Philosophy of Art

The philosophical study of art, and of our judgment of art, through classical readings and contemporary developments. Includes topics such as representation, taste, artist intention, and mechanization. Special attention is paid to the problem of trying to speak generally about art in the face of the differences among specific arts. (W) 3 HR./WK.; 3 CR.

32600: Philosophy of Law

A critical analysis of some central concepts employed in legal reasoning and judgment, such as justice, crime, evidence, responsibility, legal and civil rights, punishment, civil disobedience, and constitutional interpretation. Examination of major theories of law such as natural law theory,

legal positivism and social realism, and of the relation between the law and morality. (W) 3 HR./WK.; 3 CR.

32700: Philosophy of Religion

Critical analysis of the question: What is religion? in light of the variety of religious beliefs and practices. Examination of different approaches to religion, including faith, rational argument, sensory experience, mystical and religious experience. Exploration of the relation between faith and reason, and between morality and religion. (W) 3 HR./WK.; 3 CR.

32800: Philosophy of Social Science

Critical analysis of the concept of the social as it is employed in classical and contemporary social scientific theories of social action, social structure, social collectivity and social explanation. Attention will be paid to topics such as holism and individualism; social and psychological explanation; structural and functional explanation; rationality assumptions; understanding alien societies; theories and values in social science; and the autonomy of historical understanding. (W) 3 HR./WK.; 3 CR.

32900: Philosophy of History

A survey of some classical and contemporary problems in both speculative and analytical philosophy of history. The course focuses on topics such as general theories of history (Vico, Kant, Herder, Hegel, Marx, Toynbee); varieties of historical explanation; objectivity in history; concepts of causation in history; methodology; history as an autonomous discipline. (W) 3 HR./WK.; 3 CR.

33400: Philosophy of Artificial Intelligence

Addresses philosophical issues raised by computers and other machines capable of performing tasks indicative of intelligence (e.g. multiplication, logical reasoning, playing chess, learning a language). The course will focus on topics such as the Turing test; strong and weak AI; concepts of representation, memory and understanding; the frame problem; symbolic versus connectionist approaches to cognitive processing. (W) 3 HR./WK.; 3 CR.

33500: Philosophy of Film

Addresses philosophical issues relating to film, such as the status of film as art object; the role of the audience in the constitution of the film object; realism and surrealism in film; and particular film genres such as comedy and cinema noire. (W) 3 HR./WK.; 3 CR.

33600: Philosophy of Space and Time

Addresses philosophical questions raised by our employment of the concepts of space and time in science and metaphysical thinking. The course will focus on topics such as individuation and spatio-temporal continuity; unities of space and time; substantial and relational theories of space; asymmetries of time; the theory of relativity; infinity and eternity. (W) 3 HR./WK.; 3 CR.

33700: Decision Theory

A non-mathematical introduction to game theory, decision theory, and rational choice theory, and philosophical issues relating to probability theory and utility theory. Includes examination of problems and paradoxes such as the Prisoner's Dilemma, Newcomb's problem and Cohen-Kelly queuing paradox. 3 HR./WK.; 3 CR.

33800: Philosophy of Wittgenstein

Critical explanation and analysis of the philosophy of Ludwig Wittgenstein, with special focus on his controversial and influential views on language, reality and forms of life, and their implications for disciplines such as linguistics, psychology, literary criticism and feminist theory. 3 HR./WK.; 3 CR.

33900: Kierkegaard, Nietzsche, Freud

A study of three authors who helped to define modernism after Hegel. The course focuses on: the philosophical critique of philosophy; the new quest for authentic individuality; reassessments of religion. (W) 3 HR./WK.; 3 CR.

34000: Self and Identity

A study of major philosophical theories of self-knowledge and personal identity, and related literary, social and psychological theories. (W) 3 HR./WK.; 3 CR.

34100: Philosophy of Psychoanalysis

Critical analysis of central concepts of Freudian and post-Freudian psychopathology and psychotherapy. (W) 3 HR./WK.; 3 CR.

34400: World Philosophies

Addresses central concepts and principles of a variety of non-Western systems and traditions in philosophy. Courses offered are likely to include (but are not restricted to) African Philosophy; Chinese Philosophy; Indian Philosophy; Islamic Philosophy; Latin-American Philosophy. Different systems and traditions will be offered in different semesters. (W) 3 HR./WK.; 3 CR.

34500: American Philosophy

Addresses central themes of American Philosophy, through the work of authors

such as Edwards, Emerson, James, Pierce, Dewey, Quine, Putnam, and Rorty. (W) 3 HR./WK.; 3 CR.

34600: Feminist Philosophy

Charts the historical evolution of the feminist approach to philosophy, and the contribution of feminists to topics in epistemology, philosophy of mind and moral, social and political philosophy. (W) 3 HR./WK.; 3 CR.

34700: Contemporary Philosophy

A study of major philosophical theories and theorists of the late nineteenth and twentieth century. The focus of this course may vary in different semesters, with emphasis placed upon either analytical, pragmatist or continental theories and theorists. (W) 3 HR./WK.; 3 CR.

34800: Continental European Philosophy

A study of major concepts and principles of philosophical movements originating in Continental Europe, such as Phenomenology; Existentialism; Hermeneutics; and Critical Theory. (W) 3 HR./WK.; 3 CR.

34900: Applied Ethics

Critical analysis of moral issues and dilemmas as they arise in various professions and everyday situations. Courses offered are likely to include (but are not restricted to): Business Ethics; Computer Ethics; Engineering Ethics; Environmental Ethics; Medical Ethics; Psychological Ethics. Different course topics will be offered in different semesters. (W) 3 HR./WK.; 3 CR.

35000: Major Philosopher(s)

Intensive study of the work of major philosophers (such as Plato, Hume, Kant, Hegel). Different philosophers featured in different semesters. (W) 3 HR./WK.; 3 CR.

35400: Seminar in Advanced Topics in Philosophy

Topics selected from a variety of different areas are made the focus of intensive critical examination. Topics offered each semester will be listed by the Philosophy Department. Prerequisites stated with course descriptions. Intended primarily for philosophy majors. 2 SEM. HR./WK. PLUS CONFERENCE; 3 CR.

FACULTY**John Greenwood, Professor**

M.A., University of Edinburgh; Ph.D., Oxford Univ.

Michael E. Levin, Professor

B.A., Michigan State Univ.; Ph.D., Columbia Univ.

Louis Marinoff, Associate Professor

B.Sc., Concordia Univ.; Ph.D., Univ. College, London

Nickolas Pappas, Associate Professor and Chair

B.A., Kenyon College; Ph.D., Harvard Univ.

Claudine Verheggen, Assistant Professor

M.A., Univ. of Chicago; Ph.D., Univ. of California at Berkeley

David Weissman, Professor

B.A., Northwestern Univ.; M.A., Univ. of Chicago; Ph.D., Univ. of London

PROFESSORS EMERITI**Abraham Edel**

K.D. Irani

Martin Tamny

Harry Tarter

H. S. Thayer

Phillip P. Wiener

Department of Physics

(DIVISION OF SCIENCE)

Professor Myriam Sarachik, Chair • Department Office: Marshak 419 • Tel: 212-650-6832

GENERAL INFORMATION

The City College offers the following undergraduate degree in Physics:

B.S.

PROGRAMS AND OBJECTIVES

The Department of Physics provides a comprehensive program designed to enable students to acquire a basic understanding of the laws of nature and their application, and to prepare them for a career either in physics or in one of the many science and technology oriented professions for which physics is a basic component. The various introductory courses are therefore designed to meet a variety of student needs, including general knowledge, preparation for professional work (engineering, materials science, photonics, premedical, biomedical physics, architecture, teaching, etc.) and preparation for advanced work in physics. A sequence of advanced courses is provided primarily for Physics majors but is also open to other interested students. The aim of these courses is to train students for technical employment in industry or government and for graduate work.

In addition to the Standard Physics Option the Department offers an Applied Physics Option, a Secondary Education Option and a Biomedical Physics Option. The Applied Physics Option has two tracks: Materials Science or Optics/Photonics.

The Department cooperates in the Program in Premedical Studies (PPS), a program of the Division of the College of Liberal Arts and Science. This allows the student to major in

Physics while participating in PPS. The program features a curriculum which integrates a variety of learning experiences specifically preparing participants to meet medical, dental and veterinary school admission requirements as well as those for physician's assistant and physical therapy advanced degree programs.

Honors

The Research Honors Program is one of several ways for undergraduate students to participate in faculty research projects. Such projects, if judged to be of sufficient quality and quantity, may lead to a degree with honors.

Physics Scholar Program

The Physics Department accepts students into the Physics Scholar Program. This program provides research opportunities and summer research employment. More information about this very successful and competitive program can be obtained directly from the Department.

Research

The large active research faculty provides undergraduate research opportunities in many fields of experimental and theoretical physics. Modern laboratories provide excellent training facilities in the areas of laser physics, low temperature physics, biophysics and semiconductor physics. Off-site research in atomic physics takes place at Lawrence Berkeley National Laboratory. Some students also participate in theoretical physics research, primarily in the areas of condensed matter physics and high energy. Academic credit can be earned for participation in such research projects.

Graduate Courses

Physics majors in their senior year sometimes enroll in beginning graduate courses.

Electives for Non-Majors

Engineering majors may take as electives Physics 32100, 32300, 42200, 45200, 45300, 55400, 55500, 56100, 58000 and 58100. Biology and pre-medical students may elect Physics 31500. Mathematics and Chemistry majors may elect Physics 35100 and 35300. All physical science students with an interest in astronomy should consider Physics 45400. Chemists should consider Physics 55400.

Exemption Credit

Qualified students may take exemption examinations for all courses offered by the Department upon application to the Department. Exemption examinations are given at several specified times during the year. In general, a grade of B+ or better is required for exemption with credit and a grade of B- or better for exemption without credit. For some courses, it will be necessary to complete the laboratory component before full credit is given.

TUTORING

Each faculty member designates two office hours per week when she or he will be available to tutor students. In addition, all faculty members teaching multiple section introductory or intermediate courses are available for tutoring of students in all sections of the particular course(s) they are teaching. Detailed tutoring schedules are distributed early in each semester. For the introductory courses there is

also a tutoring lab, open about 25 hours per week, staffed by qualified graduate and undergraduate students, where a student in these courses may seek assistance.

DEPARTMENT ACTIVITIES

Colloquia and Seminars

The Physics Department holds a weekly colloquium in a field of general or current interest in physics, usually given by a distinguished outside speaker. All Physics graduate students and Physics majors are invited to attend. In addition there are weekly seminars of a more specialized nature in such areas as high-energy physics, condensed matter physics and biophysics and frequent seminars in such areas as astrophysics and light scattering.

Planetarium

The Physics Department maintains a fully equipped planetarium. Programs and shows on an appropriate level are given for elementary schools, junior and senior high schools and the college community as well as other groups upon request. Programs and shows are available both in English and in Spanish.

Job Placement

The Physics Department maintains an up-to-date file of employment opportunities at all levels.

Computer Facilities

Computation facilities including a Sun Sparc-10 server and a Sparc-10 work station using the UNIX operating system, and a graphics work station are available in the Marshak Science Building for assigned course work and approved projects. Many work stations and personal computers throughout the building are connected to this facility. Access is available to the world-wide web and other internet facilities. Larger projects may use the CUNY computer complex with several large machines. The Physics Department has a PC laboratory.

AWARDS

The Physics Department annually awards one or more Ward medals and the Millman Prize for academic excellence, and a Sonkin medal for the best achievement in experimental physics. Physics students may also compete, along with students in the other science departments, for the annual Marshak award and Zemansky Introductory Physics Prize. All awards are presented at a special Science Honors Convocation.

ADVISEMENT

Undergraduate Majors

Professor Joseph L. Birman
Marshak J-424; 212-650-6871

Graduate Students

Professor Timothy Boyer
Marshak J-331; 212-650-5585

All other students

Contact the Physics Office (J-419; 212-650-6832), to be put in touch with an appropriate advisor.

REQUIREMENTS FOR MAJORS

All Physics majors must complete "Basic Courses for Physics Majors" and either the "Standard Physics Option" or one of the "Alternative Options". These courses are in addition to the Science core curriculum requirements:

Basic Courses for Physics Majors

Physics:	
32100: Modern Physics	3
35300: Electricity and Magnetism I	3
37100: Advanced Physics Laboratory I	2
45100: Thermodynamics and Statistical Physics	3

Total Credits for Basic Courses 11

Standard Physics Option

Required Courses

Physics:	
35100: Mechanics I	3
35200: Mechanics II	2
35400: Electricity and Magnetism II	2
45200: Optics	3

47100: Advanced Physics Laboratory II	2
55100: Modern Physics I	3
55200: Modern Physics II	3
55600: Current Topics in Physics	1
Physics Elective: Physics 31500, 42200, 45300, 55400	3

Mathematics:

39100: Methods of Differential Equations	3
39200: Linear Algebra and Vector Analysis	3

Total Credits for Standard Physics Option 39

Alternative Physics Option

(Materials Science and Optics/Photonics Tracks)

Required Courses

Physics:

32300: Quantum Mechanics	3
35100: Mechanics I	3
35400: Electricity and Magnetism II	2
Applied Physics Electives:	15
<i>Materials Science track requires Physics 554000, 55500 and 56100. Additional electives may be selected from Physics 42200, Chemistry 26100, 32500, Chem Engr 46700 and EE 44000.</i>	
<i>Optics/Photonics track requires Physics 45200, 47100, 45300 and 58000. Additional electives may be selected from Physics 55400, 58100 and EE 59801</i>	

Mathematics:

39100: Methods of Differential Equations	3
39200: Linear Algebra and Vector Analysis	3

Total Credits for Applied Physics Option 40

Biomedical Physics Option

Required Courses

Physics:

42200: Biophysics	3
52200: Biomedical Physics	3
One of the following:	3
32300: Quantum Mechanics (3 cr.)	
55100: Modern Physics I (3 cr.)	

Mathematics:

39100: Methods of Differential Equations	3
39200: Linear Algebra and Vector Analysis	3

Chemistry:
45900: Biochemistry I 4

**Total Credits for Biomedical
Physics Option 30**

Secondary Education Option

Major requirements are listed below.
Pedagogical requirements are listed in
the Department of Education section of
this Bulletin.

Required Courses

35100: Mechanics 3
35300: Electricity and Magnetism I 3
35400: Electricity and Magnetism II 2
37100: Advanced Physics Lab I 2
45100: Thermodynamics and
Statistical Physics 3
45200: Optics 3
32100: Modern Physics 3
Electives to be chosen in consultation
with the advisor 6

**Total Credits for Secondary Ed.
Option 25**

Elective Courses

Students who intend to go on to grad-
uate work in Physics should choose, in
consultation with the departmental
advisor, free electives from among the
following:

Physics:

31500: Medical Physics (3 cr.)
42200: Biophysics (3 cr.)
45300: Physical Photonics I (Laser
Optics) (3 cr.)
45400: Descriptive Astronomy (3 cr.)
52200: Biomedical Physics (3 cr.)
55300: Kinetic Theory and Statistical
Mechanics (3 cr.)
55400: Solid State Physics (3 cr.)
55500: The Physics and Chemistry of
Materials (3 cr.)
Any graduate course with designation
V0100-V2600

Mathematics:

Selected 20000, 30000, or 40000 level
courses

Additional Requirements

Students who intend to go on to com-
plete some graduate work during the
undergraduate years should see the
specialization advisor (Prof. J. L.
Birman) concerning possible substitu-
tions for some of the above courses.

*Note: all the non-introductory courses in
physics required for physics majors are given
only once a year. For a student who has
completed the required introductory courses
(Physics 20700, 20800, Math 20100, 20200,
20300) the following sequence is therefore
recommended for the remaining courses:*

	Physics	Math
Spring	32100	39100
Fall	35100, 35300, 37100	
Spring	35200, 35400, 55100, 47100	39200
Fall	45100, 55200, 55600	
Spring	45200, elective	

Students who enter this sequence dur-
ing their sophomore year may thus be
free to take physics (or math) electives
or graduate courses in their senior
year. The latter is especially recom-
mended by the department. Students
who cannot readily fit into this
sequence should consult the specializa-
tion advisor. All students intending to
major in physics should see the spe-
cialization advisor before entering their
junior year. Students who do not intend
to do graduate work should see
Professor Birman for an individualized
program.

All Physics majors must also complete
the following courses:

New Student Seminar (unless exempt)
(0 cr.)
English 11000: Freshman Composition
(3 cr.)
English 21003 or equivalent: Second
Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the
Speech Proficiency test.

In addition, all students must com-
plete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but
no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either two
years of foreign language in high
school or a second semester-level
course at City College.

Writing Across the Curriculum:
Three elective-level courses that are
identified as requiring at least 3,500

words of writing. Courses designated
with a (W) at the end of each course
description fulfill this requirement.

For more information, please con-
sult the chapter entitled *Degree
Requirements* in the introduction to
this Bulletin.

REQUIREMENTS FOR A MINOR IN PHYSICS

Students in other departments may
minor in physics by taking a minimum
of 9 credits in physics beyond the
introductory courses (20700, 20800 or
20300, 20400). These courses are in
addition to the science core require-
ments. See an advisor in the Physics
Department for guidance.

COURSE DESCRIPTIONS

CORE COURSES

*All courses except Astronomy 10000 and
30500 carry a Physics (PHYS) designation,
starting with PHYS 10000.*

Astronomy 10000: Ideas of Astronomy

Explores the entire realm of the universe,
its origins and history, and establishes our
time and place and role in it. Our solar
system, our galaxy, the expanding uni-
verse of many galaxies will be discussed
along with more recent discoveries such
as quasars, pulsars and black holes.
3 LECT., 1 REC. HR./WK., SLIDES, FILMS,
PLANETARIUM SHOWS; 3 CR.

Physics 10000: Ideas of Physics

A course with two themes: 1. How nature
works the interplay of space, time, matter
and energy; 2. Structures are born, live
out their life cycles, and die. These
include us, the stars, and perhaps the uni-
verse. This theme may be called the scien-
tific story of genesis. 3 LECT., 1 REC.
HR./WK., DEMONSTRATIONS, SLIDES,
FILMS; 3 CR.

**Astronomy 30500: Methods in
Astronomy**

Designed to fulfill the 30000-level core
science requirement, the course covers the
fundamental physical laws that underlie
the motions of heavenly bodies, including
Newtonian mechanics and Einstein's theo-
ry of relativity, planetary, stellar and
galactic evolution; the methods, tech-
niques and instruments used by modern
astronomy, including the Hubble Space
Telescope and planetary space probes.
3 LECT., 1 REC. HR./WK., SLIDES, FILMS,
PLANETARIUM SHOWS, FIELD TRIPS; 3 CR.

INTRODUCTORY COURSES

20300-20400: General Physics

For majors in the life sciences (biology, medicine, dentistry, psychology, physical therapy) and for liberal arts students. Fundamental ideas and laws of physics from mechanics to modern physics. Included are Newton's laws of motion, electricity and magnetism, heat, optics, relativity, quantum mechanics and nuclear physics. Emphasis is on the basic principles and general laws. Use of mathematics is restricted to elementary algebra and some trigonometry. Students registering for Physics 20300 or 20400 must also register for and take the Physics 20301 or 20401 Lab during the same semester. Physics 20300 is prereq. for Physics 20400 (required for Premed., Preudent., Bio-Med., and all Life Science students). 3 LECT., 1 REC. HR./WK., 3 LAB. HR. ALT. WKS.; 4 CR./SEM.

20305-20405: Laboratory Sections for 20300 and 20400

Department permission required for registration, which is limited to students having passed lecture part via exemption exam or via equivalent course elsewhere. Not open to students who have previously taken or are planning to register for 20300 or 20400. 3 LAB. HR. ALT. WKS.; 1 CR./SEM.

20700-20800: General Physics

Vectors, equilibrium, rectilinear motion. Newton's laws, gravitation, motion in a plane, work and energy, impulse and momentum, rotation and angular momentum, simple harmonic motion, fluids, heat and thermodynamics, waves and acoustics, electrostatics, magnetism and electromagnetism, direct and alternating current, geometrical and physical optics. Pre- or coreq.: Math 20200 for Physics 20700. Physics 20700 is prereq. for Physics 20800. Math 20300 is pre- or coreq. for Physics 20800. Students registering for Physics 20700 or 20800 must also register for and take the Physics 20701 or 20801 Lab during the same semester. (Required for all students in the Physical Sciences, Engineering and Computer Science.) 3 LECT., 2 REC. HR./WK., 2 LAB/WRKSH. HRS (20700), 2 LAB. HRS. ALT. WKS. (20800); 4 CR.

21900: Physics for Architecture Students

A one-semester course for students of Architecture. Translational and rotational equilibrium. Newton's laws of motion and vibrations. Work, energy and power. Fluids and temperature. Heat and energy trans-

fer. Prereq.: completion of all mathematics requirements through trigonometry or be eligible for Math 20500. 3 LECT., 2 REC. HR./WK.; 4 CR.

30000: Elementary Physics

For students in the School of Education. Survey of physics emphasizing the meanings of physical laws, concepts of motion and energy, and physical properties of matter. Topics include concepts of velocity and acceleration; Newton's laws of motion, mass and weight, circular motion, gravitation, work, energy, momentum, electromagnetic properties of matter, and atomic theory (required for students in Elementary Education). 3 LECT., 2 LAB. OR DISCUSSION HR./WK.; 3 CR.

32100: Modern Physics for Engineers

Introductory historical background, elementary quantum theory, application to one-electron atoms, atomic shell structure and periodic table; nuclear physics, relativity and statistical mechanics. Concepts, quantitative work and problem sets are emphasized. Prereq.: Physics 20800 or equivalent, Math 20300 or 20900 (elective for Engineering students). 3 LECT. HR./WK.; 3 CR.

ELEMENTARY ELECTIVES

31500: Medical Physics

Physical aspects of the skeletal, circulatory, nervous, muscular, respiratory, and renal systems; diagnostic imaging including EKG, EEG, x-rays, CAT, MRI, lasers and fiber optical probes; radiation therapy and safety; nuclear medicine; artificial organs. Prereq.: Physics 20400 or 20800. 3 HR./WK.; 3 CR.

32300: Quantum Mechanics for Applied Physicists

Postulates of quantum mechanics, formulation of the time-dependent and time-independent Schrodinger equation, application to one-dimensional bound state and scattering problems, application to three-dimensional problems, angular momentum, perturbation techniques, application to molecules. Prereq.: Physics 32100; pre- or coreq.: Math 39200 (required for Physics majors in the Applied Physics Option). 3 HR./WK.; 3 CR.

33100: Intelligent Life in the Universe

Problems concerning the existence of and contact with other intelligent life forms. The physical conditions necessary for development and evolution of such forms. The physical limitations on contact with them. No prereq. 4 HR./WK.; 4 CR.

33200: Physics of Science Fiction

The physical basis for the many imaginative and speculative schemes encountered in science fiction: anti-matter, space warps, black holes, anti-gravity, time travel, multi-dimensional universes, parallel universes, quarks, robots, flying saucers, Star Trek, etc. Every lecture is accompanied by a color slide show. No prereq. 3 HR./WK.; 3 CR.

ADVANCED COURSES

35100: Mechanics I

Dynamics of a particle and of a system of particles, conservation laws, central force motion, oscillations. Prereq.: Physics 20800; pre- or coreq.: Math 39100 (required for Physics majors). 3 HR./WK.; 3 CR.

35200: Mechanics II

Rotating coordinate systems, rigid body motion, Lagrange's equations. Prereq.: Physics 35100 (required for Physics majors). 2 HR./WK.; 2 CR.

35300: Electricity and Magnetism I

Vector calculus, electrostatics in vacuum and in material media. Laplace's equation, electrostatic energy, steady currents, magnetostatics. Prereq.: Physics 20800; pre- or coreq.: Math 39100 and Physics 35100 or equivalent (required for Physics majors). 3 HR./WK.; 3 CR.

35400: Electricity and Magnetism II

Magnetic fields in matter, Electromagnetic induction, Maxwell's equations, electromagnetic waves, introduction to radiation. Prereq.: Physics 35300; pre- or coreq.: Math 39200 (required for Physics majors, except those in the Biomedical Option). 2 HR./WK.; 2 CR.

37100: Advanced Physics Laboratory I

Experiments in electricity, magnetism and electronics. Prereq.: Physics 20800; coreq.: Physics 35300 (required for Physics majors). 3 LAB., 1 CONF. HR./WK.; 2 CR.

42200: Biophysics

Introduction to the structure, properties, and function of proteins, nucleic acids, lipids and membranes. In depth study of the physical basis of selected systems including vision, nerve transmission, photosynthesis, enzyme mechanism, and cellular diffusion. Introduction to spectroscopic methods for monitoring reactions and determining structure including light absorption or scattering, fluorescence, NMR and X-ray diffraction. The course emphasizes reading and interpretation of

the original literature. Prereq.: 1 yr. of Math, 1 yr. of Physics (elective for Physics Majors and Biomedical Engineering students). 3 HR./WK.; 3 CR.

45100: Thermodynamics and Statistical Physics

Temperature; equations of state; work, heat and the First Law; irreversibility, entropy and the Second Law; introduction to kinetic theory and statistical mechanics; low-temperature physics; the Third Law. Prereq.: Physics 35100 and 35300; coreq.: Math 39100 (required for all Physics majors). 3 HR./WK.; 3 CR.

45200: Optics

Dispersion, reflection and refraction, interference, diffraction, coherence, geometrical optics, interaction of light with matter. Prereq.: Physics 35400, or similar engineering courses; pre- or coreq.: Math 39200 (required for all Physics majors, except those in the Biomedical Option). 3 HR./WK.; 3 CR.

45300: Physical Photonics I/Laser Optics

Theory and applications of lasers and masers. Physical principles underlying the design of lasers, coherent optics, and non-linear optics. Pre- or coreq.: a course in modern physics (Physics 55100 or Physics 32100), a course in electricity and magnetism (Physics 35400 or EE 33200). Optics (Physics 45200) is desirable but not required (elective for Physics and Engineering majors). 3 HR./WK.; 3 CR.

45400: Descriptive Astronomy

Astronomy for science majors. Stellar astronomy, galactic astronomy, cosmology, and earth and planetary science. Recent discoveries and topics such as pulsars, black holes, radio astronomy, interstellar medium, radio galaxies, quasars, spiral density waves in disc galaxies, black body radiation, intelligent life beyond the earth. Lectures are supplemented by observations and planetarium shows. Prereq.: Physics 20800 (elective for Physics majors). 3 HR./WK.; 3 CR.

47100: Advanced Physics Laboratory II

Experiments in optics, quantum physics and atomic physics. Prereq.: Phys 35400; pre or coreq.: Physics 55100 (required for Physics majors). 3 LAB., 1 CONF. HR./WK.; 2 CR.

52200: Biomedical Physics

Methods used in the study of biophysics and biomedical physics. Study of the physical basis of spectroscopic methods including light absorption or scattering, fluorescence, NMR and X-ray diffraction for the

study of biomolecules. Biomedical imaging including sonogram, MRI, and tomography will be discussed. Prereq.: 42200 or the consent of the instructor. 3 HR./WK.; 3 CR.

55100: Modern Physics I

Introductory historical background, experimental and conceptual foundations of quantum theory, atomic spectroscopy, formal quantum theory, harmonic oscillator, potential well problems. Prereq.: Physics 32100; pre- or coreq.: Math 39200 (required for Physics majors). 3 HR./WK.; 3 CR.

55200: Modern Physics II

Angular momentum, hydrogen atom, perturbation theory, spin, identical particles, interaction of matter with radiation; selected applications from nuclear, particle, atomic, molecular and solid state physics. Prereq.: Physics 55100 (required for Physics majors). 3 HR./WK.; 3 CR.

55300: Kinetic Theory and Statistical Mechanics

Maxwellian distribution of velocities, entropy, and probability; Maxwell-Boltzmann statistics; equipartition of energy and classical theory of heat capacity of gases and solids, quantum statistical theory of heat capacity of gases and solids; Einstein-Bose and Fermi-Dirac statistics; quantum theory of paramagnetism. Prereq.: Physics 55100 (elective for Physics majors). 3 HR./WK.; 3 CR.

55400: Solid State Physics

(Same as Physics U4500) Crystal structure and symmetry; crystal diffraction; crystal binding; phonons and lattice vibrations; thermal properties of insulators; free electron theory of metals; energy bands; Fermi surfaces; semiconductors, selected topics in superconductivity, dielectric properties, ferro-electricity, magnetism. Prereq.: Physics 55100 or equivalent, e.g. Chem 33200 or Physics 32100 (elective for Physics and Engineering majors). 3 HR./WK.; 3 CR.

55500: The Physics and Chemistry of Materials

(Same as Physics U4600) Examples, characteristic properties, and applications of important classes of materials (semiconductors, ceramics, metals, polymers, dielectrics and ferroelectrics, superconductors, magnetic materials); surfaces and interfaces of solids; selected topics in the synthesis, processing and characterization of materials. Prereq.: Phys 55400 or equivalent, e.g. EE 45400 or ChE 46400 (required of Physics majors in the Applied Physics/Material Science Option; and elective for other Physics majors and for Engineering majors). 3 HR./WK.; 3 CR.

55600: Current Topics in Physics

A seminar course on current topics in experimental and theoretical physics, with oral reports by students and faculty (required for Physics majors). 1 HR./WK.; 1 CR.

56100: Materials Science Laboratory

Introduction to some of the basic methods for sample preparation and characterization relevant to materials science. Topics include synthesis of semiconductor thin films and high temperature superconductors, contact preparation, measurements of transport properties as a function of temperature, Raman spectroscopy, electron spin resonance (ESR), X-ray diffraction, absorption measurements in UV-visible range. Prereq.: Physics 32300; coreq.: Physics 55400 or permission of the instructor. 4 LECT. HR./WK. FOR THE FIRST THREE WKS., THEN 7 LAB. HR./WK.; 4 CR.

58000: Physical Photonics II

(Same as Physics U6800) Three-level and four-level solid state lasers: ion-doped laser crystals and glasses. Solid-state laser engineering: end-pumping techniques. Laser characterization: limiting slope efficiency. Femtosecond pulse generation: synchronous pumping, active mode-locking of tunable solid-state lasers. Regenerative amplification of ultrashort pulses. Photons in semiconductors: light-emitting diodes and semiconductor lasers. Semiconductor-laser-pumped solid-state lasers; microchip lasers. Photon detectors; noise in photodectors. Polarization and crystal optics: reflection and refraction; optics of anisotropic media; optical activity and Faraday's effect; optics of liquid crystals; polarization devices. Electro-optics: Pockel's and Kerr effects; electro-optic modulators and switches; spatial modulators; photo-refractive materials. Nonlinear optics: frequency mixing and harmonic generation; optical solutions. Acousto-optics: interactions of light and sound; acousto-optic devices. Prereq.: Phys 45300. 3 HR./WK.; 3 CR.

58100: Physical Photonics III/Wave Transmission Optics

(Same as Physics U8100) Waves and Maxwell's equations. Field energetics, dispersion, complex power. Waves in dielectrics and in conductors. Reflection and refraction. Oblique incidence and total internal reflection. Transmission lines and conducting waveguides. Planar and circular dielectric wave-guides; integrated optics and optical fibers. Hybrid and linearly polarized modes. Graded index fibers. Mode coupling; wave launching. Fiber-optic communications: modula-

tion, multiplexing, and coupling; active fibers: erbium-doped fiber lasers and amplifiers. Prereq.: Phys 35300 and 35400. 3 HR./WK.; 3 CR.

HONORS AND SPECIAL COURSES

30100-30300: Honors I-III

Approval of Dean and Department Honors Supervisor required. Apply not later than December 10 in Fall term or May 1 in the Spring term (elective for Physics majors). VARIABLE CR., USUALLY 3 CR./SEM.

31000: Independent Study

The student will pursue a program of independent study under the direction of a member of the Department with the written approval of the faculty sponsor and the Department Chair. Credit may be from 1-4 credits, as determined in the semester before registration by the instructor with the approval of the Department Chair. Students must have completed at least nine credits with a GPA of 2.5 or higher. A maximum of nine credits of independent study may be credited toward the degree. Independent study is to be used to meet special student needs that are not covered in regular course offerings.

31100-32000: Selected Topics in Physics

Courses on contemporary topics to be offered according to the interest of faculty members and students. Consult Department for courses to be offered each academic year. 3 HR./WK.; 3 CR.

GRADUATE COURSES OPEN TO UNDERGRADUATES

Qualified students may take, with Departmental approval, any course available in the Master's Program in Physics or the first year of the Doctoral Programs in Physics. These courses are described in their appropriate catalogs.

Adolf A. Abrahamson, Professor

B.A., New York Univ., M.S., Ph.D.

Robert R. Alfano, Distinguished Professor

B.S., Fairleigh Dickinson Univ., M.S.; Ph.D., New York Univ.

Joseph L. Birman, Distinguished Professor

B.S., The City College; M.S., Columbia Univ., Ph.D.; Doc-es-Sciences

Timothy Boyer, Professor

B.A., Yale Univ.; M.A., Harvard Univ., Ph.D.

Ngee-Pong Chang, Professor

B.S., Ohio Wesleyan Univ.; Ph.D., Columbia Univ.

Victor Chung, Professor

S.B., M.I.T., S.M.; Ph.D., Univ. of California (Berkeley)

Harold Falk, Professor

B.S., Iowa State Univ.; Ph.D., Univ. of Washington

Swapan K. Gayen, Associate Professor

B.Sc.(Honors), Univ. of Dacca, M.Sc; M.S., Univ. of Connecticut, Ph.D.

Joel Gersten, Professor

B.S., The City College; M.A., Columbia Univ., Ph.D.

Daniel M. Greenberger, Professor

B.S., M.I.T.; M.S., Univ. of Illinois, Ph.D.

Marilyn Gunner, Professor

B.A., SUNY (Binghamton); Ph.D., Univ. of Pennsylvania

Michio Kaku, Professor

B.A., Harvard Univ.; Ph.D., Univ. of California (Berkeley)

Joel Koplik, Professor

B.S., Cooper Union; Ph.D., Univ. of California (Berkeley)

Mathias Lenzner, Associate Professor

M.S., Friedrich-Schiller-Univ.; Ph.D., Jena Germany

Michael S. Lubell, Professor

A.B., Columbia Univ.; M.S., Yale Univ., Ph.D.

Hernan Makse, Assistant Professor

Licenciatura (Physics), Univ. of Buenos Aires; Ph.D., Boston Univ.

Carlos Andres Meriles, Assistant Professor

B.Sc., FaMAF, Universidad Nacional de Cordoba, Argentina, Ph.D.

Vangal N. Muthukumar, Associate Professor

Ph.D., Institute of Mathematical Sciences (India)

V. Parameswaran Nair, Professor

B.S., Univ. of Karawala; M.Sc., Syracuse Univ., Ph.D.

Vladimir Petricevic, Associate Professor

Dipl. EE., Univ. of Belgrade; M.S. Miami Univ.; Ph.D., CUNY

Alexios P. Polychronakos, Professor

Dip. E.E., National Technological Univ. of Athens; M.Sc., California Institute of Technology, Ph.D.

Myriam P. Sarachik, Distinguished Professor and Chair

A.B., Barnard College; M.S., Columbia Univ., Ph.D.

David Schmeltzer, Professor

B.Sc., Hebrew Univ.; M.Sc., Technion, D.Sc.

Mark Shattuck, Assistant Professor

B.A., Wake Forest Univ., M.S.; Ph.D., Duke Univ.

Frederick W. Smith, Professor

B.A., Lehigh Univ.; Ph.D., Brown Univ.

Jiufeng J. Tu, Assistant Professor

A.B., Harvard Univ., A.M.; M.S., Cornell Univ., Ph.D.

Sergey A. Vitkalov, Assistant Professor

M.S., Moscow Institute of Physics and Technology; Ph.D., Institute of Solid State Physics, Russian Academy of Sciences

PARTICIPATING FACULTY

Richard N. Steinberg, Associate Professor

B.S., SUNY Binghamton; M.S., Yale Univ., Ph.D.

PROFESSORS EMERITI

Michael Arons

Joseph Aschner

Alvin Bachman

Robert Callender

Herman Z. Cummins

Erich Erlbach

Hiram Hart

Martin Kramer

Robert M. Lea

Seymour J. Lindenbaum

Harry Lustig

William Miller

Marvin Mittleman

Leonard Roellig

Harry Soodak

Peter Tea

Martin Tiersten

Chi Yuan

Department of Political Science

(DIVISION OF SOCIAL SCIENCE)

Professor Vincent Boudreau, Chair • Department Office: NAC 4/126 • Tel: 212-650-5468

GENERAL INFORMATION

The City College offers the following undergraduate degree in Political Science:

B.A.

PROGRAM OBJECTIVES AND CAREERS

The Political Science Department offers a wide variety of courses on politics, law and government. Courses explore political institutions of every kind: executive and legislative bodies; courts and legal systems; bureaucracies, political parties, interest groups and coalitions; mass media; structures of international cooperation and conflict; ethnic, religious and ideological movements. We try to understand where political power is, how it operates, whose interests it serves—who gets what, when, where, how. But we also ask, not only how political institutions work, but how they should work, what human values they serve, or violate; what is the ultimate meaning and purpose of political life.

The department prepares people for careers in politics and in government employment generally; in law; in mass communications; in health professions; in every aspect of private and public planning. But our central vocation is to give students the knowledge and awareness they will need to become free men and women, and active citizens.

REQUIREMENTS FOR MAJORS

Required Courses

10100: American Government and Politics	3
12400: Political Ideas and Issues	3

Elective Courses

Ten courses distributed among the following four areas: 30

United States Politics and Government* (minimum 6 cr.)	
22000: The Judiciary	
22100: The Congress	
22200: The Presidency	
Comparative Politics and Government * (minimum 3 cr.)	
10400: World Politics**	
23000: Contemporary Comparative Politics	
International Relations* (minimum 3 cr.)	
10400: World Politics**	
25000: Contemporary International Relations	
Political Theory and Philosophy* (minimum 3 cr.)	
27300: Classical Political Thought	
27400: Modern Political Thought up to 1848	
27500: Contemporary Political Thought—1848 to the Present	

Total Credits 36

*The first course taken in each subfield should normally be chosen from among the listed courses.

** PSc 10400 may be taken in place of either PSc2300 or PSc25000. It can not take the place of both courses.

ADDITIONAL REQUIREMENTS

All Political Science majors must complete the following courses:

New Student Seminar, unless exempt (0 cr.)
 English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language: Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
 Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

HONORS PROGRAM

Students with a 3.0 average or better in Political Science are eligible, in their Junior year, to apply for the Honors Program in Political Science.

For further information, consult the Director of the Honors program, Professor John Harbeson (NAC 4/143C).

INTERSHIPS

The Political Science Department offers an Internship in Public and

International Affairs, as well as information regarding internships in the New York State Assembly and State Senate, unions, environment groups, and other governmental and non-governmental institutions. For information on available internships consult a Department advisor.

The department also cooperates with the Rosenberg-Humphrey Program in sponsoring summer internships in Washington, D.C.

ADVISEMENT

The Political Science Department assigns a faculty advisor to each Political Science major. New majors desiring an advisor, or majors seeking a new advisor, should consult with the chair so they can be assigned an advisor in their particular field of interest.

DEPARTMENTAL ACTIVITIES

The Political Science Department sponsors a number of student organizations, such as the Government and Law Society and the International Relations Club.

AWARDS

Students are invited to apply for honors and awards given annually for outstanding work in political science. These include:

The D'Agostino/Greenberg Scholarship in Law and Public Policy

The Bennett Essay Prize

The Henry Epstein Rule of Law Prize

The Hillman Bishop Award

The Ivo Duchacek Prize

The Kupperman Prize

The Murray A. Gordon Scholarship Award

The Samuel Hendel Award

The Stanley Feingold Prize

The Theodore Leskes Memorial Award

The Ward Medal

The Carl Dunat Prize

For detailed information, consult Professor Andrew Rich or Professor John Krinsky (NAC 4/138B and NAC 4/138C).

COURSE DESCRIPTIONS

CORE COURSES

10100: United States Politics and Government

An analysis of processes, values and problems of American government and democracy. Special emphasis is given to national political institutions and issues. 3 HR./WK.; 3 CR.

10101: American Government and Politics

For students enrolled in the Freshman Honors Program. This course covers more intensively and more comprehensively the subject matter of Political Science 10100. The student is expected to read several additional books, prepare papers, and participate actively in class discussions. 3 HR./WK.; 4 CR.

21002: Politics and Leadership

The dynamics and dilemmas of leadership and power. Various definitions of politics and systems of government will be related to current political controversies. Use of case studies, novels, films, essays, and other materials to illustrate political processes and concepts. Satisfies requirements of discipline-based writing course. Prereq.: satisfactory completion of English 11000. 3 HR./WK.; 3 CR.

INTRODUCTORY COURSES

The following introductory electives are expected to serve as prerequisites to further study in a subfield. Thus the Introduction to World Politics should be taken before enrolling in a more advanced International Politics course. Introduction to the Legal Process is a prerequisite to courses in Law, and so on. Additional prerequisites may be listed under some courses and may be waived only with the permission of the instructor or the department chair.

10400: Introduction to World Politics

Major patterns of contemporary world politics and the basic analytic tools for examining them that have been developed by students of comparative politics and inter-

national relations. The course will examine competing ideologies and systems of governance, patterns of international conflict and cooperation, and causes of the rise, fall and transformation of systems of world politics. 3 HR./WK.; 3 CR.

12400: Political Ideas and Issues

The relevance of political theory in the examination and solution of current political controversies. The course will cover such themes as justice, legitimacy, civil liberties, civil disobedience, the nature of man, society and the state. Focus will be on great writings in political thought from all periods. 3 HR./WK.; 3 CR.

12500: Introduction to Public Policy

Contemporary public policy. How policy issues are formulated, resolved and evaluated. The major techniques of policy analysis and public affairs research, with emphasis on the social and political contexts of policy problems. 3 HR./WK.; 3 CR.

12600: Introduction to the Legal Process

The basic institutions, procedures and theory of the administration of justice. Students examine typical proceedings, civil and criminal, and the operation of administrative as well as judicial tribunals. The legal process in relation to the American political system. 3 HR./WK.; 3 CR.

ELECTIVE COURSES

The prerequisite for all electives is Political Science 10100 or permission of the instructor. Additional prerequisites may be listed under some courses.

I. United States Politics and Government

20700: The Politics of Criminal and Civil Justice

The uses and limitations of law as a vehicle for achieving and securing a just political and social order. Special attention to the persistence of discrimination and inequality in the establishment and operation of legal systems. Prereq.: PSC 10100, 12600, or permission of the instructor. (W) 3 HR./WK.; 3 CR.

20800: American Political Thought I: 1620-1865

The origins and development of American political thought from the Puritan times to the end of the Civil War. The course will include study of basic themes in American thought: the scope and bounds of legitimate government power, majority

rule and minority rights, federalism and centralization, participatory democracy, checks and balances, religious freedom and separation of church and state. Also counts as a political theory and philosophy course. (W) 3 HR./WK.; 3 CR.

20900: American Political Thought II: 1865-Present

The development of American political thought from the end of the Civil War to the present. The course will include study of major political issues emergent since Reconstruction: race and gender issues, immigration, urbanization, multiculturalism, business-government relations, management of the American economy, and America's relationship to the world. Also counts as a political theory and philosophy course. (W) 3 HR./WK.; 3 CR.

21000: Urban Politics

The politics and policy problems of urban areas throughout the United States. Emphasis on both the central cities and their suburbs, as well as their relationships to state governments and national institutions. (W) 3 HR./WK.; 3 CR.

21100: New York Politics

The government and politics of New York City and State. An analysis of the processes, values and problems of contemporary New York and of the relationships between the City and rest of the State. (W) 3 HR./WK.; 3 CR.

21200: Constitutional Law, The Federal System

Survey of the historical and political role of the Supreme Court, focusing on leading decisions. These deal with central problems of judicial review and democracy, the federal system, and the scope and limits of congressional and presidential power. (W) 3 HR./WK.; 3 CR.

21300: Constitutional Law, Individual Liberties

The conflicts between majority rule and minority rights in leading Supreme Court decisions. Major attention to the more recent decisions concerning freedom of speech, freedom of religion, and other civil liberties, as well as social legislation and regulation of business. Prereq.: PSc 21200 or permission of the instructor. (W) 3 HR./WK.; 3 CR.

21600: Political Parties and Interest Groups

Interest groups and pressure politics. The rise of new groups in the political process. The nature and functions of parties under the American system of government; major and minor parties; party finance and political machines; national campaign issues and techniques. (W) 3 HR./WK.; 3 CR.

21700: Mass Media and Politics

The political questions raised by the growth, methods and technology of the mass media. Includes exploration of alternative theories of communication; the development of special media-oriented social roles and events; and the relationship between mass communication, symbolic politics, and political behavior at both the individual and societal level. (W) 3 HR./WK.; 3 CR.

22000: The Judiciary

How courts function in the political system. Examination of the motivations of judges, the social and cultural contexts of courtroom behavior, and role of the judiciary in policy-making. (W) 3 HR./WK.; 3 CR.

22100: The Congress

An examination of the role of legislative bodies in our political system. Organization, procedures and operations are the focus of the course. Case studies dealing with contemporary policy-making are integrated throughout the semester. (W) 3 HR./WK.; 3 CR.

22200: The Presidency

Assessment of the present and possible future role of the American presidency. The development of the office, its relationship to other institutions and politics, and contemporary problems. Topics include the duties of the President as Chief Executive, legislator, shaper of foreign policy, Commander-in-Chief, party leader, and head of state. (W) 3 HR./WK.; 3 CR.

22300: United States Foreign Policy

This course will examine the nature and instruments of American foreign policy with the aim of equipping the student with the tools to make his/her own evaluation. Emphasis will be on the interplay between "ideas" and "reality" in this nation's approach to the outside world. Current foreign policy issues will be thoroughly examined. Also counts as an International Relations course. (W) 3 HR./WK.; 3 CR.

22400: An Introduction to Quantitative Data Literacy

The use and abuse of statistics in politics, journalism and the social sciences. Indices, such as crime and unemployment rates, and the use of statistical data in approaching policy problems and in studying political phenomena. Emphasis on the use and limitations of quantitative data as evidence for description and problem analysis. This course may not be substituted for a required course in mathematics, statistics or methodology. (W) 3 HR./WK.; 3 CR.

22600: Ethnic and Racial Politics in the United States

Detailed examination of cooperation and conflict among various ethnic groups. Particular attention will be paid to such topics as busing, affirmative action, neo-conservative thought, and comparative ethnic issues. (W) 3 HR./WK.; 3 CR.

22800: Policy Analysis

Designed to provide practical insights into the use of technical information and technical skills in the legislative and administrative processes of government. Designed especially for students in the School of Engineering and Architecture, this course is open by permission of the instructor to other interested students. Prereq.: Economics 10400 or 26400 or permission of the instructor. (W) 3 HR./WK.; 3 CR.

22900: Women and Politics

This course explores the theoretical underpinnings of contemporary feminism and analyzes the changing dimensions of women's participation in American politics. Electoral, interest group, and elite level political involvement will be discussed and comparisons made with women's political role in other nations. (W) 3 HR./WK.; 3 CR.

32200: Freedom of Expression Seminar

An advanced seminar examining the provisions of the First Amendment of the U.S. Constitution that deal with freedom of expression from historical, theoretical, and doctrinal perspectives. Considers freedom of expression in the light of competing values such as equality and privacy. (W) 3 HR./WK.; 3 CR.

32400: The Politics of Protest

The emergence, development and ultimate impact of protest movements on politics and policy in American politics. Through an examination of several movements in the United States after World War II, such as the civil rights, women's and anti-tax movements, the course will focus on three basic sets of questions: under what circumstances do dissident movements emerge? how do dissidents choose political tactics and strategies? and how do movements influence more conventional politics and policy? (W) 3 HR./WK.; 3 CR.

II. Comparative Politics and Government

23000: Contemporary Comparative Politics

The basic problems of comparing different types of political systems and their institutions. Specific examples are taken from American, western European and the Communist experience, as well as from cases drawn from the developing world. (W) 3 HR./WK.; 3 CR.

23100: European Politics and Government

Political processes in European countries viewed in terms of historical influences and contemporary social structure, and in comparison with American experience. (W) 3 HR./WK.; 3 CR.

23500: Introduction to the Politics of Developing Nations

Analysis of theories of development and their application in particular to the nations of the global south, the political, social and economic problems of developing countries, with particular emphasis on public policy choices. International economic influences (problems of foreign aid, trade and investment) as well as domestic influences on policy are discussed. (W) 3 HR./WK.; 3 CR.

23600: Latin American Political Systems

Contemporary political systems in selected countries. Emphasis upon the cultural environments, constitutional foundations, and practices, political and administrative patterns, political instability and revolution, the role of the family, church, army, intellectual and caudillo, and the relations of these governments with each other and the world. (W) 3 HR./WK.; 3 CR.

23700: Political Systems in Asia

The political institutions in the Far East and developments in Southeast Asia in the framework of world politics. Analyzes selected problems affecting six major powers: Japan, India, Pakistan, Indonesia, Communist China and Russia-in-Asia. (W) 3 HR./WK.; 3 CR.

23900: Developing Political Systems in Africa

Events leading to independence, forms of government, politics and parties, sociological and economic factors, orientation and world politics. (W) 3 HR./WK.; 3 CR.

24000: Politics of Southern Africa

A survey of politics, race relations, and African nationalism south of the Zambezi: Angola, South Africa, Namibia, Zimbabwe, Mozambique, Lesotho, Botswana, and Swaziland. Special attention to South Africa, its relations with adjacent areas and other states north of the Zambezi and abroad, and the problems of revolutionary change. (W) 3 HR./WK.; 3 CR.

24500: Caribbean Politics

The course will focus on key actors and institutions shaping contemporary Caribbean politics and policy. Of particular importance will be the role of those actors and institutions, both domestic and

transnational, in shaping development in the region. Case studies will be drawn from several islands to maximize the comparative nature of the course. (W) 3 HR./WK.; 3 CR.

35500: Environmental Politics: Comparative and Global Perspectives

Examines the rise of environmental consciousness and the key actors and institutions in environmental politics and policy-making at the domestic level. In particular such issues as global warming, ozone depletion, biodiversity, deforestation, and the links between environment and economic development are addressed. Latin America contains much of the planet's rainforests and biodiversity, hence has a great concern for "green" environmental issues. It is also urbanizing at a rapid rate and must address the "brown" environmental issues associated with rapid city growth and industrialization. Many of the cases read and examples cited during the course are drawn from Latin American context. (W) 3 HR./WK.; 3 CR.

II. International Relations**20200: International Political Economy**

An examination of the relationship between political and economic systems in selected industrialized and developing countries. Introduction to theories of political economy as they apply at the domestic and international levels. The course is designed to strengthen the students' theoretical foundation for advanced study of world affairs and to prepare them for courses focusing on particular world problems or areas such as industrialized countries or development in poor countries of the Third World. (W) 3 HR./WK.; 3 CR.

25000: Contemporary International Politics

Introduction to the dynamics of international relations: power, types of international systems, East-West relations, the foreign policies of major powers and of the Third World, causes of conflict and the role of international law organization. (W) 3 HR./WK.; 3 CR.

25200: Theories of International Relations

Analysis of basic theoretical approaches at the individual, state, sub-systemic (regional) and systemic (international) levels. Includes discussion of personality and psychological approaches, decision-making, comparative foreign policy, regional integration, alliances, and the international system. Basic introduction to social science methodology as applied to international relations. (W) 3 HR./WK.; 3 CR.

25300: International Law

Development of the basic principles of international law, including those relating to war and peace. Special attention will be placed on the role of international law in international relations and recent legal problems in international politics: trade, the sea, terrorism, the redefinition of sovereignty, minority and human rights, and international criminal tribunals. (W) 3 HR./WK.; 3 CR.

25400: International Organization

General and regional intergovernmental organizations, with emphasis on purposes, organs, functions and processes of the United Nations; problems of conflict resolution, decolonization, disarmament, social and economic development and the application of international law are discussed. The National Model United Nations Simulation (PSc 25500) may be taken as an adjunct to this course. (W) 3 HR./WK.; 3 CR.

25500: Model United Nations Internship

Simulation of the United Nations in class and at local level, leading to a national exercise, held partly at the U.N., which brings together college students from around the country, from Canada, Puerto Rico and Japan. Should be taken simultaneously with, or after, PSc 25400. Open to other students only by permission of instructor. (W) 3 HR./WK.; 3 CR.

25600: Contemporary World Conflict

The psychological, sociological, cultural, economic and military sources of international conflict. Includes analyses of contemporary regional and global conflicts, and methods of conflict resolution, including negotiation, coercion, diplomacy and war. (W) 3 HR./WK.; 3 CR.

35700: International Relations in Selected Areas

A study of the foreign policies and interrelations of nations in selected areas; contacts, cooperation, and conflicts between areas will also be considered. (W) 3 HR./WK.; 3 CR.

IV. Political Theory and Philosophy**27300: Classical Political Thought**

Ancient writers and the experiences of the ancient city-state will be studied with a view to their influence, validity and contemporary relevance. Readings will include Plato and Aristotle, among others. (W) 3 HR./WK.; 3 CR.

27400: Modern Political Thought: Up to 1848

Will explore some of the political, social and ethical ideas which arose out of the

process of modernization as it first occurred in the West. Readings vary from term to term, but include some of the following: Machiavelli, Hobbes, Locke, Montesquieu, Diderot, Rousseau, Burke, Paine, Bentham, Hegel, Marx (early writings), Shakespeare, and novelists of the nineteenth century. There will be special emphasis on the Enlightenment and French Revolution. (W) 3 HR./WK.; 3 CR.

27500: Contemporary Political Thought: 1848 to the Present

Issues and ideas discussed will include: alienation, anomie, mass society, eclipse of community, bureaucratization, uses and abuses of technology, totalitarianism, and ambiguities of modernization. Readings may include Marx, Weber, Freud, Kafka, Arendt, Orwell, and other nineteenth and twentieth century thinkers. (W) 3 HR./WK.; 3 CR.

37600: Marxism

A study of Karl Marx's social thought and political activity, and of other radical responses to modern capitalism. We will explore some of the "different roads to socialism" that have emerged in the twentieth century. There will be special emphasis on the contrast between democratic socialism and Leninism. (W) 3 HR./WK.; 3 CR.

37700: Judeo-Christian Political Thought

The contributions of Judeo-Christian thinking to the tradition of political thought in the West. The religious roots of radicalism, universalism, transcendentalism and individualism, as reflected in Old and New Testaments, and representative writers from the ancient, medieval and modern periods. (W) 3 HR./WK.; 3 CR.

V. Independent Study

30100-30200: Honors I-II

Honors will be granted to graduating seniors on the basis of a research paper and a comprehensive written examination taken in two fields of political science. Admission to the course requires (1) a 3.2 average in courses taken in the Social Sciences since the freshman year and (2) approval by the Department Honors Supervisor and the Dean. Apply no later than December 10 in the Fall term or May 1 in the Spring term. (W) HONORS I (30100), 3 CR.; HONORS II (30200), 6 CR.

31000: Independent Readings and Research in Political Science

Designed to meet the special needs of individual students not met by existing courses. Requires approval of Department

Chair and availability of an instructor willing to supervise the reading or research program before registering. 1-3 CR./SEM.

VI. Special Topics in Political Science

31100-31500: Selected Topic Seminars in Political Science

Advanced study in limited registration seminars, the topics to be chosen from the area of American politics, comparative politics, international relations, political theory and methodology, and combinations of the above. Open to students only with the permission of the Department Chair. 2 HR./WK.; 3 CR.

31600-32000: Selected Topic Electives in Political Science

Advanced study in topics chosen from the areas of American politics, comparative politics, international relations, political theory and methodology, and combinations of the above. Prerequisites to be established by instructor. 3 HR./WK.; 3 CR.

VII. Internships

32300: Legislative Internships

Offers students the opportunity to participate in the New York Assembly or Senate Internship Programs, or other legislative internships that combine practical experience and academic training. Credit varies, though typically 12 credits will be awarded for those students who successfully complete the programs offered by the New York State Legislature. Prereq.: junior or senior status and permission of the instructor.

32701-32702: Seminar Internship in Public and International Affairs

This course is part of a City University internship program designed for students interested in the practical aspects of government at city, state and federal levels, as well as in international organizations. 2 HR./WK., PLUS INTERNSHIP; 4 CR.

FACULTY

Sherrie L. Bayer, Associate Professor
B.A., Barnard College; M.Phil., Columbia Univ., Ph.D.

Marshall Berman, Distinguished Professor

B.A., Columbia Univ.; B. Litt., Oxford Univ.; Ph.D., Harvard Univ.

Vincent G. Boudreau, Associate Professor and Chair

B.A., LeMoyné College; M.A., Cornell Univ., Ph.D.

Jacqueline A. Braveboy-Wagner, Professor

B.A., Univ. of the West Indies, M.Sc.; Ph.D., Univ. of Arizona

Bruce Cronin, Assistant Professor

B.A., SUNY (Albany); M.A., New York Univ.; Ph.D. Columbia Univ.

Joyce Gelb, Professor

B.A., The City College; M.A., Univ. of Chicago; Ph.D., New York Univ.

John W. Harbeson, Professor

A.B., Swarthmore College; A.M., Univ. of Chicago; Ph.D., Univ. of Wisconsin

Leonard Jeffries, Jr., Professor

B.A., Lafayette College, M.I.A.; Ph.D., Columbia Univ.

John Krinsky, Assistant Professor

B.A., Swarthmore; M.A., Columbia Univ., Ph.D.

Mira Morgenstern, Assistant Professor

B.A., City College; M.A., Yeshiva Univ.; Ph.D., Princeton Univ.

Michael Paris, Assistant Professor

B.A., Hobart and William Smith College; J.D., Columbia Univ.; Ph.D., Brandeis Univ.

Andrew Rich, Assistant Professor

B.A., Univ. of Richmond; M.A., Yale Univ., M.Phil., Ph.D.

PROFESSORS EMERITI

Moyibi J. Amoda

Allen B. Ballard

Randolph L. Braham

John A. Davis

Alan Fiellin

Diana Gordon

John H. Herz

George N. McKenna

Thomas G. Karis

Arnold Rogow

Edward V. Schneider

Pre-Law Program

(DIVISION OF SOCIAL SCIENCE)

Professor Michael Paris, Director • Program Office: NAC 4/135 • Tel: 212-650-5234

GENERAL INFORMATION

The City College offers the following undergraduate degree in Pre-Law:

B.A.

PROGRAM AND OBJECTIVES

Admission to law school is not based upon any specific pre-legal course of study. Superior students from all disciplines are accepted by law schools, and no student should feel it necessary to major in pre-law to be a competitive applicant to schools of law. Indeed, most legal educators strongly encourage undergraduate pre-law students to avoid an excessively narrow course of study and to enroll in challenging courses which will strengthen their writing and analytical abilities.

The American Bar Association recommends that pre-law students follow a course of studies which will give them precision and polish in both written and spoken English, sharpen their skills of reasoning, logic, decision-making, and analytical thinking, and equip them with a broad understanding of history, politics, economics, philosophy and the relationship of law to social institutions. Similarly, a 1982 Task Force Report to the Conference of Chief Justices called for "an undergraduate course of study that fosters a broad understanding of U.S. political institutions and values, an appreciation of the history of Western culture and ideas, insight into human behavior, and experience in the analysis and critical examination of ideas."

The interdisciplinary Pre-Law Major is designed to offer City College undergraduates just such a broad and demanding curriculum.

REQUIREMENTS FOR MAJORS

Required Courses

Economics:

One of the following two: 3
 10000: Modern United States Economy (3 cr.)
 10300: Economics: Principles and Policies (3 cr.)

English:

21002: Writing for the Social Sciences 3

One of the following two: 3
 23000: Writing Workshop in Prose (3 cr.)

33000: Critical Reading and Writing (3 cr.)

Philosophy:

20100: Logical Reasoning 3
 32600: Philosophy of Law 3

One of the following two: 3
 30800: Ethics (3 cr.)
 30900: Social and Political Philosophy (3 cr.)

Political Science:

12600: Introduction to the Legal Process 3

20800: American Political Thought I: 1620-1865 3

20900: American Political Thought II: 1865-Present 3

21200: Constitutional Law I: The Federal System 3

21300: Constitutional Law II: Individual Liberties 3

Elective Courses 12

Four courses from the following list, or as approved by the pre-law advisor: [No more than two from any single department]

Anthropology:

20100: Cross-Cultural Perspectives (3 cr.)

22500: Class, Gender and Ethnicity (3 cr.)

23100: Anthropology of Law (3 cr.)

Economics:

22000: Microeconomic Theory I (3 cr.)

22100: Microeconomic Theory II (3 cr.)

22500: Macroeconomics I (3 cr.)

22600: Macroeconomics II (3 cr.)

English:

41900: Advanced Writing Workshop (3 cr.)

History:

37000: The American Legal Tradition (3 cr.)

33200: The Era of the American Revolution (3 cr.)

33300: The New Nation, Slave and Free, 1783 to 1840 (3 cr.)

33400: The Era of Civil War and Reconstruction, 1840-1877 (3 cr.)

33500: The Response to Industrialization, to 1917 (3 cr.)

33600: The United States in the Twentieth Century (3 cr.)

Philosophy:

30500: History of Philosophy I (4 cr.)

30600: History of Philosophy II (4 cr.)

30900: Social and Political Philosophy (3 cr.)

Political Science:

20700: The Politics of Civil and Criminal Justice (3 cr.)

22000: The Judiciary (3 cr.)

22100: Congress and the Legislative Process (3 cr.)

22200: The Presidency (3 cr.)

27500: Contemporary Political Thought: 1848 to the Present (3 cr.)

Psychology:

24700: Social Psychology (3 cr.)

26900: Behavior in Organizations
(3 cr.)**Sociology:**23700: Foundations of Sociological
Theory (3 cr.)24100: Criminology and Corrections
(3 cr.)

25100: Urban Sociology (3 cr.)

Total Credits**45****ADDITIONAL
REQUIREMENTS**

All Pre-law majors must complete the following courses:

New Student Seminar, unless exempt
(0 cr.)English 11000: Freshman Composition
(3 cr.)English 21000 or equivalent: Second
level writing course (3 cr.)Core Curriculum for the intended
degreeSpeech 11000 (3 cr.) or pass the
Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:Pass the CPE after completing 45 but
no more than 60 credits.**Proficiency in a Foreign Language:**Students must complete either four
years of foreign language in high
school or a fourth semester level
course at City College.**Writing Across the Curriculum:**Three elective level courses that are
identified as requiring at least 3,500
words of writing. Courses designated
with a (W) at the end of each course
description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

Premedical Studies Program

(DIVISION OF SCIENCE)

Professor Robert P. Goode, Director • Program Office: Marshak 529 • Tel: 212-650-7843

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

The Program in Premedical Studies is a special program for students who wish to pursue careers in the health professions: medicine, dentistry, osteopathy, veterinary medicine, optometry and podiatry. It combines a full program of course work with special features designed to increase the number of successful applicants to professional schools from The City College.

High school seniors, transfer students from community colleges and from senior colleges, and college graduates who are interested in health careers may apply to the program. PPS students who are degree candidates must select a departmental major and complete their graduation requirements.

The Health Professions advisor works closely with all students from the time of their admission into the program. Students are assisted in course selection, career choices and preparation of applications to professional schools. The advisor is also responsible for preparing a detailed letter of recommendation for each applicant.

Summer Field Experience

During the summers following the sophomore and junior years, PPS students are encouraged to work as volunteers in hospitals, community health centers, or research laboratories.

Undergraduate Research

Qualified juniors and seniors may elect to do research in biochemistry, biology, chemistry, physics or psychology.

Projects are supervised and guided by members of The City College faculty. Some of these students are eligible for scholarships and salaries through the Biomedical Research Programs.

PROGRAM REQUIREMENTS

Biology, Humanities and Social Sciences Majors; Postbaccalaureate Students

PPS students who are undergraduate degree candidates must select a major department and complete all departmental and divisional requirements. Most courses listed are also applicable to the departmental major in science.

Required Courses

Biology**:

One of the following two sequences: 8

Sequence A:

10100: Foundations of Biology I (4 cr.)

10200: Foundations of Biology II (4 cr.)

Sequence B:

20700: Organismic Biology (4 cr.)

22900: Cell and Molecular Biology (4 cr.)

Chemistry:

10301: General Chemistry I 4

10401: General Chemistry II 4

26100: Organic Chemistry I 3

26300: Organic Chemistry II 3

One of the following two: 2-3

26200: Organic Chemistry Lab (2 cr.)

27200: Organic Chemistry Laboratory (3 cr.)

Physics:

20300-20400: General Physics 8

Mathematics:

One of the following sequences: 8-12

Sequence 1:

20500: Elements of Calculus (4 cr.)

20900: Elements of Calculus and Statistics (4 cr.)

Sequence 2:

20100: Calculus I (4 cr.)

20900: Elements of Calculus and Statistics (4 cr.)

Sequence 3:

20100: Calculus I (4 cr.)

20200: Calculus II (4 cr.)

17300: Introduction to Probability and Statistics (4 cr.)

Total Credits

40-45

Chemistry, Physics and Biochemistry Majors

Required Courses

Biology:**

10100: Foundations of Biology I 4

10200: Foundations of Biology II 4

22900: Cell and Molecular Biology 4

Chemistry:

10301: General Chemistry I 4

10401: General Chemistry II 4

26100: Organic Chemistry I 3

26300: Organic Chemistry II 3

27200: Organic Chemistry

Laboratory I 3

Physics:

20700-0800: General Physics 8

Mathematics:

20100: Analytic Geometry and Calculus I 4

20200: Analytic Geometry and Calculus II 4

20300: Analytic Geometry and Calculus III 4

Total Credits

50

Additional Requirements for all PPS Students

English:

11000: Freshmen Composition	3
21003: Writing for the Sciences	3

History:

38600: The American Health Care System	4
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Total Additional Credits 10

Total Credits 50-60

**After completing Biology 10100 and 10200, Biology majors must take Biology 20600 and two of the three following core courses: Biology 20700, 22800, or 22900.*

*** Students transferring to City College with one year of college biology with laboratory (C or better), or who have passed Advanced Placement Biology in high school with a grade of 4 or 5 or who pass an exemption, will receive credit for Biology 10100 and 10200, and are required to take sequence B. Students receiving credit for Biology 10100 and 10200 are encouraged to consult the syllabi for these courses to ensure that they have covered all the material.*

ADVISEMENT

Program Advisor

Lolita A. Wood-Hill
J-529; 212-650-7845

Tutorial Services

Individual and small group tutoring in biology, chemistry, physics and mathematics is available to all students in the program. One-week minicourses in laboratory skills and organic chemistry as well as workshops in learning skills and organismic biology lecture and laboratory have been developed for our students. For further information call Emily Rosario, 212-650-7840.

CLUBS

The Caduceus Society

This respected club, which was founded at the College in 1935, invites all students interested in the health professions to become members. Students receive invaluable information about health careers and about what it takes to get into schools of the health professions.

AWARDS

The Bolognino Scholarship

To students admitted to medical school.

The Sigmund and Rebecca L. Mage Scholarship

To a student in the process of applying to medical school.

The Dr. Jonas E. Salk Scholarship Award

To students admitted to medical school. A university-wide award.

The Benjamin Segal Scholarship

To a humanities graduate at the College admitted to medical school.

The Irving (Isaac) Shendell Memorial Scholarship

To students admitted to dental school.

Department of Psychology

(DIVISION OF SOCIAL SCIENCE)

Professor William King, Chair • Department Office: NAC 7/120 • Tel: 212-650-5442

GENERAL INFORMATION

The City College offers the following undergraduate and combined degrees in Psychology:

B.A.

B.S.

B.A./M.A. (Combined Degree)

PROGRAMS AND OBJECTIVES

The major provides students with a strong preparation for graduate study in psychology or work in other fields such as law, medicine, social work and business. The Department offers a wide variety of courses which are useful to students who are pursuing other majors but wish to broaden their understanding of human behavior.

A graduate degree is necessary for most careers in psychology, including work in counseling, clinical, school and industrial settings. Many graduate programs in Psychology require courses in statistics and experimental psychology. Computer literacy and a broad academic background are also useful preparation for graduate studies.

Research

Eligible students are encouraged to take Research Honors which usually requires three semesters for completion. Completion of Research Honors will significantly increase their chances of acceptance to graduate programs. Students need to approach a mentor in their junior year.

Other opportunities exist for students to earn credits while serving as volunteers in a social service or hospital setting or to get experience in research work. See Psychology 23300-23600.

The Combined B.A./M.A. Degree

This program offers highly qualified students the opportunity to simultaneously earn their B.A. and M.A. degrees. Students must take M.A. level courses in their junior and senior years, as well as complete a nine-credit honors project with a faculty mentor. All of the standard required courses for the undergraduate Psychology major and the M.A. degree requirements must be satisfied. Students save substantial time in working toward a Master's degree due to reduced total elective requirements and reduced time to complete a master's thesis after an honors project has been completed.

Most students graduating from this program enter doctoral studies in Psychology. Those not going on to doctoral work will have developed employable skills in the areas of Social Services, Psychological Testing, Market Research, Counseling and other human resources activities.

Admission requirements include the following: The completion of 60 credits including Psychology 10200, and 21500; a general GPA of 3.2 with a 3.5 in Psychology courses; three letters of recommendation from members of the faculty; a written personal statement describing goals and interests in Psychology. Students are admitted for both the Fall and Spring semesters. Applications from outstanding transfer students are also encouraged.

Interested students should contact Professor Vivien Tartter, Director, B.A./M.A. Program, NAC 7/209; 212-650-5709.

Exemption Credit

The Department normally allows credit toward the major for Psychology courses taken elsewhere which have been accepted for college credit by the Registrar's Office. However, the Department does not, at this time, accept CLEP for credit.

Requests for exemption exams must be made on an individual basis and are never granted unless the student can demonstrate that he or she has actually already completed *equivalent training* but did not, or could not, receive proper credit for some reason.

REQUIREMENTS FOR MAJORS*

Required Courses

Psychology:

<i>One</i> of the following three:	3-4
10101: Psychology for Freshman Honors Students (4 cr.)	
10200: Applications of Psychology in the Modern World (3 cr.)	
10299: Applications of Psychology in the Modern World (3 cr.)	
21500: Applied Statistics	4
32100: Experimental Psychology	4

Elective Courses

Additional courses that provide exposure to the many diverse areas in the field. 19

Total Credits 30-31

ADDITIONAL REQUIREMENTS

All Psychology majors must complete the following courses:

- New Student Seminar, unless exempt (0 cr.)
- English 11000: Freshman Composition (3 cr.)

English 21000 or equivalent: Second Level Writing Course (3 cr.)
Core Curriculum for the intended degree
Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
Students must complete either four years of foreign language in high school or a fourth semester-level course at City College (B.A.) or two years of foreign language in high school or a second semester level at City College (B.S.).

Writing Across the Curriculum:
Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

Students completing Freshman Honors 10101 must complete 28 credits; all others must complete 30 credits.

A total of four credits of fieldwork may be earned on a P/F basis for Psychology 23300, 23400, 23500 and 23600. Only one fieldwork credit counts toward the 19 elective credits required for the major. Students are *not* required to do field work.

Advanced undergraduate students may enroll in certain graduate courses in Psychology. Written permission of the instructor must be obtained prior to registration. The credits earned will count toward the undergraduate degree. Check in the Psychology Department office for further information.

** Major requirements are likely to change during the 2005-2006 Academic Year, Students entering during or after that year should check the requirements with the department.*

Requirements for the Minor

Students may minor in Psychology by completing Psychology 10200 and any additional four 3-credit Psychology courses achieving a total of 15 credits.

THE COMBINED B.A./M.A. DEGREE

Required Courses

Undergraduate Psychology Courses:
10200: Applications of Psychology in the Modern World 3
21500: Applied Statistics 4
32100: Experimental Psychology 4
30100-30200: Honors Research 6

Graduate Psychology Courses:
V1000: Advanced Experimental Psychology 4
One of the following: 0-3
V5000: Statistical Methods in Psychology I (3 cr.)
Pass an exemption examination (0 cr.)
B9900: Psychological Research and Seminar 3

Elective Courses

Undergraduate electives 7
Graduate electives 17-20

Total Credits 48

ADVISEMENT

To aid students in planning, the Psychology Department has prepared a Psychology Student's Handbook which is available in the Department Office: NAC 7/120. Students should consult advisors at least once each year to evaluate their progress and plan for the future.

Undergraduate Specialization Advisors

Students may visit any full-time faculty member during office hours to be advised, to become a psychology major or to have a graduation check form filled out prior to graduation. Office hours are posted outside NAC 7/120.

TUTORING

Tutoring services are available for Psychology 10200 in NAC 7/213, which is open at various hours for student use. Check in the Psychology Department office, NAC 7/120, for the tutoring schedule.

PSYCHOLOGICAL CENTER

Students experiencing personal or educational difficulties are encouraged to apply to the Psychological Center (NAC 8/101, 212-650-6603) for assistance.

DEPARTMENT ACTIVITIES

The Psychology Student's Association (PSA)

The PSA is organized and run by students. In the past it has conducted a variety of activities of interest to students including field trips, informal seminars and discussion groups, and hosted lectures. Interested students should contact the Psychology student advisor listed in NAC 7/120.

Psi Chi

Psi Chi is the National Honor Society in Psychology, affiliated with the American Psychological Association. In order to qualify for membership in Psi Chi, a student must be recommended by a faculty member, have taken 3 semesters of college courses, 6 credits of Psychology beyond Psychology 10200, and have a 3.0 average in Psychology as well as overall. Interested students should contact the Psi Chi advisor listed in NAC 7/120.

Students interested in joining either or both organizations need not be psychology majors.

Lecture Series

From time to time the Department sponsors public lectures or colloquia. These are generally announced several weeks in advance.

AWARDS

The following awards are given annually:

Bernard R. Ackerman Foundation Award

Joseph E. Barmack Memorial Award

Francis P. Hardesty Award

Gardner Murphy Award

Ward Medal

COURSE DESCRIPTIONS

SPECIAL COURSES

In addition to our regular course offerings, the department usually offers special topics courses each semester. These have included courses on Sleep & Dreams, Special Topics in Child Development and Interviewing. New topics are constantly being considered. See Psych 11100-12000 and 31100-32000: Seminars in Special Topics in Psychology.

CORE COURSES

10101: Psychology for Freshman Honors Students

Designed to provide for greater student participation. In addition to attendance at special Psychology 10101 lectures, students will participate in a 2 hour seminar, during which student papers will serve as the basis for class discussion. 2 LECT., 2 SEMINAR HR./WK.; 4 CR.

10200: Applications of Psychology in the Modern World

An introduction to the study of human development and learning, personality and motivation, sex differences, attitudes, aggressions, interpersonal attraction, behavior in groups and work settings, abnormal behavior and its treatment. Emphasis on the ways in which psychological theory and research can be applied to individual and social problems. May not be taken for credit by students who have already passed Psych 10101 or 10299. 3 HR./WK.; 3 CR.

10299: Applications of Psychology in the Modern World

For SEEK students. 6 HR./WK.; 3 CR.

ELECTIVE COURSES

10300: Psychology as the Science of Behavior

Introduction to basic research methods in Psychology. Students will gain first-hand experience in using a range of scientific methods to study basic psychological questions and will critically examine reports of social science findings. Prereq.: Psych 10200 or 10299 (required for Psychology majors). May not be taken for credit by students who have passed Psych 10101. (W) 3 HR./WK.; 3 CR.

11100-20000: Seminars in Special Topics in Psychology

Specially selected topics for intensive examination in several different areas. The topics and the courses offered each semester will be listed by the Psychology Dept. No prereq. 3 SEMINAR HR./WK.; 3 CR.

21500: Applied Statistics

Summation notation, frequency distributions; graphs; percentiles; measures of central tendency and variability; standard score; the normal curve; statistical inference; one-sample tests of significance; confidence intervals; 2-sample tests of significance; linear correlation and regression; chi-square. All procedures are examined in the context of their application to research in psychology. Prereq.: Psych 10101 or 10200 or 10299 and 10300 or 20300. Credit will be given for only one of the following courses: Econ 29000, Math 17300, Psych 21500, 21800, Soc 23100. Required for Psychology majors. 5 HR./WK.; 4 CR.

22600: Introduction to Life-Span Development

Introduces theories, concepts and research which enrich our understanding of human development throughout the life cycle. Students may wish to take this course as a general introduction to human development before enrolling in courses which focus on particular developmental periods. (Psych 24600, 25600 and 26600). Prereq.: Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

23300-23600: Laboratory and Field Work

For students who wish to supplement classroom work by supervised experience in the field. It is expected that a student will work on the average of 3 hr./wk. per credit. Approval is required. Pre-or coreq.: Psych 10101 or 10200 or 10299. Only one credit of fieldwork can be applied toward the elective credits required for the Psychology major. 3 HR./WK.; 1 CR.

Note: no more than six credits in any one department and no more than nine credits total will be permitted for the following courses: Anthropology 13300-13600, Asian Studies 20402, Black Studies 20000-20400, Psychology 23300-23600, Sociology 23300-23600, Urban Legal Studies 22000.

23800: Drug and Alcohol Abuse: Causes and Treatment

Discusses theory and research on personality, developmental and genetic factors in the lives of drug and alcohol abusers; diagnostic techniques for the assessment of substance abuse and addiction; and the various techniques used in the treatment and prevention of drug and alcohol abuse. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

23900: Psychology Applied to Work

Problem solving in the work environment using principles derived from psychological research: selection and placement of employees, psychological testing, job analysis, job evaluation, employment interviewing, performance appraisal and feedback, employee and management training and development, workplace design and human engineering. Emphasis will be placed upon social issues such as affirmative action, equal employment opportunity, substance abuse, and health and safety in the workplace. Prereq.: Psych 10101 or 10200 or 10299. (W) 3 HR./WK.; 3 CR.

24400: Psychology and the Black Experience

This course examines the psychological aspects of historical and contemporary experiences of people of African ancestry. The work of noted black psychologists in the United States and abroad is utilized to address issues of well-being and abnormality as they pertain to black people's past and current realities. Topics will include cross-cultural perspectives in black psychology, the black family, ethnic identity, education and the black child, mental health concerns of black people, research issues and the black community. Prereq.: either Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

24500: Psychology of Human Sexual Behavior

Sexual behavior, attitudes, developments, and the consequences of the behavior are examined from a psychological perspective. Topics include historical and cross-cultural viewpoints, theories of human sexuality, gender roles, sexual dysfunction, sexual preference, psychological develop-

ment of adult sexuality and aging sexuality. Prereq.: Psych 10101 or 10200 or 10299 or 10300. Credit will be given for only one of the following courses: Psych 11300 or 24500. 3 HR./WK.; 3 CR.

24600: Introduction to Human Development: Infancy and Childhood

Topics include genetic considerations; prenatal development; the characteristics of the neonate; cognitive processes; language development; personality changes; early socialization; moral development. Prereq.: Psych 10101 or 10200 or 10299 or 10300. (W) 3 HR./WK.; 3 CR.

24700: Social Psychology

Fundamental concepts and methods used in the investigation of attitude and attitude change, prejudice, socialization, communication, groups, conformity and other topics. Issues will be studied in the light of theory, research and relevant social problems. Prereq.: Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

24800: The Abnormal Personality

The description of various psychological disorders. Through the study of these disturbances the course gives insight into the general nature of personality functioning. Case material is presented. Prereq.: Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

25300: Cognitive Psychology: Thinking, Knowing and Remembering

How do we come to understand the world we live in and the people with whom we interact? How is self-knowledge acquired? This course will consider the ways in which people acquire and process information. Why do we forget some things and remember others? How do we solve problems, learn to read and write, find the right words to express our ideas? What is "thinking?" How do we transform our ideas into action? Other topics include how computers process information; brain damage; and learning disabilities. Prereq.: Psych 10101 or 10200 or 10299. (W) 3 HR./WK.; 3 CR.

25600: Introduction to Human Development: Adolescence and Youth

>From puberty through early adulthood. Topics include the physical and psychological changes associated with puberty and the assumption of adult sex roles; cognitive and personality changes associated with developing autonomy; the varying social and cultural contexts within which adolescents and young adults develop; and the relationships of these age groups to social institutions. Prereq.: Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

26600: Introduction to Human Development: Adulthood and Aging

From early adulthood (marriage, parenthood, first job) up to the end of the life cycle. Topics include the developmental approach to adulthood; considering the psychological, sociological, and biological changes in adult life; sex differences; the family; work, leisure, and retirement; death and bereavement. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

26900: Behavior in Organizations

Interaction between individual behavior and organizational factors such as structure, technology, environment, climate; and their impact upon worker productivity, satisfaction and motivation; leadership and supervision; group dynamics; strategies for organizational change; organizational development approaches, and quality of worklife issues. Prereq.: Psych 10101 or 10200 or 10299 or 10300. (W) 3 HR./WK.; 3 CR.

30100-30400: Honors I-IV

Prior application to and approval by Honors Office and permission of Psychology Department Honors Supervisor required before December 10 for Spring term or May 1 for Fall term. Prereq.: Psych 21500 and 32100.

31000: Independent Study

For students who wish to pursue advanced study or research in selected topics. Students must obtain written permission of faculty mentor and Dr. Fishbein, Director of Student Affairs, before registration. The mentor must approve both the number of credits and the student's plan of study (31001-1 CR.; 31002-2 CR.; 31003-3 CR.; 31004-4 CR.). This could involve intensive reading on a selected topic and does not necessarily involve experimental research.

31100-32000: Seminars in Special Topics in Psychology

Specially selected topics for intensive examination in several different areas. The topics and the courses offered each semester will be listed by the Psychology Department. Prerequisites stated with course descriptions. 3 HR./WK.; 3 CR.

32100: Experimental Psychology

The application of research methods to psychological problems. Techniques of formulating and investigating a problem and use of laboratory equipment are stressed. Experiments are performed in representative areas of psychology. Prereq.: Psych 21500 (required for Psychology majors). (W) 2 LECT., 4 LAB HR./WK.; 4 CR.

33100: Evolution of Modern Psychology

The theoretical and conceptual problems involved in the development of psychology as a science and its relationship to other disciplines. An examination of selected theories, such as behaviorism, gestalt psychology and Freud, which have attempted to deal systematically with such persistent problems of psychology as perception, motivation, learning and personality. Recommended for juniors and seniors. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

33800: The Psychology of Women

This course explores the social constructions, theories and research that have resulted in a psychology of women. It includes the biological, developmental, social and cultural aspects of femaleness in an historical and contemporary context. Students will be expected to consider and contribute from their own gender-establishing experiences. Prereq.: Psych 10101 or 10200 or 10299. (W) 3 HR./WK.; 3 CR.

34300: Basic Processes in Sensation and Perception

The theories, problems and experimental techniques concerning several sensory systems with a concentration on vision, and a similar examination of perceptual processes. Prereq.: Psych 10101 or 10200 or 10292 or 10294 or 10299. (W) 3 HR./WK.; 3 CR.

35700: Community Psychology

The use of psychology in the solution of community problems, and the impact of social and psychological stressors is examined from a community-wide perspective. How can communities and neighborhoods be measured for mental health strengths and dangers? What kinds of preventive actions and strategies, and what kinds of treatment and programs can be taken on a community-wide basis to promote mental health? Prereq.: Psych 10200 or 10299. 3 HR./WK.; 3 CR.

36500: Family Psychology

Family structure and process in terms of historical, cultural and psychosocial factors. Emphasis on viewing family interactions in terms of a psychodynamic system and subsystems. The complex relationships within the family and between the family and society serve as a setting for theorizing, researching and developing models of constructive intervention. Prereq.: Psych 10101 or 10200 or 10299 or 10300. 3 HR./WK.; 3 CR.

36700: Small Group Processes

The course is divided into two parts: self-study groups and lectures. The self-study

group examines its own behavior in order to help the student develop an ability to observe, analyze and understand the small group as a social system. The lectures present concepts, case materials, and empirical findings on group phenomena. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

37100: Introduction to Behavioral Neuroscience I

Science of behavioral neurobiology and psycho-biology. The course will emphasize topics in neurobiology including history of brain/mind research, models of brain/behavior relationships, cellular and chemical interactions, brain development/aging, biological rhythms, systems of sensation and movement. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

37700: Theories of Personality

A critical review of major contemporary theories of human personality, their relation to research findings and to methods of psychotherapy. Case studies interpreted from the perspective of the various theories. Prereq.: Psych 10101 or 10200 or 10299. 3 HR./WK.; 3 CR.

38800: Theories of Psychotherapy

Designed primarily to discuss and evaluate different forms of psychotherapeutic intervention. Concepts such as resistance, transference, and working through will be treated in the context of both psychoanalytic and interpersonal theory. The aims and techniques of behavioral therapy and case histories will be presented for analysis. Prereq.: Psych 10101 or 10200 or 10299 and Psych 24800. 3 HR./WK.; 3 CR.

38900: Psychological Tests and Measurements

Introduces both theoretical and practical aspects. Methods for assessing intelligence, achievement, aptitude, personality, interests and attitudes. Evaluation of tests and interpretation of test scores; use of tests in educational and clinical prediction, guidance, personnel selection, and research. Prereq.: Psych 10101 or 10200 or 10299 and 10300 and Psych 21500. 2 REC., 2 LAB HR./WK.; 3 CR.

FACULTY

John S. Antrobus, Professor

B.A., Univ. of British Columbia; M.A., Columbia Univ., Ph.D.

Deborah Coates, Professor

B.S., Univ. of Redlands; M.S., Univ. of Southern California; Ph.D., Columbia Univ.

William Crain, Professor

A.B., Harvard Univ.; Ph.D., Univ. of Chicago

Diana Diamond, Associate Professor

B.A., Wesleyan Univ.; M.A., Univ. of Massachusetts, M.S., Ph.D.

William Fishbein, Professor

B.S., New York Univ., M.A.; Ph.D., Univ. of Colorado

Tiffany Floyd, Assistant Professor

B.A. SUNY (Binghamton); M.A., Temple University, Ph.D.

Peter Fraenkel, Associate Professor

B.A., Boston Univ.; Ph.D., Duke Univ.

Anderson J. Franklin, Professor

B.A., Virginia Union Univ.; M.S., Howard Univ.; Ph.D., Univ. of Oregon

Hilary Gomes, Associate Professor

B.S., Georgetown Univ.; M.A., City College; Ph.D., CUNY

Elliot Jurist, Professor

B.A., Harford College; Ph.D. (Philosophy) Columbia Univ.; Ph.D., CUNY

William King, Professor and Chair

B.A., Rutgers Univ.; M.A., Univ. of Colorado, Ph.D.

Arthur D. Lynch, Associate Professor

B.A., Univ. of Texas, Ph.D.

Glen Milstein, Assistant Professor

B.A., Brandeis Univ.; Ph.D., Teachers College (Columbia Univ.)

Cynthia A. Primeau, Associate Professor

B.A., SUNY (New Paltz); M.A., Teachers College, Columbia Univ., Ed.D.; Ph.D., CUNY

Ruth Ellen Proudfoot, Associate Professor

A.B., Radcliffe College; Ph.D., New York Univ.

Margaret Rosario, Associate Professor

B.A., Princeton Univ.; Ph.D., New York Univ.

Jeffrey J. Rosen, Professor

B.A., George Washington Univ.; M.A., Clark Univ., Ph.D.

Millicent Roth, Professor

B.A., Brooklyn College, M.S.W., D.S.W., New York Univ.

Brett Silverstein, Professor and Dean, Division of Social Science

B.A., State Univ. of New York (Stony Brook); Ph.D., Columbia Univ.

Arietta Slade, Professor

B.A., Sarah Lawrence College.; Ph.D., New York Univ.

Ellen E. Smiley, Associate Professor and Acting Deputy Provost

B.S., Denison Univ.; A.M., Univ. of Illinois, Ph.D.

Arthur J. Spielman, Professor

B.A., The City College; Ph.D., CUNY

Vivien C. Tartter, Professor

B.A., Brown Univ., M.A., Ph.D.

Stephen Thayer, Professor

B.A., New York Univ.; M.A., Columbia Univ., Ph.D.

Steven B. Tuber, Professor

B.A., Yale; M.A., Univ. of Michigan, Ph.D.

Paul Wachtel, Distinguished Professor

A.B., Columbia Univ.; M.S., Yale Univ., Ph.D.

Lissa Weinstein, Assistant Professor

B.A., SUNY (Stony Brook); M.A., The City College; Ph.D., CUNY

Ann Marie Yali, Assistant Professor

B.A., Eckerd College; M.A., SUNY (Stony Brook), Ph.D.

PROFESSORS EMERITI

Kenneth B. Clark

Eugene L. Hartley

Douglas C. Kimmel

Donald E. Mintz

Herbert Nechin

Lawrence Nyman

Vera Paster

Irving H. Paul

John J. Peatman

Lawrence Plotkin

Getrude R. Schmeidler

Jerry Siegel

Ann Rees

Harold Wilensky

Public Policy and Public Affairs Program

(DIVISION OF SOCIAL SCIENCE)

Professor Lily M. Hoffman, Director • Program Office: NAC 6/137 • Tel: 212-650-6809

GENERAL INFORMATION

This specialization offers an interdisciplinary approach to studying policy issues with an emphasis on acquiring the analytical tools required for policy development and decision-making.

Marvin Rosenberg/Hubert Humphrey Program

The Marvin Rosenberg/Hubert Humphrey Program in Public Affairs provides paid internships for students in national, state and city offices, as well as with other political, civic and labor organizations. Students gain practical experience and specialized training while earning credit toward a public policy minor. Established by City College alumnus Marvin Rosenberg, the program emphasizes leadership skills and encourages students to combine their studies with responsible and effective political action.

REQUIREMENTS FOR THE MINOR

Students complete a departmental major and a minor in Public Policy as follows:

Prerequisites

Political Science 10100: American Government

Economics 10000: Modern United States Economy

Economics 10300: Economics: Principles and Policies

Required Courses

Political Science:

12500: Introduction to Public Policy 3

32100: Politics and the Policy

Process 3

One of the following two-semester sequences: 7-8

Sociology:

23100: Sociological Statistics (3 cr.)

23200: Methods and Techniques of Sociological Research (4 cr.)

Economics:

29000: Principles of Statistics (4 cr.)

29400: Computer Aided Economic Analysis (4 cr.)

Psychology:

21500: Applied Statistics (4 cr.)

An approved quantitative course (3-4 cr.)

[Or another two-semester quantitative sequence to be determined in consultation with the faculty advisor.]

Total Credits 13-14

ADVISEMENT

Internship placements will be made in consultation with the program coordinator. Paid summer internships are available on a competitive basis.

All students who wish to concentrate in Public Policy must consult with the program office in NAC 6/137 regarding requirements and to fill out a student profile card.

Department of Sociology

(DIVISION OF SOCIAL SCIENCE)

Professor Gabriel Haslip-Viera, Chair • Department Office: NAC 6/125 • Tel: 212-650-5485

GENERAL INFORMATION

The City College offers the following undergraduate degree in Sociology:

B.A.

PROGRAMS AND OBJECTIVES

Sociology majors may choose to take a varied selection of courses or they may take advantage of the department's specializations.

In the past the department's majors have gone on to leadership positions in academic life; city, state, and local government; advertising; consulting; and a number of other related professions.

Specialization in Urban Issues, Politics, and Policy

For students anticipating careers in the city or just interested in urban concerns, the Department offers a specialization in urban issues, politics, immigration, and policy, with sub-specialties in Urban Studies and Policy, Crime and Deviance, and Social Work.

These specializations take advantage of our location in the heart of one of the most complex cities in the world. The objective is to bring social science theory and research to bear upon the pressing issues that confront major cities like New York, such as economic restructuring, immigration, housing, neighborhood transitions, education, urban poverty, politics, and fiscal crisis. These specializations prepare students for careers in specific areas such as education, urban planning, public policy, and public administration.

The Social Research Laboratory

The Social Research Laboratory is used by the Department of Sociology to place students in projects providing pre-professional experience in social welfare agencies. SRL courses (Sociology 23300, 23400, 23500, and 23600) may be taken by any student. The student need not be specializing in Social Work or majoring in Sociology. Students may take the above courses for either two or three credits. The maximum number of credits allowed in these courses (commonly referred to as "fieldwork courses") is six in any one department of the College.

Master's Courses for Undergraduate Students

Some graduate courses may be taken by exceptional juniors and seniors with the permission of the instructor. Students are strongly advised to get the permission of the instructor in writing well before registration. The authorization will be required at registration.

REQUIREMENTS FOR MAJORS

Required Courses

Sociology:	
10500: Individual, Group and Society: An Introduction to Sociology	3
23200: Methods and Techniques of Sociological Research	4
23700: Foundations of Sociological Theory	3

Elective Courses

Seven additional Sociology courses 21

Total Credits 31

Note: Fieldwork (23300-23600) does not count as one of the seven courses, but does count towards graduation

Specialization in Urban Issues, Politics, and Policy

While a great number of courses offered by the Department are relevant to urban concerns, the following electives are especially recommended for a specialization:

23300-3600 Fieldwork in Social Service (Social Work)
24100: Criminology (Crime & Deviance)
24200: Juvenile Delinquency (Crime & Deviance)
24300: Sociology of Youth (Crime & Deviance)
24400: Principles of Social Work (Social Work)
24500: Sociology of Social Welfare Institutions I (Social Work)
24800: Studies in Deviant Behavior (Crime & Deviance)
25100: Urban Sociology (all sub-specialties)
25300: Ethnic Minority Groups (all sub-specialties)
25500: Demography-Population & Human Ecology (all sub-specialties)
26900: Sociology of Law (Crime & Deviance)
27400: Urban Politics & Policy (all sub-specialties)
29000: Immigration (all sub-specialties)

(While the department does not offer a degree in Social Work, the sub-specialization has been found most helpful for students who later wish to study for M.S.W. degrees).

ADDITIONAL REQUIREMENTS

All Sociology majors must complete the following courses:
New Student Seminar unless exempt (0 cr.)

English 11000: Freshman Composition (3 cr.)
 English 21000 or equivalent: Second Level Writing Course (3 cr.)
 Core Curriculum for the intended degree
 Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:
 Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:
 Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:
 Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

ADVISEMENT

All members of the department can help students wishing advisement on major requirements or specific courses.

Students wishing advisement on the graduate program in Sociology should see the chair of the graduate committee.

COURSE DESCRIPTIONS

Introductory and Core Courses

10500: Individual, Group and Society: An Introduction to Sociology

The language of sociology, the sociological perspective, and basic areas of sociological inquiry. Topics include: culture, socialization, self and society, social stratification and social class. The family, religion, polity, community organization, collective behavior, mass culture, social order and social change. 3 HR./WK.; 3 CR.

10501: Introductory Sociology For Freshman Honors Students

Provides a basic framework for sociological investigation and some knowledge of the

institutions which constitute the fabric of society. The emphasis will be on concepts, hypotheses and theories which explain social behavior. Although social problems of contemporary relevance are often discussed, the focus of most of the material is on sociological problems and on analytical issues in the study of society. 3 HR./WK.; 3 CR.

Intermediate and Advanced Courses

23000: Qualitative Research Methods

The logic and practice of the major non-quantitative research methods in sociology: field observation; participant observation; qualitative interview; thematic content analysis of sociological documents. Students design and carry out projects to gain mastery of these methods. 3 HR./WK.; 3 CR.

23100: Sociological Statistics

An introduction to statistical theory and techniques as utilized by sociologists. This course covers descriptive and inferential statistics. Prereq.: Soc 10500. Credit given for only one of the following courses: Eco 29000, Math 17300, Soc 23100. 4 HR./WK.; 4 CR.

23200: Methods and Techniques of Sociological Research

The meaning and relevance of "the Scientific Method" as a canon guiding the logic of research in sociology. Historical perspective and method of social research in the recent past. Survey research, sampling, questionnaire construction analysis, and hypothesis-testing; community study, field observation, unstructured interviewing, participant observation, control of bias. 2 REC., 1 LAB HR./WK.; 4 CR.

23300-23600: Field Work in Social Service or Tutorial Research

Involves, according to student's choice, either: (1) placement in special agency (welfare, poverty, urban planning, police, detention) where a student learns by working directly with clients under close supervision of the agency; or (2) carrying out a research project in the student's area of interest. In either case, the student meets regularly with a faculty member of the Social Research Laboratory. No more than six credits in any one department and no more than nine credits total will be permitted in the following courses: Anth 13300-13600, Asian 20402-20404, BLST 20000-20400, Psych 23300-23600, Soc 23300-23600. These credits count towards total credits needed for graduation, but do not count as credits needed for the major in Sociology. 2 HR./WK., 1 CR.; 4 HR./WK., 2 CR.; 6 HR./WK., 3 CR. MAXIMUM: 6 CR. CUMULATIVE.

23700: Foundations of Sociological Theory

The roots of modern sociology in the ideas of nineteenth and early twentieth century theorists, such as Marx, Weber, Durkheim, Simmel, Veblen and Cooley, with emphasis on the intellectual and social context and current relevance of the concepts and propositions they developed. Suggested prerequisite: a course in the history of ideas such as Hist 35100, 35200, 35300 or PSc 27400. 3 HR./WK.; 3 CR.

23800: Contemporary Sociological Theory

Modern sociological theory and practice. Contemporary theorists such as Parsons, Merton, Homans, Dahrendorf and others show how conceptualization and theory building proceeds in understanding self, society, class, power and alienation in the modern world. 3 HR./WK.; 3 CR.

24000: Personality and Social Structure

The relevance of biological and social factors (and the interaction of the two) are examined in an attempt to understand the variations and universalities of personality. Psychological and social theoretical views are presented, as are current works in socialization theory. 3 HR./WK.; 3 CR.

24100: Criminology and Corrections

Theories of crime causation and the social response to crime. Nature, extent, major types, and distribution of criminal behavior. The changing impact of police and the courts. 3 HR./WK.; 3 CR.

24200: Juvenile Delinquency

Theories of delinquency and youth crime, including the extent and major types of delinquent behavior, the impact of labeling, and explanations of re-entry into society. Analysis of delinquency causation, prevention, control and treatment. Strategies of diversion, alternatives to incarceration, the juvenile court, drug use and public policy, and the possibility of decriminalization. 3 HR./WK.; 3 CR.

24300: Sociology of Youth

Youth considered as a stage in socialization, a stratum, a demographic group with its own subculture, and as a force for change. Implications for education, mental health and urbanization. 3 HR./WK.; 3 CR.

24400: Principles of Social Work

Introduction to principles of group work, case work, and community action. Primarily designed for those planning a career in Social Work. Concurrent field work required (see description of Social Research Laboratory). 3 HR./WK.; 3 CR.

24500: Sociology of Social Welfare Institutions

Origins and growth of social welfare theory and practice. Impact of industrialization and urbanization. Trends in social legislation. Current issues and concepts. Social agencies and social work as a profession. Prereq.: minimum of 2 electives in Sociology. Concurrent field work required (see description of Social Research Laboratory). 3 HR./WK.; 3 CR.

24800: Studies in Deviant Behavior

Sources and effects of differences in behavioral norms between society at large and deviant groups (criminals, drug addicts, sexual deviates, cultural deviates). Power structure and the social definition and control of deviancy. Stigma, alienation and the problems of value relativism. 3 HR./WK.; 3 CR.

25000: Theory of Mass Culture and Mass Communications

The character of mass society in comparison with earlier forms. "High" culture and "pop" culture and the mass media of communications. Social effects of the mass media and the problem of public control. 3 HR./WK.; 3 CR.

25100: Urban Sociology

Nature and origins of the modern city, and of community life within and in relation to the metropolis. Urbanization as a process. Types of cities and urban communities. The changing nature of contemporary cities, urban development and the dilemmas of growth. 3 HR./WK.; 3 CR.

25200: Social Class

The application of various theories of social stratification to studies of societies and communities. The relationships of class positions to familial, educational, religious, political and economic behavior. 3 HR./WK.; 3 CR.

25300: Ethnic Minority Groups

Analysis of human relations from both social- structural and social-psychological standpoints. Prejudice and discrimination; their consequences for both minority and majority group members. Theoretical, historical, cross-cultural approaches. Examination of public and private organizations engaged in intergroup relations. Case materials from social action programs in the United States and other nations. 3 HR./WK.; 3 CR.

25400: Social Problems

The origins and career of "social pathology" as a sensitizing concept. The interrelationship between social issues, and social problems, and public policy. The

problem of bias in defining a social problem and in devising a strategy for meliorative intervention. Case studies with contemporary relevance. Role of voluntary agencies, mass media and legislative bodies in identifying social problems. (W) 3 HR./WK.; 3 CR.

25500: Population and Human Ecology

The determinants and consequences of human migration and differential population composition. Comparative fertility and mortality in relation to selected socio-cultural factors. Demographic description and analysis as a research tool. Implications of population trends for local, regional, national and world problems. Recommended for all specialization programs in the Department. 3 HR./WK.; 3 CR.

26000: Theory of Social Change

Theories of institutional change in the past and present. How culture, social structure, and political, economic and technological factors are interrelated. Case studies of change in Western Europe and in developing countries today. 3 HR./WK.; 3 CR.

26200: Political Sociology

Theories of the polity and political behavior in sociological perspective. Types of government and of political order viewed comparatively and historically, and in relation to economic and social-psychological factors. Legitimation and subversion (counter-legitimation) as social process. Social movements. Analysis of contemporary issues. 3 HR./WK.; 3 CR.

26300: Contemporary Social Issues

An examination of the major controversial issues of the day: abortion, homosexuality, capital punishment, and the like. 3 HR./WK.; 3 CR.

26500: Sociology of Childhood

Examination of the socialization process of childhood, the familial environment of the child, influence of the peer group, the development of the self and values. Major psychological and sociological theories will be examined in the light of empirical evidence. 3 HR./WK.; 3 CR.

26600: Family Relationships

Sociological explanations of how and why husband/wife, parent/child, and other family relationships have varied, historically and today, in the United States and around the world. How sociological research can contribute to understanding and making informed choices and decisions in family life. 3 HR./WK.; 3 CR.

26700: Social Change in Developing Countries

Major processes of change today in Latin America, Asia and Africa. Theories of development as applied to industrialization and changes in occupational structure; urbanization, internal migration and population growth; national integration; changes in the class structure; revolution and reform. 3 HR./WK.; 3 CR.

26800: Studies in Social Forces and Mass Movements

Mass movements for reform, revolution and renovation. Socialism, communism, fascism, and the forces that brought them into being, natural history and internal dynamics of the type they represent. Contemporary case materials. 3 HR./WK.; 3 CR.

27000: Sociology of Medicine

The social bases of illness, social organization of medical care and the impact of medicine upon society. 3 HR./WK.; 3 CR.

27200: Religion and Religious Groups

The social bases for the function and impact of religion in contemporary society. 3 HR./WK.; 3 CR.

27400: Urban Politics and Policy

This course examines the changing U.S. city with a focus on New York City. Beginning with an overview of U.S. urban politics and policy, we explore the impact of economic, political, demographic and social trends on our cities; then examine several contested policy issues—housing, economic development, education and/or welfare. How and why have national problems become identified as "urban" problems? Is the city a viable problem-solving unit? What are the respective roles of public and private sectors? We will address these questions through critical reading, discussion and writing. 3 HR./WK.; 3 CR.

27700: Ethnic Families in the United States

A description and explanation of male/female values, power, conflicts, and achievements of families from various ancestral origins. Included will be elite and minority families and old and new immigrant families from Europe, Africa, Asia, Latin America, and the Caribbean. 3 HR./WK.; 3 CR.

29000: Immigration

This course will examine the new immigration to the U.S. in the light of the old, searching for similarities that link this latest wave to the turn-of-the-century experience, and for the differences that make the post-1965 immigration distinctive. 3 HR./WK.; 3 CR.

38100: Institutional Structure and Behavior

Offered irregularly. 3 HR./WK.; 3 CR.

38106: Selected Topics in Comparative Sociology**38200: Human Groups and Communities**

Offered irregularly. 3 HR./WK.; 3 CR.

38201: Occupations and Professions**38203: Small Groups****38206: Aging and Society****38207: Sex Roles and Social Change****38209: Sociology of Sexualities****31000: Independent Study**

The student will pursue a program of independent study under the direction of a member of the Department with the approval of the Department Chair. CREDIT MAY BE FROM 1-4 CREDITS, AS DETERMINED BEFORE REGISTRATION, BY THE INSTRUCTOR, WITH THE APPROVAL OF THE CHAIR.

30100-30300: Honors I-III

Approval of Dean and Department Honors Supervisor required. Apply no later than December 10 in the Fall term or May 1 in the Spring term. CREDIT FLEXIBLE BUT USUALLY 3 CREDITS PER TERM.

31100-32000: Selected Topics in Sociology

See Department for information.
HOURS AND CREDIT TO BE ARRANGED

FACULTY**Ibtihaj Arafat, Professor**

B.S., Oklahoma State Univ., M.S., Ph.D.

Mehdi Bozorgmehr, Associate Professor

B.S., California State Univ.; M.A., San Diego State Univ.; M.A., Univ. of California (Los Angeles) Ph.D.

Wayne L. Cotton, Assistant Professor

B.A., The City College; M.A., New York Univ., Ph.D.

Marina Wikramanayake Fernando, Associate Professor

B.A., Univ. of Ceylon, Sri Lanka; M.A., Univ. of Wisconsin, Ph.D.

Gabriel Haslip-Viera, Associate Professor and Chair

A.A.S., SUNY(Farmingdale); B.A., The City College M.A., Columbia Univ., Ph.D.

William Helmreich, Professor

B.A., Yeshiva Univ., M.A.; Ph.D., Washington Univ. (St. Louis)

Ramona Hernandez, Associate Professor

B.A., Lehman; M.A., New York Univ.; Ph.D., CUNY

Lily M. Hoffman, Associate Professor

B.A., Cornell Univ.; M.A., Univ. of Michigan; Ph.D., Columbia Univ.

Perezi Kamunanwire, Lecturer

B.A., Columbia Univ., M.I.A.

Philip Leonhard, Associate Professor

B.A., The City College; Ph.D., CUNY

Iris Lopez, Associate Professor

A.A., Borough of Manhattan Community College; B.A., New York Univ.; M.A., Columbia Univ., Ph.D.

Kathleen M. McCahery, Lecturer

A.B., Immaculata College; M.A., New York Univ.

Chudi P. Uwazurike, Associate Professor

B.A., Univ. of Nigeria; M.A., Lagos Univ.; Ph.D., Harvard Univ.

PROFESSORS EMERITI

Milton L. Barron

Steven Goldberg

Gerald Handel

F. William Howton

Baidya Nath Varma

Charles Winick

Betty Yorburg

Department of SEEK Counseling and Student Support Services/SEEK Program

Professor E. Maudette Brownlee, Chair/Director • Department Office: NAC 5/226 • Tel: 212-650-5774

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

The department administers the Search for Education, Elevation and Knowledge (SEEK) Program. SEEK is a state-funded, educational opportunity program which provides a range of support services to students with a demonstrated need for academic and financial support. Students enrolled in the City College SEEK Program receive counseling, tutoring, and additional financial aid.

ADMISSIONS

Students are eligible for the SEEK Program only at the time of their initial admission. Transfer students who previously were enrolled in either another SEEK, CD, EOP, or HEOP program also qualify for enrollment in the City College Program. Students who are interested in applying for the SEEK Program should complete the appropriate section of the CUNY Freshman application (or Transfer application). For further details regarding admission criteria and procedures, contact the CUNY Office of Admission Services, 1114 Avenue of the Americas, New York, NY, 10036. All SEEK students are required to provide proof of their economic eligibility for the program before their program enrollment can be finalized.

PROGRAM REQUIREMENTS

All incoming students are required to attend the College's summer immersion program unless they qualify for an

exemption. Freshmen and transfers must complete the SEEK New Student Seminar, and satisfy basic skills requirements consistent with the University's policy. Contact the SEEK office for further information regarding program requirements.

COUNSELING

Counseling is a major component of the Program's services. This division provides personal, academic and career counseling in both individual and group settings; refers students to community, health and social agencies; conducts group meetings for students on academic probation; and offers general information about the College and graduate education. Each student is assigned a counselor who works closely with the student to monitor his or her academic progress during the time of enrollment. Counselors also conduct New Student Seminars for entering and transfer students.

FINANCIAL AID

Financial Aid counselors are available to help students with the process of documenting their SEEK economic eligibility. SEEK students who qualify, receive additional financial assistance in the form of a book stipend, college fees, and extended tuition assistance. The amount of assistance provided is based on need, as determined by financial aid guidelines.

TUTORING AND SUPPLEMENTAL INSTRUCTION

Tutorial services, in the form of individual and group tutoring, are available to all SEEK students. Instructor, counselor, and/or self-referrals are accepted. Tutoring is available in both basic skills areas and academic subjects. In addition to tutoring, supplemental instruction is offered in a variety of modalities such as cooperative learning groups, precept classes, computer-assisted instruction, skills immersion workshops, and review sessions.

DEPARTMENTAL ACTIVITIES

Regularly scheduled activities include: the SEEK Awards Program, SEEK Student assemblies and receptions, the Chi Alpha Epsilon honor society induction ceremony and special interest workshops.

AWARDS

Departmental awards are determined by the SEEK Administrative Committee and are based on nominations by faculty. SEEK students should contact their SEEK counselors for additional information about the awards listed below.

Henry Arce Award

Community Service Award

Exemplary SEEK Freshman of the Year Award

Marianne Cowan Memorial Award

Betty Rawls Memorial Award

Outstanding SEEK Graduate of the Year Award**SEEK Science Award****Luis Matos Award****The Jacqueline Michael Award****The Joseph Ma Memorial Award****The Outstanding Scholastic Achievement Award****SEEK Special Tribute****The Honorable Lottie Wilkins Award****The SEEK Engineering Award****The George McDonald Award**

All awards and certificates of academic achievement are presented at the annual SEEK Awards Program.

COURSE DESCRIPTIONS

SEEK students take advantage of the full range of courses offered to all students in the College. Placement in appropriate introductory courses is based on an evaluation of high school preparation and performance on entrance examinations.

Separate SEEK sections are offered in selected courses to provide students with smaller class size and the opportunity for more intensive course work.

00108: New Student Seminar:

All entering freshmen and transfer students are required to take the New Student Seminar 00108 which is designated for SEEK students only. This is a non-credit course which provides new students with an orientation to the College and to the SEEK program; disseminates information about college guidelines, regulations and retention standards; helps students to clarify their educational and career goals; encourages the development of greater self awareness and the development of those personal skills and attitudes critical to college success. 1 HR./WK.; 0 CR. (REQUIRED)

FACULTY/STAFF**E. Maudette Brownlee, Associate Professor and Chair/Director**

B.A., Albion College; Ph.D., Teacher's College (Columbia Univ.)

Joyce Conoly-Simmons, HE Associate

B.A., Florida AM&N Univ.; M.S.W., Columbia Univ.; M.S., The City College

Rita J. Joy, Associate Professor

B.S., Boston Univ.; M.S.W., Howard Univ.; D.S.W., Adelphi Univ.

David Luciano, Instructor

B.A., The City College; M.S.W., New York Univ.; J.D., SUNY (Buffalo)

Marie C. Nazon, Instructor

B.A., Fordham Univ.; M.S. Columbia Univ. School of Social Work

Mildred Plaud-Morales, Assistant Professor

B.A., The City College; M.S.W., Fordham Univ.

Florence Rock, Assistant Professor

B.A., Brooklyn College; M.S., Columbia Univ.

Department of Theatre and Speech

(DIVISION OF HUMANITIES AND THE ARTS)

Professor David Willinger, Chair • Department Office: CG 311 • Tel: 212-650-6666

GENERAL INFORMATION

The City College offers the following undergraduate degree in Theatre:

B.A.

The B.A. degree program in Theatre offers a broad perspective of the academic and professional field, permitting great elective choice, and preparing students for a variety of career options. Following completion of the required sequence of courses, which expose the student to all facets of the theatre field, the student may take upper level elective courses in any one of these facets to gain a mastery of that subject. The student should be advised that further graduate and/or professional study is strongly recommended upon completion of the bachelor's degree before a student may be considered prepared to enter the professional theatre world.

In addition to completing the required curriculum for each degree program, students are encouraged to attend and participate in the numerous faculty and student-directed productions the program offers. These opportunities annually include four main-stage productions, two Playwright/Director Connection projects, and the One-Act Play Festival.

All Theatre majors, and other interested students from the College-at-large, take courses in theatre production at Davis Hall, which contains two main-stage theatres, and at the Compton-Goethals Studio Theatres. All these spaces boast state-of-the-art scenic, lighting, and sound equipment.

Most courses are open to non-majors without prerequisites, including 12700, 13100, 13400, 13600, 23900, 33000,

and 33100; non-majors may register for any other course in the program provided they follow the prerequisite sequence. All students are welcome to participate in the many open-call auditions for productions held each year.

Speech

A non-degree service program that provides the general student population with basic courses for developing skills in oral communication.

Theatre

Professor David Willinger, Chair
Compton-Goethals 322; 212-650-5948

Professor Keith Grant, Deputy Chair and Academic Advisor
Compton-Goethals 311; 212-650-5960

Speech

Orsini Gonzalez, Speech Exemption Exam Coordinator
NAC 6/332D; 212-650-6287

The Drama Club

The Drama Club, open to all students interested in theatre, sponsors performances by students and outside artists, discussions by professionals, and workshops.

Events and Productions

Members of the Theatre and Speech Department present shows and arrange events throughout the year, including:

Faculty-directed productions: fully mounted main stage events.

The Playwright/Director Connection: student directors stage original work by student playwrights.

Harlem Repertory Theatre: students, alumni and professionals perform in a summer season of theatre for the community.

The One-Act Play Festival
Advanced Directing Projects
Professional performances and workshops

AWARDS

Friars Club Award

For excellence and potential in acting.

Jacques Levy Award

Seymour Peck Scholarship and Creative Awards in the Arts

To outstanding undergraduate or graduate majors in the arts.

The Sandham Prize for Theatrical Performance

The Scanlon Prize in Theatre

Jacob A. Weiser Playwriting Fund Award

To assist young playwrights in pursuing their artistic goals.

The Bernie West Theatre Award

FACILITIES

Aaron Davis Hall

Davis Hall is a modern, three-theatre complex housing state-of-the-art equipment and staffed by professional technical personnel capable of mounting the most complex productions. The facility contains three spaces: a proscenium theatre that seats an audience of 750, a black box experimental theatre that seats 150-250, and Theatre C, a rehearsal-workshop theatre for 50. The structure was specifically conceived and built to serve as a laboratory for students training in the arts and as a showcase for professional events.

Compton-Goethals Hall

The very finest facilities are available for the use of theatre students in historic Compton-Goethals Hall. These include two studio theatres and various studio-classroom spaces, rehearsal areas and prop rooms.

REQUIREMENTS FOR THEATRE MAJORS

12700: Speech for the Stage	3
13100: Introduction to Theatre Arts	3
13200: Body Movement	3
13400: Basic Production and Design	3
13600: Acting I	3
21100: Theatre History I	3
21200: Theatre History II	3
21300: Theatre History III	3
23300: Directing I	4
23700: Technical Theatre Practicum	2
33100: Playwriting	3
33300: Directing II	4

Theatre Majors with pronounced foreign accents or speech impediments are also required to take:

SPCH 01100: Articulation (1cr.)	0-4
SPCH 23300: Voice and Diction (3 cr.)	

Elective Courses 6

Six credits from the following, including at least one from each group:

Group I

- 23600: Acting II
- 23700: Technical Theatre Practicum (second time)
- 23800: Musical Theatre Workshop
- 23900: Acting for the Camera
- 33100: Playwriting (second time)

Group II

- 23601 Acting III
- 23602 Acting IV
- 24000: Stage Combat
- 37100: Special Problems in Playwriting
- 37200: Special Problems in Technical Theatre and Design

Total Credits for B.A. in Theatre

40-44

Elective Courses

Theatre students are urged to supplement their required courses by studying related subjects in the Theatre Department as well as in other programs and departments, including singing, film and video directing, painting and sculpture, Shakespeare, and literature.

ADDITIONAL REQUIREMENTS

All Theatre majors must complete the following courses:

- New Student Seminar unless exempt (0 cr.)
- English 11000: Freshman Composition (3 cr.)
- English 21000 or equivalent: Second Level Writing Course (3 cr.)
- Core Curriculum for the intended degree
- Speech 11100 (3 cr.) or pass the Speech Proficiency test.

In addition, all students must complete the following:

College Proficiency Examination:

Pass the CPE after completing 45 but no more than 60 credits.

Proficiency in a Foreign Language:

Students must complete either four years of foreign language in high school or a fourth semester-level course at City College.

Writing Across the Curriculum:

Three elective-level courses that are identified as requiring at least 3,500 words of writing. Courses designated with a (W) at the end of each course description fulfill this requirement.

For more information, please consult the chapter entitled *Degree Requirements* in the introduction to this *Bulletin*.

COURSE DESCRIPTIONS

THEATRE COURSES

30000-level and above courses may be taken only with faculty permission. All Theatre courses carry the designation THTR.

11300: Stage Makeup

The fundamentals of stage appearance, stage lights and audience proximity. Basic

and painted illusion. Face proportion, base colors, proper tools and materials. 2 HR./WK. PLUS HRS. TO BE ARRANGED; 1 CR.

12700: Speech for the Stage

Focusing on developing breath control, resonance and articulation. Introductory phonetics and physiology of speech, followed by the analysis and reading aloud of selected fictional texts. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. 3 HR./WK.; 3 CR.

13100: Introduction to Theatre Arts

The related creative arts of playwright, director, actor and designer; their collective contributions to the form of the play that ultimately evolves on stage. Discussion of the institutions in contemporary American theatre. 3 HR./WK.; 3 CR.

13200: Body Movement

Techniques to free and relax the actor's body, connect mental imagery with physical expression, and combine movement with speech. Elementary modern dance. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. 3 HR./WK.; 3 CR.

13400: Basic Production and Design

Practice in constructing, assembling and lighting the stage set. Introduction to stage management and allied fields as well as elementary exploration of design. 4 HR./WK.; 3 CR.

13600: Acting I

Principles and practice of acting. Introduction to relaxation, concentration, self awareness, inner objects, outer activities, objectives and obstacles, ensemble work, circle of belief, text analysis. Consideration of work ethic and professionalism. Basic scene and monologue exploration. 4 HR./WK.; 3 CR.

21100: Theatre History I

The development of theatre and drama from tribal origins to 1640 (including Egyptian, Greek, Roman and Medieval/Renaissance periods). (W) 3 HR./WK.; 3 CR.

21200: Theatre History II

The development of theatre and drama from 1640 to 1900, including Jacobean, Restoration, Romanticism, Early Melodrama, Naturalism. (W) 3 HR./WK.; 3 CR.

21300: Theatre History III

The study of plays and production styles prevalent throughout the Twentieth Century in Europe and America. This course will consider a selection of impor-

tant plays and such movements as: Symbolism, Futurism, Dada, Surrealism, Expressionism, Theatre of the Absurd, Theatre of Images, the rise of the Broadway musical, the Off-Off Broadway theatre movement, the rise of Afro-American and Latino schools of writing and production, New German Realism, Post-Modernism, etc. (W) 3 HR./WK.; 3 CR.

23200: Black Theatre, U.S.A. I

Spanning the period, 1821-1950, this introductory course offers an intensive exploration and analysis of the evolution of black dramatic literature in the United States of America. Through the process of close reading of dramatic texts, this course will offer insights into the movements, institutions, actors, playwrights and other related artists contributing to African-American theatre. (W) 3 HR./WK.; 3 CR.

23201: Black Theatre, U.S.A. II

Focusing on the contemporary period, from 1950 to the present, this introductory course examines the development of recent African American drama. Through the process of close reading of dramatic texts, this course will focus on the contributions of African-American playwrights, actors, designers, critics, and producers. (W) 3 HR./WK.; 3 CR.

23300: Directing I

Introduction to techniques of directing actors; scene and beat analysis; creative considerations of setting, properties, staging, and dramatic rhythm. 4 HR./WK.; 4 CR.

23600: Acting II

Continuation and development of improvisation and monologues, with intensive work on scene study. Prereq.: Thtr 13600 or permission of the Department. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. 4 HR./WK.; 4 CR.

23601: Acting III

Work on classical and modern poetic schools of dramatic works, featuring in-depth exploration of theatrical language, including consideration of emphasis, meter, connecting breath with thought, verbal imagery, and word-as-action. Both two-character scenes and monologues and soliloquies are required. Prereq.: Thtr 13600. 4 HR./WK.; 3 CR.

23602: Acting IV

This course emphasizes auditioning for professional theatre and cinema. Consideration is given to building a repertoire, developing a resume, professional comportment, etc. The student will have

experience in both the presentation of monologues and in doing cold readings. Prereq.: Thtr 13600 or permission of the instructor. 4 HR./WK.; 3 CR.

23700: Technical Theatre Practicum

Guided individual work in one of the following areas: Stage Management, Costume Design and Construction, Set Design, Painting, and Construction, Stage Lighting, Property Construction and Acquisition, Sound Design. THIS COURSE MAY BE TAKEN EIGHT TIMES FOR CREDIT. VARIABLE HOURS; 1-3 CR./SEM.

23800: Musical Theatre Workshop

This course emphasizes acting through singing. The students will gain familiarity with the various genres of songs within the musical comedy rubric and gain experience in performing them. There will also be choral work and an elementary workshop in jazz dance. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. 3 HR./WK.; 3 CR.

23900: Acting for the Camera

Students, using extant film scenarios, act in scenes from movies and gain practice in acting for television dramas and commercials. Performances are video-taped, played back, and analyzed. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. 4 HR./WK.; 3 CR.

24000: Stage Combat

Introducing students to the art of stage combat. Begins with basic exercises and culminates in a comprehensive and choreographed scene. Students learn the importance of partnering, discipline, and the difference between actual violence and effective illusion. Emphasis is on safety, acting values and telling the story of the fight in a theatrical setting. THIS COURSE MAY BE TAKEN 2 TIMES FOR CREDIT. 4 HR./WK.; 3 CR.

30100-30300: Honors

VARIABLE CR., USUALLY 3 CR./PER TERM.

31000: Independent Study

Upper level work on issues of dramatic literature, theatre history, and criticism. Permission of program advisor required. VARIABLE CR.

31100-32000: Selected Topics

Advanced study in selected topics and problems chosen from areas of theatre with emphasis upon aspects not treated in regular courses. HOURS AND CREDITS TO BE ARRANGED.

33000: Performance Practice

Active participation in the production of a play either as actor, assistant director or

as a member of the technical crew. Open to all students in the college. By audition. Permission of faculty advisor required. MAY BE TAKEN UP TO EIGHT TIMES FOR CREDIT. 20 HR. REHEARSAL/WK.; 4 PERFORMANCES; 2 CR.

33100: Playwriting

Development of skills in writing for the theatre; practice in developing dramatic situations, dialogue, building characters, etc. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. (W) 3 HR./WK.; 3 CR.

33300: Directing II

Advanced course in directing, utilizing extended and more complex scenes and texts. Students direct a one-act play. Prereq.: Thtr 23300 or permission of the department. 4 HR./WK.; 4 CR.

33600: Performance Practice in Film

The student performs in one or several student films and/or videos sponsored by the Film and Video programs. Ultimately presents a portfolio of work and a journal to selected theatre faculty for evaluation. THIS COURSE MAY BE TAKEN TWO TIMES FOR CREDIT. Permission of the department required. 3 HR./WK.; 3 CR.

37000: Special Problems in Directing

The student directs a full-length theatrical work under faculty guidance. Permission of major advisor required. Prereq.: Thtr 33300. HOURS VARIABLE; 3 CR.

37100: Special Problems in Playwriting

The student writes a full-length theatre work under faculty supervision. Permission of major advisor required. This course may be taken two times for credit. Prereq.: Thtr 33100 (taken twice), Engl 32201. HOURS VARIABLE; 3 CR.

37200: Special Problems in Technical Theatre and Design

Guided work on a project of substantial scale, either in costume, lighting, set, or sound design, stage management or extensive apprenticeship in technical crews. Permission of program advisor and technical director required. Prereq.: Thtr 13400. MAY BE TAKEN UP TO FOUR TIMES. HOURS VARIABLE; 3 CR.

43000: Theatre Workshop

Creative work in both acting and directing for advanced students who demonstrate outstanding talent. Permission of the department required. 3 CR./SEM. MAXIMUM: 3 SEM.; 9 CR.

43100: Internship in Theatre

Involves work at a theatre or theatre organization outside the college environment.

The work could be in (1) theatre management and administration, (2) technical theatre, (3) various creative areas, including acting, directing and design. The Theatre Advisors must approve the outside organization as well as a coherent plan for the nature and quality of the work the student proposes to do. Ultimately, the student presents to their campus advisor a portfolio or journal chronicling their internship work as confirmed by the on-site supervisor. 43101: 2 HR./WK.; 1 CR.: 43102: 4 HR./WK.; 2 CR.: 43103: 6 HR./WK.; 3 CR.

45000: Special Topics in Dramatic Literature

Specialized study of specific playwrights, genres, and historical periods of dramaturgy. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

SPEECH

01100: Articulation

Primarily for students whose English is difficult to understand owing to foreign accent, dialect or incorrect learning. 2 HR./WK.; 1 CR.

00380: Speech Communication

Basic skills in extemporaneous speaking, oral reading, small group communication, interview techniques and listening. Each student will have at least one performance recorded in the TV/Media Center. Students who have completed Speech 11100 may not take this course. For SEEK Students only. 4 HR./WK.; 3 CR.

11100: Foundations of Speech Communication

Basic skills in extemporaneous speaking, oral reading, small group communication, interview techniques and listening. Each student will have at least one performance recorded in the TV/Media Center. Students who have completed Speech 00380 may not take this course. 4 HR./WK.; 3 CR.

11400: Oral Interpretation

Theory and practice in reading aloud. 3 HR./WK.; 3 CR.

23300: Voice and Diction

Effective self-expression in communication, with emphasis on voice, diction and vocabulary. 3 HR./WK.; 3 CR.

FACULTY

Orsini Gonzalez, Lecturer

B.A., SUNY (Binghamton); M.A., Queens College; Ph.D., Fordham Univ.

Keith L. Grant, Associate Professor

B.F.A., Univ. of Utah; M.A., Pennsylvania State Univ.; M.F.A. Yale Drama School

Kate Levin, Assistant Professor

B.A., Harvard Univ.; Ph.D., Univ. of California (Berkeley)

Eugene Nesmith, Associate Professor

B.F.A., The City College; M.F.A., Univ. of California (San Diego)

Steven Urkowitz, Professor

B.A., The City College, M.A.; Ph.D., Univ. of Chicago

David Willinger, Professor and Chair

B.A., Herbert Lehman College, M.A.; Ph.D., CUNY

Women's Studies Program

(DIVISION OF SOCIAL SCIENCE)

Professor Joyce Gelb, Director • Program Office: NAC 6/132 • Tel: 212-650-7494

GENERAL INFORMATION

PROGRAMS AND OBJECTIVES

The Women's Studies Program offers an interdisciplinary undergraduate minor. The purpose of the program is to engage students in the discovery and production of knowledge that emerges from feminist perspectives on culture and society. We seek to provide students with the analytic competency that results from engagement with a curriculum focused on the intersections of gender, race, ethnicity, class, sexuality, and nation and that promotes responsible citizenship in a diverse global environment. The program introduces students to the history of women and their social, cultural and scientific contributions; it stresses the importance of social responsibility, activism, and community outreach. The program supports and sponsors both on and off campus events relevant to women's social, cultural and political issues with a strong sense of commitment to women in the metropolitan region. Both curricular and extracurricular activities of the program are grounded in multiple feminisms and interdisciplinary approaches to feminist thought.

Development
Economics
Government Service
Medicine
Science
Social Science
the Arts
the Humanities

REQUIREMENTS FOR THE MINOR

Required courses
 10000: Women's Roles in Society 3
 Elective courses (with approval of the program director) 12

Total credits 15

Events/Activities

The Women's Studies program hosts and co-sponsors Women's History Month, including many exciting talks, films, and activities during March. The program also hosts talks and activities in conjunction with other groups, programs, and college departments, including Art, History and Political Science.

AWARDS

CCNY undergraduate students are eligible for the following awards:

The Joan Kelly Essay Award

Women Hold up the Sky Award

The Most Outstanding Written Work in WS 10000 Award

COURSE DESCRIPTIONS

INTRODUCTORY AND CORE COURSES

10000: Women's/Gender Roles in Contemporary Society

An introduction to issues that arise when women's lives and gender roles become the focus of critical inquiry. How do different societies and academic disciplines define women? How do women's experiences vary in relation to factors such as race, ethnicity, class, sexuality, age and nationality?

How have women resisted, adapted to, and transformed "women's space" in the United States and elsewhere? (W)
 3 HR./WK.; 3 CR.

Intermediate and Advanced Courses

31000: Independent Study

The student will pursue a program of independent study under the direction of a member of the program with the approval of the Program Director. 1-4 HR./WK.; 1-4 CR.

31100-32000: Selected Topics in Women's Studies

Topics not covered in the usual program offerings. Topics will vary from semester to semester depending upon student and instructor interest. Credits and hours will be determined by the instructor and the program. 1-4 HR./WK.; 1-4 CR.

ELECTIVE COURSES IN OTHER DEPARTMENTS

Below is a partial listing of courses accepted in the Women's Studies program. Please consult an advisor for all applicable courses each semester.

Anthropology

20100: Cross Cultural Perspectives
 20300: Human Origins
 22500: Class, Ethnicity & Gender
 22600: Culture, Personality & Gender
 23200: Witchcraft, Magic and Religion
 23600: Sex, Marriage and the Family
 in Cross-Cultural Perspective
 25500: The Anthropology of Health
 and Healing
 25600: American Cultural Patterns
 28500: Heredity, Race and
 Intelligence
 31430: Women and Violation of
 Human Rights
 32000: Islamic Culture and Issues

Asian Studies

20700: Asian Women

Art

29100: Women in World Art

39100: Women and Art in New York City

Biology

32100: Physiological Processes

Black Studies

16600: Caribbean and International Migrations

English

31713: Latina Writers

31746: Women's Literature

37502: Women Novelists of the 19th Century

37501: Women Writers of the Middle Ages and the Renaissance

37503: 20th Century Women Writers

37517: 19th Century Women Writers

41313: Gender Issues in Victorian Literature

Foreign Languages and Literatures

31500: Selected Topics: French Women in Literature (in English)

45300: Gender Issues in Hispanic Letters

History

31706: The Black Woman

31880: Women and Gender in Latin America

31910: Women in the Middle East

35900: Women in World History through the Middle Ages

36000: Women in Modern History

36600: The American Women's Movement

Jewish Studies

27300: The Jewish Woman

Latin American and Latino Studies

13200: The Contemporary Hispanic Family

31200: Women/Health: Latinos and Other Women of Color

Media and Communications Arts

23200: Documentary Workshop I

32300: Screenwriting Workshop I

32400: Screenwriting Workshop II

Political Science

22900: Women and Politics

Philosophy

34600: Feminist Politics

Psychology

24500: Psychology of Human Sexual Behavior

36500: Family Psychology

38800: Psychology of Women

Sociology

26600: Family Relationships

26700: Social Change in Developing Countries

27700: Ethnic Families in the United States

34600: Feminist Philosophy

38207: Sex Roles and Social Change

38209: Sociology of Sexualities

FACULTY

The faculty of the program includes those professors who teach the program's courses and those whose departmental courses may be credited to the minor.

Center for Worker Education

Center for Worker Education

Dr. Daniel Lemons, Dean • Campus Office: NAC 4/109 • Tel: 212-650-5300
99 Hudson Street, 7th floor (between Harrison and Franklin Streets) • Tel: 212-925-6625

GENERAL INFORMATION

The City College offers the following undergraduate degrees through the Center for Worker Education:

B.A. (Interdisciplinary Arts and Sciences)

B.S. (Early Childhood Education)

PROGRAMS AND OBJECTIVES

The Center for Worker Education (CWE) was established in 1981 to provide working adults with opportunities both to pursue their intellectual interests and to earn a bachelor's degree. The Center has a close relationship with a variety of unions as well as with governmental agencies and employers.

The Center offers working adults a flexible, interdisciplinary program leading either to the B.A. in the field of Interdisciplinary Arts & Sciences or the B.S. in Early Childhood Education. The Center also sponsors research and conferences on issues having to do with work and workers.

Classes are held and offices located at the Center's Tribeca campus—two floors at 99 Hudson Street, an address in the midst of New York's landmark district: Wall Street, City Hall, Chinatown and Greenwich Village. Most classes meet once a week in the evenings, Monday to Friday, and on Saturdays during the day.

Students must apply for admission directly at the Center. The first step is attending an admissions workshop at the Center. Anyone with a high school diploma or a General Equivalency Diploma is eligible to apply. Courses are generally open only to students

who have been admitted to the program. In order to register, students are required to see a counselor; regular academic advisement is available to all students enrolled in the degree programs and is one of the benefits of matriculating at the Center.

REQUIREMENTS FOR THE MAJOR

B.A. in Interdisciplinary Arts and Sciences

Majors must complete the following requirements:

CWE Core Courses

CWE 10000, 10100: Literature, Film and Human Experience	8
CWE 10200, 10300: Work, Family and Community	8
CWE 10400, 10500: Nature and Human Beings	8

Language Requirement

Spanish 12100, 12200 and 22300:
Basic Spanish I, II, and Intermediate Spanish I 0-10

Depending on the student's individual circumstances, another foreign language may be accepted with the advisor's approval. The language requirement may also be satisfied by three years of one language in high school, two semesters each of two different languages in college or by a test in which the student demonstrates proficiency.

Elective Courses

Elective courses 86-96

The 86-96 credits of electives may include up to 16 credits of independent study. Twenty-eight credits may be in the Autobiography Life Experience Component. Further explanation of the Life Experience component is provided below.

At least 28 elective credits must be earned in upper-division courses, and the final 30 credits must be earned at CWE.

Total Credits 120

Concentrations for the B.A. in Interdisciplinary Arts and Sciences

For the B.A. degree, students are not required to elect a conventional major, but may construct an interdisciplinary liberal arts and science course of study in consultation with their advisors. Areas of concentration include the following:

- Labor Studies
- Public Administration
- Human Services
- Communications and Literature
- Social Sciences
- Developmental Disabilities
- Urban Studies

B.S. in Early Childhood Education

The Center offers a B.S. degree with a major in Early Childhood Education. Students must apply for admission to the Early Childhood Education Program and will be expected to complete a General Education Core in the liberal arts and sciences; a content core in either Communications and Literature or Social Sciences, and a Teaching Methods core, which requires fieldwork. Student teaching is a required one-semester experience. Students who successfully complete all required coursework and student teaching will be recommended by City College for initial New York State teacher certification in Early Childhood.

CWE Core Courses

CWE 10000, 10100: Literature, Film and Human Experience	8
CWE 10200, 10300: Work, Family and Community	8

CWE 10400, 10500: Nature and Human Beings	8	40200: Literacy and Language II	2
		40300: Social Studies Methods	2
		40500: Facilitating Children's Artistic Development	2
		40600: Facilitating Children's Musical Development	2
		40800: Supervised Student Teaching	6
		41900: Professional Development	0
		42000: Science in Elementary Education Program	2

Total Credits **120**

The Life Experience Portfolio

The Life Experience Portfolio is a special option available by permission to students in the program who have completed 45 credits and have passed the CUNY Proficiency Exam. The portfolio option consists of three parts:

1. The Seminar in Autobiography (4 hr.; 4 cr.) and the Autobiography Workshop (4 hr.; 4 cr.) are required of students electing the option.
2. The Autobiographical Essay analyzes a student's prior experience. The final essays are read by a faculty committee which recommends the total number of credits to be awarded up to a maximum of 8. A reading fee of \$75.00 is due when the Autobiographical Essay is submitted.
3. The Portfolio documents the college-level learning achieved by a student outside of conventional institutions of higher education. A committee of the Center's faculty and staff recommends the total number of credits to be awarded for the Portfolio up to a maximum of 12.

Additional Requirements

In addition to the above requirements, both B.A. and B.S. students must meet the following criteria:

1. Pass the CUNY Proficiency Examination (CPE), prior to earning sixty-one (61) credits.
2. Students in the B.S. in Early Childhood Education program are expected to maintain a minimum 2.5 Grade Point Average.

Liberal Arts

Speech

11104: Foundations of Speech Communication 4

Psychology

10204: Applications of Psychology in the Modern World 4

English

11004: English Composition 3

One of the following two: 4

21014: Writing for the Humanities (4 cr.)

21024: Writing for the Social Sciences (4 cr.)

Language Requirement*

Spanish 12100 and 12200: Basic Spanish I, II 0-8

Mathematics

18000: Quantitative Reasoning 3

18500: Basic Ideas in Mathematics 3

Sociology

38144: School in American Societies 4

U.S. History

One of the following two: 4

12404: American Civilization I, Colonial Period to 1865 (4 cr.)

12504: American Civilization II, 1865 to the Present (4 cr.)

**Depending on placement by advisor, another foreign language may be accepted if approved by advisor.*

Total Credits **54-62**

Content Core

All Early Childhood Education majors at City College are required to complete a 32-credit liberal arts content core in either Communications and Literature or Social Science. Courses in the content core are selected in consultation with an academic advisor.

Education Courses

Education

20604: Building Blocks of Early Childhood Education 1 4

20614: Building Blocks of Early Childhood Education 2 4

22100: Family, School, Community 2

32204: How Children Learn Math 4

32304: Literacy and Language I 4

ADVISEMENT

CWE students are required to select an advisor upon admission to the program and may not register each semester without careful planning of their course of study in consultation with that advisor.

AWARDS

Eugene Bellin Scholarship

As Scholarship of \$300 awarded two consecutive years to a junior at the Center for Worker Education who has a documented record of activity on behalf of social justice and a grade point average of 3.0 or better.

The Edward Rivera Prize for Autobiography/Autobiographical Fiction

This award is administered by the Center for Worker Education in collaboration with the English Department and it honors a student of autobiographical writing. The prize is named after Professor Edward Rivera, acclaimed novelist, writer, and teacher, who taught autobiography, fiction, and literature courses at the Center until his death in 2001.

The Jagna Sharff Award

An award is given annually to a student who excels in the area of Urban Anthropology. This award was established in 2001 by the friends, family, and faculty in honor of Jagna Sharff, Anthropologist, who taught for several years at CWE until her death in 2001.

Leonard Spano Award

An award of \$100 given annually to the graduating senior who is judged by a committee established by the Center for Worker Education to have demonstrated excellence in the study of history or the other social sciences.

Ada Shepherd Creative Writing Award

An award of \$75 given annually to that student whose creative writing is judged the best submitted to a committee established by the Center for Worker Education.

The Barbara Aronson Social Justice Award

On the recommendation of the Social Justice Award Committee, a \$1000 award will be given annually to one or more students at the Center for Worker Education for:

(a) Social Justice Internship, to a junior or senior who will undertake a year-long internship in an organization promoting social justice issues and who documents his/her experience in an essay; and/or

(b) Study (or Research) Abroad, to a junior or senior who will travel abroad, with preference given to travel in Third World countries, to study or conduct research on issues of human rights, labor or sustainable development.

The Heyman Alumni Association Scholarship

Awarded to undergraduates who have earned at least 24 credits at the Center for Worker Education each year for academic achievement. Several \$1000 scholarships will be awarded.

The Samuel Wallach '29 Prize

A \$1000 prize awarded annually to a graduating senior at the Center for Worker Education who plans a career in public school teaching or labor education and who exemplifies the values associated with Mr. Wallach's long life as a teacher and labor union leader: a commitment to teacher organizations that serve the needs of children as well as teachers; and a commitment to teaching with the aim of achieving social justice.

The Frances Patai Prize

On the recommendation of the Advisory Committee to the Frances S. Patai Fund on the Nazi Holocaust, a \$1000 prize given for the best undergraduate research paper on the role of women in the anti-Facist struggles of the 1930s.

COURSE DESCRIPTIONS

CWE 10000, 10100: Literature, Film, and the Human Experience

(Core Humanities) An introduction to literature and film that will focus on the capacity of these arts to illuminate basic questions of human experience. Topics to be covered include the psychological, historical, social, philosophical and mythic aspects of both literature and film. The course will also include instruction in, and emphasis on, the written work of students. 4 HR./WK.; 4 CR. PER COURSE

CWE 10200, 10300: Work, Family, and the Community

(Core Social Science) This course introduces students to the methodologies and approaches of the various social sciences by exploring themes and problems associated with the development of the modern world. The course focuses on work and workers in various social and historical contexts. Prereq.: CWE 10000 and CWE 10100. 4 HR./WK.; 4 CR. PER COURSE

CWE 10400, 10500: Nature and Human Beings

(Core Science) This course introduces students to fundamental ideas in the biological and physical sciences as well as the interaction of science with society. One of the important aims will be to develop an understanding of the scientific method with an emphasis on model building and its wide range of potential applicability. Another important goal will be to convey an appreciation of both the possibilities and limitations of science and technology. Prereq.: CWE 10000, CWE 10100, CWE 10200, CWE 10300. 4 HR./WK.; 4 CR. PER COURSE

EARLY CHILDHOOD EDUCATION COURSES

20604: Building Blocks of Early Childhood Education I

An overview of early childhood education theory and practice from historical and sociocultural viewpoints. Major areas of study include child development, observation and recording techniques, developmentally appropriate practices, multicultural and inclusive classrooms, authentic assessment, family-child-teacher interactions, and subject area methods. Fieldwork required. 4 HR./WK.; 4 CR.

20614: Building Blocks of Early Childhood II

Students construct a working understanding of theorists such as Dewey, Piaget, and

Vygotsky as applied to young children and the curriculum and practices that support their growth. Students will consider typical, inclusive, and multicultural settings in depth. These understandings are grounded in systematic observations culminating in a child study. Fieldwork required. 4 HR./WK.; 4 CR.

22100: Families, School, Community

Students will gain understandings and skills for working with all kinds of families. This includes using the local community and cultures as resources and supports for the child and family, bringing the outside world into the school, and viewing the classroom as a community. Emphasis on special needs, inclusion, and children with English as a second language. Includes 15 hours of fieldwork. 2 HR./WK.; 2 CR.

SOC 38144: School and American Societies

Students explore the complexities of the social institution of public schooling in the context of a democratic society: what the schools ought, can, and actually do. This exploration includes a progressive educational framework that considers a pluralistic society. Includes 15 hours of fieldwork. 4 HR./WK.; 4 CR.

32204: How Children Learn Math

A constructivist foundation for teaching mathematics in Early Childhood based on Piaget, Vygotsky and current ECE theorists including Kamii. Development of mathematical concepts and skills in Early Childhood and through curricular materials. Field assignments link curriculum and theory with ECE classroom practice. 4 HR./WK.; 4 CR.

32304: Literacy and Language I

Developmental and constructivist framework of early language development and emergent literacy. Children's language development, the development of other communication skills, and the relationship of these to the process of reading. Children's literature examined from sociocultural and multilingual perspectives. Field assignments provide experiences that link theory and practice. 4 HR./WK.; 4 CR.

40200: Literacy and Language II

Developmental processes of emergent to fluent reading, writing, speaking, and communicating. Multiple teaching/curricular/assessment approaches to beginning reading and writing for children of different cultures, linguistic backgrounds, abilities/disabilities, and developmental level. Field assignments link theory and practice. 2 HR./WK.; 2 CR.

40300: Social Studies in Early Childhood Education

Social studies is developed as the core of an integrated ECE curriculum involving literacy, math, science, and play. Students will explore theories, methods, and materials to help the child understand his/her immediate environments and relationships to them. Emphasis on family, classroom, school and neighborhood. Field assignments link theory and practice. Prereq.: Educ. 32304. 2 HR./WK.; 2 CR.

40500: Facilitating Children's Artistic Development

Students explore the use of a range of art materials and activities for young children at various developmental stages and methods for supporting their total development. The natural sequences and stages of children's drawings and their link to emergent literacy and other developmental areas. 2 HR./WK.; 2 CR.

40600: Facilitating Children's Musical Development

A study of young children's interest and response to rhythms, dramatic play, and spontaneous imaginative experiences which the teacher can guide and incorporate into a program of developmental activities. 2 HR./WK.; 2 CR.

40800: Student Teaching in Early Childhood Education

Supervised student teaching in two of the three ECE levels: Pre-K, Kindergarten, and grades 1 & 2, with a minimum of four weeks at each level. 25 HR./WK.; 6 CR.

41900: Professional Development Seminar

42000: Science in Early Childhood Education

An introduction to learning science at the elementary level. Emphasis on firsthand experiential learning of science through the design, conduct, and communication of science investigations that portray underlying elements of science inquiry. Students relate learning experiences to state and national standards in science. Coreq.: Educ. 40800, 41900. 2 HR./WK.; 2 CR.

POLICY COMMITTEE

Marshall Berman (Sociology)
Gabriel Haslip-Viera (LALS)
Federica Raia (EAS)
Sylvia Netzer (Art)
James Neujahr (Education)

FACULTY

David Eastzer (Biology)
Vicki Garavuso (Education)
Barbara Gleason (English)
Irina Carlotta Silber (Anthropology)

STAFF

Jason Chappell
Admissions Coordinator
John Calagione
Academic Advisor, Academic Coordinator
Deborah Edwards-Anderson
Coordinator of the B.S. in Early Childhood Education Program
Arlene Edwards-Bones
Recruitment Assistant
Robert Hernandez
Instructional Systems Technician
Judy Hilkey
Senior Counselor
Warren Orange
Academic Advisor, CPE and Space Coordinator
Davi Saroop
Administrative Services Coordinator
Jean Weisman
Administrative Coordinator, Financial Aid



**School of
Architecture,
Urban Design
and Landscape
Architecture**

School of Architecture, Urban Design and Landscape Architecture

Professor George Ranalli, Dean • Professor Peter Gisolfi, Chair • Department Office: Shepard 103 • Tel: 212-650-7118

GENERAL INFORMATION

The School of Architecture, Urban Design and Landscape Architecture offers the following undergraduate degrees:

**B.S. in Architecture
Bachelor of Architecture (B.Arch.)**

PROGRAMS AND OBJECTIVES

Architects, urban designers and landscape architects design buildings, cities, communities and the landscapes in which we live and work. They must be capable of synthesizing the needs of all of those involved in the complex process of shaping an environment, from inception and design to construction and management. The School gives equal emphasis to good design, technical knowledge and a clear understanding of human experience and community development. The City College's Architecture program is dedicated to the understanding of the complex systems of the city's urban fabric and a desire to make the city work well for the people who live and work there. The location of the School in Manhattan allows for direct access to a vibrant and exciting urban resource, which the program uses to the fullest extent.

The Architecture program leads students through the artistic, technical, intellectual and social process of designing buildings, communities and open spaces. This course of study leads to the degree of B.S. in Architecture in four years and the B. Arch. (first professional degree) in five years. Students who terminate their studies after four years must apply for

the B.S. in Architecture degree in their fourth year.

Students apply to the B. Arch. (fifth year) program in the last semester of their fourth year. For further information on admissions to both programs, see the section on Admissions below.

HISTORY

The program in architecture leading to the first professional degree was initiated in September 1961, within the School of Engineering and Architecture. In July 1968, a separate School of Architecture and Environmental Studies was created. In September 1971, the Urban Landscape and Urban Design options were added to the programs of the School. The City College Architectural Center was founded in 1980. In 2000, the name of the School was changed to the School of Architecture, Urban Design and Landscape Architecture.

CURRICULUM

The educational program of the School is divided into three phases. Each phase has a specific emphasis.

In Phase I (first and second years), the student is offered a general education in liberal arts and sciences as well as a series of architecture and environmental studies (AES) lecture and workshop courses that serve as an introduction to the processes of change in the physical fabric of the urban environment of the past and present.

Phase 2 (third and fourth years) is devoted to professional concentration in architecture. In each semester, the student is required to take parallel courses in three areas: problem-solving design workshops, values, concepts,

and methods of the environmental design professions (history and theory), and the technology of building systems for architecture.

Phase 3 focuses on advanced studies in architecture in the fifth year. The development of independent professional judgment is emphasized in Phase 3.

RESEARCH

The City College Architectural Center (CCAC) offers technical assistance to community and public agencies concerned with enhancing and rehabilitating their environments. The research component of this center develops new knowledge and skills to support the academic program. Particular emphasis is placed on developing the relationship of professionals and non-professionals, community groups, agencies and other clients and users in decision making affecting the environment. The CCAC also provides students with opportunities to gain field experience and contribute to the community.

AWARDS, SCHOLARSHIPS AND HONORS

**Alumni Association Scholarships
Architecture Alumni Group
Scholarship**

Megan Lawrence Memorial Award

Fred L. Leibman Book Award

**Most Outstanding Student Awards:
Years 1-5**

**Most Outstanding Thesis Project
Award by Design Studio**

**Faculty History and Theory Award
Extech Award**

**Bernard L. Spanier Scholarship Fund
Ecole D'Art de Fontainebleau
Scholarship**

AIA/Architectural Foundation Scholarship
AIA/New York Chapter Eleanor Allwork Award
AIA/Certificate of Merit Carol J. Weissman Kurth Women in Architecture Scholarship
Matthew W. Del Gaudio Award
AIA Henry Adams Award
Alpha Rho Chi Medal
J. Max Bond Award
Gerner, Kronick & Valcarcel Scholarship
James Stewart Polshek Scholarship

STUDENT ORGANIZATIONS

The American Institute of Architecture Students (AIAS)

National Organization of Minority Architecture Students (NOMAS)

City College Academy for Professional Preparation (CCAPP)

Digital Architectural Students Club (DASC)

ACCREDITATION

Both the B.S. in Architecture and the professional degree (B. Arch.) are registered by the New York State Education Department. The B. Arch. program is accredited by the National Architectural Accrediting Board.

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or a two-year term of accreditation, depending on its degree of conformance with established educational standards.

Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which when earned

sequentially comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

ADMISSIONS

FRESHMEN

For information about academic requirements, application procedures, placement examinations and special admissions programs, consult the front of this *Bulletin*.

CHANGING MAJORS WITHIN THE COLLEGE

Students in The City College who want to change their major to architecture must apply to the School of Architecture. A limited number of applicants are accepted each year.

TRANSFER AND PREVIOUS DEGREE STUDENTS

Students with previous college course work or degrees may be exempted from some of the required and elective general education courses. An evaluation of a student's transfer credits is made by the director of academic advisement. Those wishing to apply must complete a CUNY Transfer Application. Once accepted students are individually evaluated on the basis of past academic work. A portfolio is required only for those who previously studied architecture.

B. ARCH. PROGRAM

Applicants from The City College

The fifth year thesis is open only to students with a B.S. in Architecture and an overall GPA of 2.5, as well as a 2.75 GPA in the professional courses in Architecture and 2.5 in design workshop courses and a pass in portfolio review.

Fifth year application forms can be obtained in Shepard 103. A Bursar's receipt for the non-refundable fee must be submitted to the School of Architecture office.

Applicants from Other Institutions

Applicants who have earned B.S. degrees in Architecture at other institutions should submit transfer student applications. Applicants will be scheduled for interviews with the Director of Academic Advising and asked to present a portfolio containing examples of their work.

REGISTRATION AND ADVISEMENT

Pre-Registration

All Architecture students must see an academic advisor before registration. At these times, advisors will consult on matters of registration, program, credits, academic standing, or personal problems related to the student's professional career.

Program Planning Procedures

Entering freshmen are advised by an advisor in the School of Architecture. At the advisement session, they prepare a program for the coming semester. The approval of an advisor is required for any change in an approved curricular program.

Most courses offered by the School are part of a sequence. Since every course in this *Bulletin* is not offered every semester, students should be careful to plan programs that can be completed in the required number of semesters.

Most courses offered by the School have prerequisites, which are listed immediately after the course descriptions. The prerequisites must be successfully completed before the course that requires them can be taken.

Students may not register for two sequential courses simultaneously in Architectural Design Workshops, History/Theory, or Construction Technology, unless they have been granted permission by the Director of Academic Advising.

If the student wishes to drop a course which is a corequisite of another course, both must be dropped.

Students with an overall average of 2.5 and a 2.5 in professional courses

and a successful portfolio review are permitted to proceed from Phase One (first and second years) to Phase Two (third and fourth years).

Students who have earned a B average for the preceding term, and who have no grade below a C in any subject studied that term, may be permitted to take more than 17 credits.

Students are expected to attend the School full-time and carry a minimum of 12 credits.

Students are responsible for seeing that they complete all requirements necessary for graduation. Students are also responsible for informing the Office of the Registrar if at any time they have reason to believe their records are incorrect.

Students who suspend their studies must apply for re-entry.

DEGREE REQUIREMENTS

Phase One: Freshmen

First Semester

New Student Seminar	0
AES 11100: Communication Studio I	4
English 11000: Freshman Composition	3
Social Science or Humanities Elective	3
Social Science or Humanities Elective	3

Second Semester

AES 12000: Communication Studio II	4
AES 21200: The Built Environment of New York City	2
World Civilizations 10100 or 10200	3
Social Science or Humanities Elective	3
Free Elective	3

Third Semester

AES 23000: Communication Studio III	4
AES 23200: A Survey of Western Architecture I	3
Physics 21900: Physics for Architects	4
World Humanities 10100 or 10200	3
Philosophy 30000: The Rational Animal	3

Fourth Semester*

AES 24000 Communication Studio IV	4
AES 24001: Portfolio Review	0
AES 24200: A Survey of Western Architecture II	3

AES 24302: Statics and Strength of Materials	4
Free Electives	5

**To proceed from the second to the third year in the Architecture program, a student must satisfactorily complete all required courses listed and electives for a minimum of 60 credits (exclusive of all ESL); have a minimum 2.5 GPA overall, a minimum 2.5 GPA in all AES courses, complete Speech 11100 or pass the Speech Exemption Exam, pass Math 19500, pass the CUNY Proficiency Exam and pass a portfolio review (AES 24001). See advisor for any changes in curriculum.*

Phase Two

Fifth Semester

35100: Design Studio I	5
35201: Modern Architecture	3
35301: Construction Technology I	3
35401: Structures I (Wood & Steel)	3
35302: Site Technology	3

Sixth Semester

36100: Design Studio II	5
36301: Construction Technology II	3
36401: Structures II (Concrete)	3
41201: Computers in Architecture	4

Seventh Semester

47100: Design Studio III	6
47201: World Architecture	3
47301: Construction Technology III (HVAC)	3
Architecture Electives	6

Eighth Semester

48100: Design Studio IV	6
48301: Construction Technology IV (Lighting and Acoustics)	3
Architecture Electives	9

Total Credits for B.S. Degree 128

Note: A minimum of 128 credits (exclusive of all remedial courses) with a minimum GPA of 2.0 overall and in AES and Architecture courses is required for the B.S. degree.

Phase Three

Note: The number of students who may be admitted to the fifth year is limited; academic performance is the principal criterion for admission. In no case will a student be admitted with an average below 2.5 in all courses taken, 2.75 in professional courses in architecture, and 2.5 in all design workshop courses, and a pass in portfolio review.

Ninth Semester

51100: Thesis Studio	6
51200: Architectural Management Architecture Electives	3 8-9

Tenth Semester

52100: Thesis Studio	6
Architecture Electives	8-9

Total Credits for Phase Three 32

Total Credits for B. Arch. Degree 160

Note: Architecture students in the fifth year must maintain a grade point average of 2.5 in all courses taken, in professional courses of architecture, and in design courses. A student must complete a minimum of 32 credit hours in the fifth year.

Note: A student who completes the fifth year will be awarded the professional degree of Bachelor of Architecture.

ADVISEMENT

Architecture

Professor Ghislaine Hermanuz
S-109B; 650-7118/8731

Mr. Arnaldo Melendez
S-109C; 650-7307

FACILITIES

The Library

The Architecture Library contains more than 30,000 volumes related to the programs of the School. It currently receives 70 periodicals, and has a collection of 11,000 pamphlets and pictures. Public workstations in the library offer web access. The Morris Raphael Cohen Library and the Science/Engineering Library are also available for student use. Professor Judy Connorton is the Chief of the Architectural Library.

The Model Shop

Students use the shop to make models that enable them to study design solutions in three dimensions and to analyze construction details and methods. The shop is equipped with hand and power tools for wood and plastic. Instruction is provided in the use of equipment. Use of the shop is integral to the design curriculum, beginning with the first year studio. Professor Fran Leadon is the Model Shop Instructor.

The Slide Library

The slide library is a reference collection of over 60,000 slides as well as a rapidly growing collection of digital images. It also includes facilities for photographing models and drawings and other equipment for recording or viewing architectural projects.

Professor Ching-Jun Chen is the Art and Architecture Visual Resources Librarian.

The Computer Lab

The Computer Aided Design Lab, housed in a large central space in the School, provides students with a variety of networked computer equipment for carrying out graphic and design projects. Advanced software for drafting, drawing and rendering as well as other applications are available. The Computer Lab is used for teaching the various computer courses offered in the School.

The City College Architectural Center

The City College Architectural Center (CCAC) provides technical assistance in architecture and planning to neighborhood groups, non-profit housing groups and other organizations unable to pay for private services. The CCAC offers advanced students from the School of Architecture experience through internships and is a venue for independent studies. The CCAC also acts as a center for various special projects and programs. The Director of CCAC is Professor Ethan Cohen.

COURSE DESCRIPTIONS

Please note that English 11000 or exemption is a prerequisite to all Architecture and AES courses, except AES 11100.

AES 11100: Communication Studio I

The course emphasizes analysis and design of architectural space through a series of repetitive exercises concentrating on process and production and examining the relationship between space, time, form, structure, landscape, scale, precedent, and program. Students master drafting and freehand pencil drawing techniques, and model-making techniques. 8 HR./WK.; 4 CR.

AES 12000: Communication

Studio II

Students continue the spatial exercises introduced in AES 11100 with emphasis placed on formulating a personal, self-directed design process. Students master conceptual and physical tools of architecture through individual and team projects and explain, defend, and modify the design process through presentations and discussion, analysis and research of historical and theoretical precedents. Prereq: AES 11100. 8 HR./WK.; 4 CR.

20100: Freehand Drawing

In this course the students are led to see architectural space and to understand and draw the elements that define it. Objects are seen and drawn relative to the greater spaces of which they are a part. Line drawing is the principle technique employed in this course. 4 HR./WK.; 2 CR.

21200: The Built Environment of New York City

Exploring the conditions and factors that have led to the development of New York City and its world renowned architecture and open spaces. Field trips, papers and investigation on the creation of New York. 2 HR./WK.; 2 CR.

23000: Communication Studio III

Analysis and methodology of design; drawing as a tool for design; orthographic projections. Prereq.: AES 12000. 8 HR./WK.; 4 CR.

23200: A Survey of Western Architecture I

This is the first of a two-semester survey that reviews the physical forms of architecture and related arts in a chronological format through an examination of case studies. It seeks to show how architecture responds to the needs of societies, and how it influences those who use it. The first semester will explore Ancient Near Eastern, Egyptian, Greek and Roman, Early Medieval, Byzantine, Western Islamic, Romanesque, Gothic and Renaissance Architecture against its social, cultural and political backdrops. 3 HR./WK.; 3 CR.

24000: Communication Studio IV

Objects and elements in space and context. Forms and materials. Prereq.: AES 23000. 8 HR./WK.; 4 CR.

24001: Portfolio Review

Review by faculty of the student's design portfolio which is to include work carried out in the 10000 and 20000-level design studios. Criteria include graphic ability, conceptual ability, progress and development. A grade of P is necessary to enter the third year. Coreq.: AES 24000. 0 CR.

24200: A Survey of Western Architecture II

The second semester will explore Mannerist, Baroque, Ottoman, Rococo, Romantic, Neo-Classical and Colonial Architecture, as well as 20th century movements including Modernism, Post-Modernism, and contemporary trends in which architects are working today. The interaction of architecture with its social, cultural and political context will be stressed. 3 HR./WK.; 3 CR.

24302: Statics and Strength of Materials

Evaluation of the balance of stationary forces in such statically determinate structural elements as beams, columns, cables, trusses, arches; analyzing reactions, axial forces, shear forces and bending moments. The evaluation of cross-sectional properties; measuring axial shear, bending, twisting and buckling strength of structural elements. Prereq.: Physics 21900. 3 HR./WK.; 3 CR.

35100: Design Studio I

This is the first of four sequential workshop courses which develop programming, design and graphics abilities. These continuing, realistic exercises of the student's power to influence environmental change will preview the whole range of his or her activity as a practicing professional. Prereq.: entry to third year. 9 HR./WK.; 5 CR.

35201: Modern Architecture

A continuation of AES 24200 which includes artistic movements and technological innovations from the late 19th century and 20th centuries: the modern movement in Europe and the United States, contemporary vernacular traditions worldwide, world architecture after World War II and new directions in contemporary architecture. Prereq.: entry to third year. 3 HR./WK.; 3 CR.

35301: Construction Technology I

An introduction to building systems, including simple wood and masonry construction. Assemblies of various building components will be studied. Concepts of energy conservation will be related to building construction. In the studio sections students will develop construction drawings of simple building assemblies. Prereq.: entry to third year. 3 HR./WK.; 3 CR.

35302: Site Technology

A survey workshop in the relationship of physical development to land forms. The student will deal with the basic principles of site planning, environmental and eco-

logical factors of siting, building, grading, drainage, site structures and materials. Prereq: entry to third year. 3 HR./WK.; 3 CR.

35401: Structures I, Wood and Steel

This course reinforces the statics and strength experience and applies it to real building situations. Simple wood and steel structures are used as the examples. Prereq.: AES 24302. 3 HR./WK.; 3 CR.

36100: Design Studio II

Students will be introduced to the processes, knowledge and skills required for the design of a small group of buildings of simple program, within a selected number of the real financial, political and legal constraints in New York City. 9 HR./WK.; 5 CR.

36301: Construction Technology II

The course will concentrate on the technology of medium to high rise buildings of steel and concrete construction. Case studies of specific buildings will be used to help students expand by analysis their knowledge of a particular group of design applications of building systems. Prereq.: Arch 35301. 3 HR./WK.; 3 CR.

36401: Structures II, Concrete

The knowledge of structural analysis is expanded to continuous systems. Examples are taken from concrete building structures with emphasis on the three-dimensional potential of planning space economically and elegantly. Prereq.: Arch 35401. 3 HR./WK.; 3 CR.

41001-41003 Series: Independent Studies

For students in the third and fourth years who wish to pursue advanced study or research in selected topics. Students must obtain written permission from a faculty member who becomes the mentor for the student or students, as to the study plan and the number of credits. Prereq.: permission of the department.

41001: 1 CR.
41002: 2 CR.
41003: 3 CR.

41201: Computers in Architecture

This is an introductory course to the use of computer-aided drafting technology, and the concept of 3D modeling. Students will gain direct experience by using computers to model three-dimensional space. Such topics as CADD, 3D modeling, and rendering will be introduced as tools available for spatial representation and professional presentation. 4 HR./WK.; 4 CR.

47100: Design Studio III

Students will progress from the simple buildings studied and designed the previous year to programs of increasing social and technological complexity. 10 HR./WK.; 6 CR.

47201: World Architecture

A continuation of Arch 35201 including case studies of traditional architecture, landscape and urban design of India, China, Korea, Japan, Southeast Asia, Islam and Medieval Europe, with a view towards understanding how architectural forms develop, and interact with the societies that produce them. 3 HR./WK.; 3 CR.

47301: Construction Technology III

Heating, ventilating, air-conditioning, plumbing, and electrical systems in buildings will be studied from a rudimentary design view to a level from which students will understand criteria involved in making choices between construction systems. Such things as space requirements and coordination with other building systems will be studied. Prereq.: Arch 35301. 3 HR./WK.; 3 CR.

48100: Design Studio IV

A continuation of the work done in previous design studios. Problems focus on multifunctional building complexes. Interdisciplinary emphasis to correlate the student's work with others implementing environmental change: government agencies, elected officials, community groups and leaders, engineers and social scientists. 10 HR./WK.; 6 CR.

48301: Construction Technology IV

The artificial and natural lighting of buildings will be studied along with the analysis and treatment of the built sonic environment. Spaces for performance and public assembly will be addressed along with housing and other building types. Prereq.: Arch 47301. 3 HR./WK.; 3 CR.

51001-51003 Series: Independent Studies

For fifth year students who wish to pursue advanced study or research in selected topics. Students must obtain written permission from a faculty member who becomes the mentor for the student or students, as to the study plan and the number of credits. Prereq.: permission of the Department.

51001: 1 CR.
51002: 2 CR.
51003: 3 CR.

51100: Thesis Studio

Each student identifies an actual architectural problem in the city of New York. The student must generate a series of basic alternate designs and present a rationale for the selection of one of the alternatives. The selected alternative is to be represent-

ed in the form of schematic models, drawings and diagrams. Prereq: B.S. in Arch. degree. 10 HR./WK.; 6 CR.

51200: Architectural Management

The principles of management as applied to the architectural profession. Included in this course are: the general organization of the profession and its relation to client, community, and the construction industry; new management techniques, organization and retrieval; project delivery, construction, and professional documents, cost control, legal surety, contract and financial management. Prereq: B.S. in Arch. degree. 3 HR./WK.; 3 CR.

51300: Selected Topics in Architecture

Special study in topics not covered in the usual department offerings. Topics vary from semester to semester, depending on student and instructor interest. USUALLY 3 HR./WK.; 3 CR.

51315: Critical Issues in Architecture

51321: Urban Reconstruction

51323-51324: Teaching Architecture I & II

51327-51330: Research and Community Service Work with the City College Architectural Center

51332: Introduction to Urban Preservation

51338: Islamic Architecture

51345: Latin American Architecture

51348: Computer Rendering and Animation

51349: Low-Energy Buildings

51352: Environmental Justice

51355: Environmental Psychology for Architects

51356: Developing Communication Skills

51359: NYC Housing: The Forces That Shape It

51362: Curating Architecture

51362-51363: Coop Internship I & II

51366: Social History of American Architecture

51372: New Directions in Green Design

51373: Computer Presentation Techniques

51374: Seminar on Louis Kahn

51376: Modernism in Architecture

51378: Six Modern Buildings

51380: Housing Theories

51381: American Urban Landscape

**51388: Architecture and
Photography****51393: Transportation and
Architecture****52100: Thesis Studio**

The student develops alternate schematic solutions for the major sub-systems of his or her design. A rationale is developed for the selection and integration of sub-systems. The student makes a complete presentation of the revised design that could provide sufficient information to form a basis for preparation of contract documents for the construction of the project. Prereq.: Arch 51100. 10 HR./WK.; 6 CR.

FACULTY**Carmi Bee, Professor**

B.Arch., Cooper Union; M.F.A. Arch., Princeton Univ.; R.A., F.A.I.A.

Horst Berger, Distinguished Professor

Stuttgart Univ., Dip. C.E., P.E.

Lance Jay Brown, Professor

B.Arch., Harvard Univ., M.Arch. (Urban Design); R.A., A.I.A., A.C.S.A., D.P.

Mi-Tsung Chang, Assistant Professor

B.Arch., Pratt Institute, M.Arch.; Ph.D., Union Institute

Ethan Cohen, Assistant Professor

B.A., Yale Univ., M.Arch.

Jerrilyn Dodds, Distinguished Professor

B.A., Columbia Univ., M.A.; Ph.D., Harvard Univ.

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B.A., Univ. of Pennsylvania; M.Arch., Columbia Univ.; R.A.

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Architecture, Universidad Nacional Rosario; M. Arch., Washington Univ.

Hanque Macari, Professor

M.S. (Envr. Design), Univ. of Wisconsin (Madison); B. Arch., Univ. of Florida; R.A.

Garrison McNeil, Professor

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**George Ranalli, Professor and Dean of
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Achva Benzinberg Stein, Professor

B.L.A., Univ. of Calif. (Berkeley); M.L.A., Harvard Univ., F.A.I.A.

Lee Weintraub, Associate Professor

B.S.Arch., The City College; R.L.A.

Andrew Zago, Professor

B.F.A., Univ. of Michigan; M.Arch., Harvard Univ.

PROFESSORS EMERITI**Jonathan Barnett****Gilbert R. Bischoff****J. Max Bond, Jr.****R. Alan Cordingley****John Deans****William Ellis****M. Paul Friedberg****David E. Guise****James B. Jarrett****Frank J. Majer, Jr.****M. Rosaria Piomelli****Labelle Prussin****William Roehl****Donald P. Ryder****Bernard P. Spring****Norval White**

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High

Electoral
mobilization

Electoral
Participation

average

Low



The School of Education



The School of Education

Professor Alfred Posamentier • Office: NAC 3/203 • Tel: 212-650-5471

The School of Education, an outgrowth of the Extension Courses organized in the fall of 1908 for teachers, librarians, and social workers, was established as a separate school of The City College in the spring of 1921. It is organized under its own faculty to prepare men and women for various educational services, teaching and non-teaching, in day care/pre-school settings, as well as in the elementary and secondary schools. It is also open to in-service personnel who wish to take courses for professional development.

In collaboration with the other Schools and Divisions of The City College, the School of Education offers programs of study in a number of professional fields. Professional preparation for educational service is under the jurisdiction of the Board of Trustees of the City University of New York and coordinated by its Committee on Coordination of Teacher Education.

The programs lead to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Education. The School also offers a sequence of courses, including student teaching, to a large number of liberal arts degree students seeking state certification in certain secondary school teaching areas. Programs of study are designed to meet state certification and New York City licensing requirements. Students who obtain the bachelor's degree may, upon graduation, apply for NYS teacher certification through the Certification Officer, NAC 3/213.

Mission and Shared Vision of the School of Education

The City College School of Education provides access to the field of education for all who show promise of contributing to New York City schools and the education of the City's children. In keeping with the historical mission of the College, the School opens its doors to those who, because of national origin, native language, or economic condition might otherwise find a career in education out of reach.

The preparation of teachers in the United States is intended to meet the needs of a democratic society. In New York City, this is extended to preparing educators to work with students who are diverse in all respects. To that end, the School seeks to draw on the varied strengths of candidates while ensuring that they acquire the academic, pedagogical, technological, professional, and personal skills required of an educator in an urban setting. The School commits itself to ensuring that its graduates can demonstrate solid grounding in the liberal arts and sciences, a deep understanding of public purposes of education in a democracy, thorough training in effective teaching skills, and the professional and affective dispositions to work successfully with students, families, and colleagues in the field.

The School focuses on five themes to insure coherence across its curriculum, instruction, field experience, and assessment:

- A. Content knowledge
- B. Pedagogical knowledge
- C. Diversity
- D. Leadership
- E. Building of caring communities.

A. Developing In-depth Knowledge About the World

Candidates preparing to work in schools in teaching or supervisory roles demonstrate the content knowledge and skills necessary to help all students learn. All the College's programs attempt to meet national and professional standards of content, rigor, and coherence. This knowledge is found in the liberal arts and sciences and is presented with the most up-to-date technology. Indeed, there is a consensus of educators, from progressives to traditionalists, that literature, history, philosophy, mathematics, natural science, foreign languages, and art and music must be part of a university curriculum.

To that end, the institution requires a core curriculum emanating from its College of Liberal Arts and Science. The School adopts and enhances this curriculum by requiring of its candidates additional math and science courses. Undergraduate candidates, in addition to their pedagogical courses, must complete an academic major or concentration. (In addition to these requirements, pedagogical courses echo the content of the liberal arts core and concentrations. Philosophy, history, mathematics and English are part of these courses.)

Content knowledge is demonstrated in teaching methods courses: e.g. language arts, social studies, math and science. In these courses, candidates are introduced to State learning standards at the level appropriate to

the certification they seek. Through the use of content knowledge, candidates must be able to determine the widest and deepest potential knowledge base of each of their students with the accompanying strategies that range from direct instruction to inquiry so the student can, from textual and electronic sources, obtain, rehearse, recall, and transfer new knowledge to routine and new learning contexts. Knowledge of students and pedagogy goes hand-in-hand with content knowledge.

The seven knowledge areas of a university curriculum, listed above, have value in themselves, a value that education and liberal arts faculty communicate, deliberately and in passing, even in pedagogical courses. These faculties work together on curriculum and search committees. Only if they share and transmit the value of these knowledge areas will candidates develop a disposition to continue experiencing these and participate in lifelong learning. If they are not disposed to recognize this value they will not be able to pass it on to their students.

The target for teacher and other professional candidates with regard to content includes in-depth knowledge of the subject matter to be taught or supervised including the methods of the discipline that determine what becomes knowledge. Candidates demonstrate this knowledge through inquiry, critical analysis, and synthesis of the subjects they plan to teach. Some are able to meet target levels of performance by graduation from the programs of the School. Others, at that point in their development as educators, meet, at least, acceptable levels. But all graduates have the basic tools, technology and necessary dispositions to continue their development as educational professionals as well as learners. In order to ultimately meet target levels of performance, our graduates will have to continue to develop their content as well as their professional knowledge.

B. Becoming Skilled, Reflective Practitioners

Teacher competence is obviously a primary influence on student learning. Critical dimensions of competence are pedagogical knowledge and skills. The School of Education adds to this the knowledge and skills to be a successful educator in urban schools that serve a diverse population of children and families and the disposition to use these to promote the learning of all children. In order to articulate the School's purposes and goals, pedagogical competence is divided into six subcategories:

- 1) Knowledge of human learning and development. In coursework, candidates build their pedagogical knowledge on a foundation of learning and developmental theory in tandem with practice in fieldwork. Candidates observe students in an educational and cultural context.
- 2) Knowledge of constructivism and inquiry learning. In coursework and fieldwork, candidates learn how to provide students with opportunities to explore, inquire, discover, and problem-solve. Candidates apply knowledge by gradually implementing a wider range of instructional practices in the field with diverse groups of students.
- 3) Knowledge of pedagogical approaches to working with students with special needs. Candidates, whether in special education or not, recognize that they may be called upon to work in inclusion classrooms and engage in culturally responsive teaching. As well as experiencing constructivist and inquiry models, candidates investigate complementary models for students with special needs.
- 4) Knowledge of the use of instructional technology for teaching, learning, and assessment. The School promotes the skillful use of instructional and communications technology with a predominantly "across the curriculum" approach based on the recognition that technology must be used to support student learning.

5) The knowledge and ability to put into practice both multiple teaching strategies and approaches to assessment that build on the knowledge and strengths that students bring to school and allow for differentiated instruction for diverse learners. Based on their knowledge and experiences with cultural differences, candidates integrate multiple strategies in the preparation of lessons and fieldwork. They are introduced to formal and informal assessment approaches in foundation courses and in succeeding course and fieldwork experiences, become comfortable with a wide range of assessment strategies.

6) Application of knowledge and skills through sequenced experiences in the field. Through sequenced fieldwork, candidates grow in their ability to apply the skills and knowledge learned. Fieldwork culminates in a carefully monitored semester of student teaching or a practicum in which they engage in a formal inquiry into their teaching practice.

C. Educating For and about Diversity

The great strength of City College is the diversity of its students and faculty. As a public institution, the College has in place a policy of nondiscrimination on the basis of age, color, disability, national or ethnic origin, race, religion, sex, sexual orientation, veteran or marital status. As a campus situated at the center of one of the world's most diverse metropolises, the College enjoys the opportunity of making that policy a living reality.

The School of Education subscribes wholeheartedly to the goal of full inclusion and so works continuously to ensure that the diversity of the New York City population, and particularly of the surrounding local community of upper Manhattan, is reflected in the make-up of the faculty and in the perspectives, concerns, and materials taken up throughout the curriculum. Access to education and to careers in teaching for the widest possible representation across the City's population is central to the

School's mission but, at the same time, a wider variety of educational options is often available to the economically more advantaged. In this light, the School and the College seek especially to provide access to those who are economically disadvantaged. Mechanisms to provide such access include low tuition, financial aid, academic support services, and scheduling of classes to accommodate students who work.

The School views the diversity of students and faculty, defined in its widest sense, not just as an obligation but as an educational resource. While an emphasis on multiculturalism does prepare learners for the diversity of the world outside the classroom, a diverse classroom actually brings that reality into the educational process itself. In a true community of learners, where each member contributes to the learning process, it must be the case that greater diversity of lived experience among the learners results in a richer learning experience for the community. For the School of Education candidate, diversity is more than a fact of the world, something about which the candidate must learn; it is a fact of the candidate's own classroom, something through which the candidate can learn. It is the responsibility of faculty to draw upon the diversity of the school to enrich the learning processes of all candidates, a practice that serves as a model for candidates in their own teaching.

The School is continuously working towards finding ways to promote understanding across experiential divides. Particularly where native cultures, languages, and dialects differ from candidate to candidate, candidate to instructor, and faculty member to faculty member, it is a challenge to appreciate and accurately assess the value of another's contribution. It is also a challenge to prepare candidates to meet the demands of state and professional assessment instruments, which may not always be sufficiently sensitive to cultural and linguistic differences. The School strives to meet

these demands without sacrificing either academic rigor or cultural and linguistic pluralism.

D. Nurturing Leadership for Learning

1) General preparation. Our goal is to develop the capabilities of candidates to assume leadership roles in their classrooms, schools, and communities. Whether or not candidates eventually assume formal leadership positions, the acquisition of the knowledge, skills, technology, and dispositions required for providing leadership serves to enhance their performance at the classroom, school, and community levels. Accordingly, developing the capacity to apply leadership skills that foster the development of community in multicultural, multilingual schools is a theme that is embedded and reinforced in the course content, fieldwork, research requirements, and internship experiences offered by all the programs in the School.

Candidates acquire the ability to lead and participate in decision-making bodies that address the academic content and management structure of the diverse programs in their schools. They are prepared to engage in collaborative processes that encourage the mutual efforts of teachers, administrators, and staff to work and learn together. They become skilled at collegial planning and evaluation, managing conflict, and reflecting and dialoging on their own professional practices. They seek to become stewards of best practice and, by so doing, feel a responsibility for the whole School and not just the classroom.

2) Preparing candidates for formal leadership positions. Candidates learn to lead through the co-creation of a shared vision, values and goals. To accomplish this, they learn to build consensus, manage conflict, and clearly communicate the importance of the shared vision and values on an ongoing basis. They learn to create and maintain a culture of cooperation and collaboration which has teaching and learning as its central focus. They

develop the value of empowering teachers and staff to act on their own ideas by involving them in decision-making processes and encouraging them to think of themselves as leaders. They demonstrate commitment to and sensitivity and respect for diverse cultures served by school communities.

Faculty in the leadership preparation programs utilize case study methodology, problem-based learning, and cooperative learning strategies to prepare candidates to understand the process of developing and articulating a vision and its related goals, to acquire the skills and dispositions needed to relinquish authority to teachers and staff, to appropriately involve others in decision-making processes, to delegate authority, and to share credit with others for the successes enjoyed by a school or other institutional unit.

E. Building Caring Communities

Community-building must be at the heart of any school improvement effort. Caring communities are places where teachers and children support and celebrate each other's learning and general well-being. The School, in order to help candidates begin this career-long endeavor, focuses on the creation of democratic classrooms and schools and teachers' roles as models of caring, values, and moral behavior.

1) Democratic classrooms and schools. Candidates come to understand what democratic classrooms and schools look like and what values they have. Faculty strives to be examples, not as transmitters where their voices dominate, but as co-intentional learners, coaches, and facilitators. Beyond modeling faculty explore with candidates the dynamics of democratic classrooms and emphasize why they are important. They emphasize the connection between public education and caring citizens equipped to make judgments as they participate in the decision-making processes of society.

2) Teachers as models of caring, values, and moral behavior. All teachers

need to know their students well and, to the extent possible, personalize instruction and provide advice, nurturing, and counseling when needed. Faculty of the School, therefore, need to know candidates well and help them identify ways to know their students and to express interest in and caring for them. Candidates need to remember details about students' lives, keep notes, call and visit their homes, respond authentically, and ask students what they think and care about. Most of all, candidates need to learn that being a caring teacher is not playing a role. They must be authentic persons before they are caring persons. To be authentic in front of students leaves one vulnerable and candidates need to be able to deal with that vulnerability.

Candidates, therefore, learn how classrooms and schools become caring communities and how they become more democratic. They understand behaviors and forces that militate against caring, democratic classrooms. They exhibit caring and democratic behaviors in their education classes. Finally, they will define the values their classrooms will support and understand how these values will contribute to the building of character in their students.

The School continually reviews and evaluates all undergraduate and graduate programs, including the objectives, content, and learning activities of individual courses. Experimentation is sought in all aspects of the program. Through required courses, counseling, experience in community agencies, and in affiliated and other schools, students are prepared to fill their role as urban teachers.

OFFICERS OF THE ADMINISTRATION

Dean

Alfred S. Posamentier
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Associate Dean

Doris Cintrón
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Prof. Gretchen Johnson
NAC6/207B, 212-650-7262

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Prof. Sylvia Roberts
NAC 6/207B, 212-650-7262

Department of Secondary Education Chair

Prof. Susan Semel
NAC 6/207B, 212-650-650-7262

Director of Student Services

Ms. Stacia Pusey
NAC 6/204, 212-650-5316

Office of Field Experiences and Student Teaching

NAC 6/207A, 212-650-6915

UNDERGRADUATE PROGRAMS

Early Childhood Education (see Center for Worker Education)

Childhood Education

Bilingual Childhood Education (Chinese, Haitian, and Spanish)

Secondary Education Programs:

English Education

Fine Arts Education

Foreign Language Education:

Spanish

Mathematics Education

Music Education

Science Education: Biology, Chemistry, Earth Science and Physics

Social Studies Education

UNDERGRADUATE ADMISSIONS

For information about academic requirements, application procedures, placement examinations, and special admissions programs, consult the back of this *Bulletin* or go to the Admissions Office in A-101.

Prospective Childhood Education students and Bilingual Education majors must apply for admission to the School of Education since their requirements lead to majors in Education. Students must apply for

admission to the School of Education through the Office of Student Services, NAC 6/204. The criteria for admission are:

1. City College GPA of 2.5 or higher;
2. Pass the School of Education Admissions Test (S.E.A.T.) administered by the School of Education through the Office of Student Services;
3. A minimum of 45 credits. Twelve credits must be completed at CCNY with at least three credits in Education.
4. Complete a satisfactory interview with program faculty.

Students interested in Early Childhood Education should contact the Center for Worker Education at 99 Hudson Street, (212) 925-6625.

Those who plan to teach music or art or any secondary school (middle or senior high school) subject are enrolled in the College of Liberal Arts and Science and follow a program leading to either a B.A. or B.S. degree. These students will take the education sequence as a minor in Education under the guidance of both Education and Liberal Arts advisors. Students wishing to minor in Secondary Education must apply for admission in the Office of Student Services, NAC 6/204. They must meet the same requirements as those majoring in Education.

The School of Education evaluates transfer credits of students with 45 or more credits. In general, credit is given only for courses completed with a grade of "C" or better in properly accredited programs. No credit will be granted for courses in which the lowest passing grade (usually "D") was obtained. No credit may be given in excess of the number of credits actually earned in a course, or in excess of the number of credits listed for the comparable course in the CCNY curriculum.

Maintenance of Matriculation

As a professional school with the responsibility of recommending students for New York State certification, the School of Education must conduct

ongoing professional assessment of all students. In cases where a faculty member determines that an individual is inappropriate for the teaching profession, he/she may recommend removal from the teacher preparation program to the chair of the department. The student has the right to appeal to the Committee on Course and Standing. The findings of the Committee are final.

LIBERAL ARTS CORE REQUIREMENT

All students in the School of Education are required to complete a Core of Liberal Arts courses. Credit is given only for courses completed with a grade of "C" or better. Students planning to specialize in Secondary Education generally choose a major in the Liberal Arts, and fulfill the Core requirements appropriate to that major.

For Childhood and Bilingual Education majors the Core requirements are outlined below. Early Childhood Education majors should refer to the Center for Worker Education section of this *Bulletin*. For further information on Core requirements, students should consult their academic advisors. All courses that are offered by specific departments within the College of Liberal Arts and Science are described in this *Bulletin*.

The following Core courses are required for Childhood Education and Bilingual Childhood Education (B.S.Ed.) majors:

World Civilization:

10100: World Civilizations I	3
10200: World Civilizations II	3

World Humanities:

10100: World Humanities I	3
10200: World Humanities II	3

Social Science:

One of the following two: U.S. Society:	3
10100: The Development of the United States and Its People (3 cr.)	
Political Science:	
10100: American Government and Politics (3 cr.)	

Philosophy:

30000: The Rational Animal	3
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Arts:

One of the following two:	3
Art 10000: Introduction to the Visual Arts of the World (3 cr.)	
Music 10100: Introduction to Music (3 cr.)	

Science:

10300: Science 1	3
10400: Science 2	3
And one 30000-level course in Biology, Physics or Astronomy (Childhood Education majors only)	3

Mathematics:

18000: Quantitative Reasoning	3
18500: Basic Ideas in Mathematics	3

English:

11000: Freshman Composition	3
21001: Writing for Humanities and the Arts	3
Speech 11100: Foundations of Speech Communication*	3

Liberal Arts:

Art 15500: Art in Education 1	2
Music 15200: Music in Elementary Education	2
Psychology 10200: Applications of Psychology in the Modern World	3

Foreign Language—Candidates for the B.S.Ed. degree who entered the College in Fall 1988 or later must successfully complete two years of a foreign language in high school or two semesters in college:

For Bilingual Childhood Education: (0-3)

For Childhood Education: (0-8).

**The Speech Examination is a College requirement. Students in the School of Education meet this requirement by taking Speech 11100 or passing an exemption examination. Since prospective teachers must meet established speech standards at the interview with the hiring principal or school superintendent, Speech 11100 affords an early opportunity to identify and correct possible speech disabilities.*

CUNY PROFICIENCY EXAMINATION

All students must take and pass the CUNY Proficiency Examination after

completing 45 but no more than 60 credits. Students who fail the CPE once should see an advisor to plan a preparatory program. Students who fail the exam twice must see the CPE faculty liaison for appropriate guidance.

LIBERAL ARTS MAJOR REQUIREMENTS

New York State requires that individuals seeking childhood and adolescent teacher certification have completed a Liberal Arts major in addition to their preparation in education. For those who wish to teach in secondary schools, this is a major in the teaching area. Those wishing to teach in the elementary school may complete traditional Liberal Arts major (American Studies, Art, Economics, English, History, Music, Political Science, Psychology, Sociology, Spanish) or they may complete a special interdisciplinary major designed specifically for those preparing to be elementary teachers. There are six interdisciplinary major areas: Biology, Earth Science, Chemistry, Mathematics, Language and Literature, and Social Studies. Those preparing to be elementary school teachers should consult with an advisor to select an appropriate Liberal Arts major.

ADDITIONAL REQUIREMENTS

1. A seminar in health education, child abuse, and school violence prevention and intervention (EDUC 41900).

2. Competence in Spanish or other language approved by advisor.

Competence in a second language is required of B.S.Ed. degree students. The sequence is designed to give students oral competency in the language and also to familiarize them with the diversity within the New York City student population.

Students who have had two years of Spanish in high school will meet the Spanish language requirement by completing Spanish 22300. When less

than two years of Spanish were taken in high school, students are required to take Spanish 12100 and 12200. Students who have a satisfactory speaking knowledge of Spanish may be exempted from these courses by passing an oral Spanish competency test given each semester by the Department of Foreign Languages and Literatures. Students may apply for the test in NAC 5/223.

In lieu of Spanish, a waiver may be obtained from an advisor to substitute another language spoken by the multilingual populations in New York City schools.

Medical Examination

The nature of a teacher's work requires especially good health. Therefore, all Education students must arrange to have a medical examination prior to fieldwork and student teaching placements; also, they must inform the School of Education of any significant, or possibly disabling illness as soon as they become aware of it.

A person with physical conditions which are likely to lead to frequent absences, or who might be unable to cope with emergency situations in a school, will only be admitted when given a clearance by the New York City Public Schools Medical Examiner.

All students are required to have a tuberculin skin test. The forms for the test results are available in the Student Health Services Office (J15). Students must make their own arrangements for the tuberculin test. They may be examined by their own private physician, by a physician on the staff of a hospital, or at the City College Health Services Office. The completed form should then be brought to the Office of Student Services, NAC 6/204A, where the student will be given a copy if needed.

Interviews and Ratings

While physical fitness, knowledge of the subject area, and the ability to use English (and the second language, in the case of Bilingual Childhood Education majors) skillfully in writing and speaking are important, there is

another criterion for teaching which is probably the most crucial of all and certainly the most difficult to evaluate: familiarity with professional dispositions expected of educators as delineated in professional, state and institutional standards. This is evaluated through personal interviews with the candidates on an ongoing basis.

Academic Average

The student's general average, as well as his or her status in the field of concentration and in education courses is considered. The special academic standards required vary somewhat for different fields. A declared major, a GPA of 2.5 and the recommendation of a faculty advisor are required for admission into student teaching.

Advisory Interview

When the candidate applies for admission to the School of Education, an appointment with an advisor is made to assure that the student's program is properly planned. Students are required to see an advisor at least once every semester for continuous academic advisement. Advisory appointments are scheduled in the Office of Student Services, NAC 6/204.

PROFESSIONAL TRAINING

Application for Student Teaching Courses

Candidates for Secondary, Childhood Education or Bilingual Childhood Education teaching positions are required to take one semester of student teaching. The Application for Student Teaching must be filed in NAC 6/204A during the first ten weeks of the candidate's lower senior term. Since the Board of Education needs information in advance for the placement of student teachers, late applications cannot be considered. Deadline dates should be verified in the Office of Field Experiences, NAC 6/207A, each semester.

Admission Requirements for Student Teaching

To be admitted to student teaching, students must have:

- A recommendation from their advisor,
- Completed a successful interview with the Director of Field Experiences,
- Completed all Liberal Arts requirements, CLAS major and requisite education courses, with grades of "C" or higher,
- Maintained a GPA of 2.50 or higher,
- Shown satisfactory results from a medical exam,
- Completed 100 hours of field experiences,
- Passed the S.E.A.T. (satisfactory LAST scores are accepted in lieu of the S.E.A.T.),
- Passed the CPE,
- Declared a major/minor code.

Students who are admitted into student teaching but do not successfully complete the experience must reapply and successfully complete all admissions procedures.

Appeals may be made through the Director of the Office of Student Services to the Committee on Course and Standing.

ACADEMIC/PROFESSIONAL STANDARDS AND REGULATIONS

Each undergraduate program establishes the academic and professional standards expected of its students. Traditional professional standards conform to but are not limited to the codes of ethics of professional educational associations.

The right is reserved to ask for the withdrawal of any student who fails to meet professional standards and/or fails to maintain a satisfactory academic and professional record in courses.

Jurisdiction over Academic and Professional Standards

Department chairs have jurisdiction over offenses regarding academic and professional standards for any student whose major field of interest is in their department.

Procedure for Handling Violations

Violations of academic and professional standards shall be reported in writ-

ing to the chair, and a copy sent to the offender as soon as possible, but no later than one week after the offense is alleged to have taken place. In any appeal, the student must first arrange an appeals conference with the instructor who shall arrange a conference with the student as expeditiously as possible in order to settle the issue informally. The decision agreed upon shall be reported in writing to all persons involved, including the Director of the Office of Student Services, the chair, and the dean.

When an informal settlement cannot be arranged with the instructor, program head or chair, the student may file an appeal to the Committee on Course and Standing of the School of Education. This request must be filed with the Director of the Office of Student Services no later than fifteen days after the offence is alleged to have taken place.

Appeals Procedures of Academic Judgments

The School of Education Committee on Course and Standing will only review appeals that pertain to the School of Education. Appeals relating to the college core must be submitted to the CLAS Committee on Course and Standing.

Students who wish to appeal academic judgments, including grades, begin by discussing the grades with the instructor as soon as possible after the grade is issued. Grades in courses may not be changed after the first month of the following semester without approval of the department chair and the dean and no grade may be changed after a student has graduated.

If after discussing the grade or other academic judgment with the instructor, a student wishes to pursue an appeal, he or she must discuss it with the program head. The program head will make an independent recommendation and then forward it to the chair.

The student may pursue the appeal further to the Committee on Course and Standing, which has final jurisdiction. Such appeals are transmitted to

the committee through the Director of the Office of Student Services (OSS) and, in general, students should discuss the appeal with the OSS Director before submitting a formal appeal.

The Committee on Course and Standing considers appeals in writing and neither the student nor the instructor appears in person. The student appeal should be in the form of a detailed letter, accompanied by any supporting evidence the student wishes to submit, including copies of the papers or letters from other students or instructors. Appeal forms are available in the Office of Student Services.

The committee normally asks the instructor and the program head to comment, in writing, on the student's appeal. On request, the OSS Director will discuss these responses with the student before the committee meets.

The committee's decision is sent to the student, in writing, by the OSS Director.

Other academic appeals, such as appeals from probation, academic dismissal and failures for poor attendance may be appealed directly to the Committee on Course and Standing. In addition, requests for waivers of degree requirements, extensions for incompletes, limitations on registration, and similar matters should be made to the committee.

LICENSING AND CERTIFICATION REQUIREMENTS

For each field, an attempt is made in these paragraphs to summarize the requirements of New York City for licensing and of New York State for certification. This is offered as a service only, for general information, and should not be construed as official; nor is it guaranteed to be the latest word, although it is abstracted from recent announcements. Each student is urged to obtain a copy of the requirements from the New York City Public Schools Office of Recruitment, Professional Advisement, and Licensing (ORPAL), 65 Court Street,

Brooklyn, New York 11201, www.nycenet.edu and from the Office of Teacher Education and Certification, State Education Department, Cultural Education Center, Empire State Plaza, Albany, New York 12230, www.nysed.gov.

Certification Requirements of New York State

All those who complete one of the approved Education sequences may qualify for initial certification upon the award of the baccalaureate degree. However, the dean of the School of Education reserves the right to recommend for New York State certification only those students who have satisfied all additional requirements that are regarded by City College as important qualifications for teaching. In addition, students must pass the additional New York State certification requirements, which include passing the Liberal Arts and Sciences Test (LAST) and the Assessment of Teaching Skills-Written (ATS-W) and the Content Specialty Test(s) (CST) in the area of the certificate.

The State Department of Education requires all degree candidates seeking initial New York State certification to file an *Application for Certificate* form. Application forms must be secured from and returned to NAC 3/213 upon completion of all degree requirements.

Initial Certificates

1. Indicate that the holder has satisfied the requirements for initial certification in the grade level/subject area identified;
2. Indicate to a prospective school employer that the holder is eligible for employment in the specified grade level/subject area identified;
3. Are valid for five years only, and may be extended up to two years.

Bilingual Extension Certificates

Those who teach children in a language other than English, bilingual teachers, must be certified in the area in which they are teaching (i.e., elementary education, special education,

or a secondary subject area). They must also have a Bilingual Extension Certificate, which enables them to teach the area to a bilingual student population. The undergraduate Bilingual Education program at City College prepares students for both the initial teaching certificate and for the bilingual extension of that certificate. To qualify for New York State certification as a bilingual teacher, students must pass the LAST, ATS-W and CST examinations required of all teachers. They must also pass the Bilingual Education Assessment (BEA).

Teaching Out of New York State

Students who have completed an undergraduate teacher education program at City College meet the educational requirements for certification in 39 states through the Interstate Agreement on Qualification of Educational Personnel. Included among these are Connecticut, Delaware, Florida, Georgia, Maine, Massachusetts, New Hampshire, New Jersey, North Carolina, Rhode Island, South Carolina, Vermont and Virginia. More information on teaching in other states is available through the Certification Officer in NAC 3/213.

Student Life and Services

Office of Career Opportunities

The School of Education provides a placement service to assist education seniors, graduate students and education alumni in locating and securing positions in local and out-of-town school systems. Further information may be obtained from the Office of Student Services in NAC 6/204 or the Career Services Office in the NAC Lobby.

Student Advisory Committee

This committee provides the opportunity for students to participate in standing committees of the School of Education. Its expanded aims include the conscientious desire to represent the point of view of education students on curriculum, policy, development and other matters of student

interest. Students who wish to serve on the committee should apply through the Office of Student Services (NAC 6/204).

Advisory Services

Members of the faculty assist students in choosing an appropriate curriculum and planning a program of study. They also conduct evaluation interviews for admission to the School of Education and to advanced education courses. Advisors are available throughout the year, except for intersession, the first three weeks, and the final examination weeks of each term. During registration, only immediate problems can be considered, since individual advisors may not be present. During the Summer session, limited advisory service is available. Advisory appointments are scheduled in the Office of Student Services (NAC 6/204).

Education Club (Teachers of Tomorrow)

offers students interested in teaching careers an opportunity to explore issues of common interest; to promote professional growth; to act as a service group to the School of Education, The City College, and the community; and to maintain dialogue with the faculty in matters relevant to teaching.

Honor Society

Kappa Delta Pi is an Honor society in education. City College constitutes the Gamma Iota Chapter. Graduate students and undergraduates in the junior or senior year who are preparing for the teaching profession, and who exhibit commendable personal qualities, sound educational ideals, and superior scholarship may be elected to membership if recommended by a committee on admissions.

Department of Childhood Education

Professor Gretchen L. Johnson, Chair • Department Office: NAC 6/207B • Tel: 212-650-7262

The City College offers the following undergraduate degrees in Childhood Education:

Bilingual Childhood Education (B.S. Ed.)
(Chinese, Haitian, and Spanish)
Childhood Education (B.S. Ed.)
Early Childhood Education (B.S.)
(see Center for Worker Education)

REQUIREMENTS FOR MAJORS

Bilingual Childhood Education (B.S. Ed.)

Required Courses:

20000: Inquiry in Education	3
20001: Fieldwork: Inquiry	0.5
20600: Observing Children and their Development	3
20601: Fieldwork: Observing Children and Their Development	0.5
22200: The School in American Society: Bilingual Education in the Urban School	3
22300: Classroom Based Inquiry on Bilingual Education	1
32200: How Children Learn Mathematics: Implications for Teaching	3
22101: Fieldwork: Schools	0.5
32300: Emergent to Fluent Literacy	2
32310: Emergent Literacy and Diverse Learners	2
35301-35303: Teaching Language Arts and Reading in a Bilingual Program (Spanish/Haitian/Chinese)	3
35600: Language, Mind and Society	3
41900: Child Abuse and Health Education Seminar	0
42000: Science in an Elementary Education Program	3
42100: Integrating the Curriculum through the Social Studies	3

45400: Teaching English as a Second Language	3
45500: Classroom Based Inquiry on Biliteracy and Bilingual Education	2
45600: Teaching Content (Math, Science, and Social Studies) Using both English and a Native Language	1
45800: Student Teaching and Integrative Seminar in Bilingual Education	6

Total Credits: 42.5

Childhood Education (B.S. Ed.)

Required Courses:

20000: Inquiry in Education	3
20001: Fieldwork: Inquiry	0.5
20600: Observing Children and their Development	3
20601: Fieldwork: Observing Children and Their Development	0.5
22100: Urban Schools in a Diverse American Society	3
22101: Fieldwork: Schools	0.5
32200: How Children Learn Mathematics: Implications for Teaching	3
32300: Emergent to Fluent Literacy	3
32310: Emergent Literacy and Diverse Learners	3
32201: Fieldwork: Math	0.5
41700: The Differentiated Classroom	1
41800: Student Teaching and Integrative Seminar in Childhood Education	6
41900: Child Abuse and Health Education Seminar	0
42000: Science in an Elementary Program	3
42100: Integrating the Curriculum through the Social Studies	3
42300: Literacy: Fluent to Experienced	3

Total Credits 36

Early Childhood Education (B.S.)

See listing for the Center for Worker Education.

ADVISEMENT

The Office of Student Services (NAC 6/204; 212-650-5316) or the Office of the Chair (NAC 6/207B; 212-650-7262) will assist you in contacting the faculty member in charge of any of the programs above.

COURSE DESCRIPTIONS

Each of the following courses carries a designation of EDCE unless otherwise noted.

20000: Inquiry in Education

A study of the inquiry process and the resulting knowledge as a basis for learning and thought. Students carry out their own investigation and relate inquiry to elementary curriculum and children's learning. Educational technology integrated throughout. Prereq: Engl 11000; coreq: EDUC 20001. (W) 5 HR./WK.; 3 CR.

20001: Fieldwork Inquiry

Field experiences fulfilling assignments made in EDUC 20000 or 21100. 15 hours in inclusive and diverse school settings. Prereq: Engl 11000; coreq: EDUC 20000. Pass/Fail only. 0.5 CR.

20600: Observing Children and Their Development

This course is grounded in the notion that how children think, how their language develops, and how their families, their culture, and their environment influences and shapes them affect how they learn in school. Salient themes explored include the child as a maker of meaning, the nature of intelligence, attachment, gender identification, and the social context of development (i.e., race, culture, and class). Prereq: Engl 11000; coreq: EDUC20601. (W) 3 HR./WK.; 3 CR.

20601: Fieldwork: Observing Children and Their Development

Structured field assignments in how to observe, what to observe, how to analyze, document and interpret children's behavior, and how to apply the understandings gained from this documentation to instructional practices in the classroom. Pass/Fail basis only. Prereq: Engl 11000; coreq: EDUC 20600. 0.5 CR.

21100-21200: Inquiry into Learning and Development

A field-based course in which students engage in participant-observation in inclusion schools with significant levels of second language learners. The content of the course consists of theories of development, learning, and instruction as applied to urban children. Educational technology is integrated throughout. Includes 30 hours of fieldwork. Prereq: ENGL 11000. 6 HR./WK.; 6 CR.

22100: Urban Schools in a Diverse American Society

The social context of schooling. An inquiry into the philosophy, history, sociology, quality, immigration, and the education of children from non-dominant cultures. Digital technology will be used as much as possible in data gathering. (Students may not receive credit for both EDUC22100 and 22200.) Prereq: Engl 11000; coreq: EDUC 22101. 3 HR./WK.; 3 CR.

22101: Fieldwork: Schools

Students engage in fieldwork consisting of visitations to Community School Board meetings, ethnographic investigation of neighborhoods, interviewing of parents, and polling of college students. 15 hr. in school settings. Pass/Fail basis only. Coreq: 22100. 0.5 CR.

22200: The School in American Society: Bilingual Education in the Urban School

Analysis of selected social, political and economic forces that influence the school as an institution, and in turn are influenced by the school, especially in urban settings. Special attention to immigrant, bilingual and language minority groups. (Students may not receive credit for both EDUC 22100 and 22200.) Prereq: Engl 11000. (W) 3 HR./WK.; 3 CR.

22300: Classroom-Based Inquiry on Bilingual Education

Students will spend four weeks in each of four schools being exposed to different kinds of classrooms, both bilingual and monolingual, and different levels, both lower and upper levels. They will conduct

classroom-based inquiry on philosophical, historical and linguistic issues of bilingualism and bilingual education, as well as curriculum and materials inquiry. Includes 30 hours of fieldwork. Coreq: 22200. 1 HR./WK.; 1 CR.

31000-31004: Independent Study in Education

May be elected under three different options. Approval of faculty sponsor and appropriate department chair must be obtained during the preceding term. 1-4 CR. SEM.

Option A: Research: a scholarly and systematic investigation (empirical, historical or descriptive) culminating in a written report.

Option B: Service: intensive participation in a school or community project, provided the individual's roll, responsibility or contribution can be identified.

Option C: Reading: a scholarly and systematic review of literature in an area, culminating in a written report.

32200: How Children Learn Mathematics: Implications for Teaching

Mathematical development of children from pre-school to upper elementary grades through their action and exploration. Students plan for and assess differentiated instruction to students within the full range of abilities. Educational technology integrated throughout. Prereq: Math 18500. 3 HR./WK.; 3 CR.

32201: Fieldwork in Learning Math

Students practice the instructional and assessment strategies learned in EDUC32200 for helping children learn mathematics. Pass/Fail basis only. Prereq: Math 18500. 15 hours in diverse and inclusive school setting; 0.5 CR.

32300: Emergent to Fluent Literacy

Emergent to fluent literacy acquisition for students with diverse cultural and linguistic backgrounds and students with special needs; assessment of semantic, phonic and phonemic awareness; strategies for children having difficulties in acquisition of speaking, listening, reading and writing competencies; organizing shared, guided and independent reading and writing instruction; use of technology. 3 HR./WK., PLUS 20 HOURS IN DIVERSE AND INCLUSIVE SETTINGS; 3 CR.

32310: Emergent Literacy and Diverse Learners

Prospective teachers acquire pedagogical knowledge, understanding and skills to support successful literacy learning for

students of diverse cultural, linguistic and socioeconomic backgrounds who are learning to read. The focus is on language and reading. 3 HR./WK., PLUS 20 HOURS IN DIVERSE AND INCLUSIVE SETTINGS; 3 CR.

35301-35303: Teaching Language Arts and Reading in a Bilingual Program (Spanish/Haitian/Chinese)

Methods and materials for teaching language arts and reading in a bilingual program, with emphasis on techniques for teaching, in their own languages, children who speak language other than English. (W) 3 HR./WK.; 3 CR.

35600: Language, Mind and Society

An introduction to basic concepts in linguistics, including phonology, lexicon, and grammar, with special consideration to the sociolinguistic and psycholinguistic aspects of bilingualism and biliteracy. These latter include: language variation, language contact, and first- and second-language acquisition. The course should provide a framework for language education. (W) 3 HR./WK.; 3 CR.

41700: The Differentiated Classroom

This course is designed to help teachers understand the various needs of diverse learners. Special emphasis is given to how to match instructional approaches to the needs and interests of students as well as how to build a respectful and productive classroom environment. While the focus of the course is primarily on how to prevent problems by establishing routines, processes, structures and practices that build classroom community and that are responsive to all students, specific communication, management, and intervention skills and techniques are presented to deal with the inevitable discipline problems in classroom life and the students who require referrals for extra supports. Coreq.: EDUC 41800. 1 HR./WK.; 1 CR.

41800: Student Teaching and Integrative Seminar in Childhood Education

Student teaching and seminar integrate theory with practice. Classroom structures, routines, teaching strategies and skills that build community and maintain discipline with a range of learners. Understandings and skills to plan a coherent and integrated curriculum. Assessment systems that inform teaching and support student learning. Respectful and effective home-school relations. Full time, 360 hours. Coreq.: EDUC 41900, 42000, 42100, 42300. 25 HR./WK.; 6 CR.

41900: Child Abuse and Health Education Seminar

Definitions, indicators, and the impact of sexual abuse, physical abuse, emotional abuse, and neglect on the child and his/her family. The course will also focus on the process of reporting these types of abuse, with special emphasis on the role of the classroom teacher. Coreq: student teaching. 2 HR./WK.; 0 CR.

42000: Science in an Elementary Education Program

An introduction to learning science at the elementary level. Emphasis on firsthand experiential learning of science through the design, conduct, and communication of science investigations that portray underlying elements of science inquiry. Students relate learning experiences to state and national standards in science. Pre- or coreq.: EDUC 41800, 41900, 42100, 42400. 3 HR./WK.; 3 CR.

42100: Integrating the Curriculum through the Social Studies

This course is designed to provide prospective teachers with skills and understandings about how to integrate the curriculum through social studies. Prospective teachers will learn how to help children inquire about the world around them utilizing all available materials and resources (including technology) to plan extended studies that integrate the disciplines. Special attention will be given to learning how to utilize students' diverse ethno-cultural backgrounds as a learning resource; how to create a productive and respectful community of learners in the classroom; how to embed the New York State Learning Standards in curricular work, utilizing a range of disciplines; and how to use research, geography, and technology skills to enhance students' learning. Pre- or Corequisite: student teaching. (W) 3 HR./WK.; 3 CR.

42300: Literacy: Fluent to Experienced

The nature of literacy acquisition and development, and the relationship between the language of children and the language of textual discourse. Focus on assessment, motivation, instructional strategies, classroom environment, and evaluation of instruction. Coreq.: EDUC 41800, 41900. 3 HR./WK.; 3 CR.

45400: Teaching English as a Second Language

Methods and materials useful in teaching English to non-native speakers in elementary schools; applicability of modern structural studies of the language to such teaching; appropriateness of various techniques and aids for different age levels. (W) 3 HR./WK.; 3 CR.

45500: Classroom Based Inquiry on Biliteracy and Bilingual Education

Students will spend 60 hours for a total of 15 weeks in a school working in one bilingual classrooms. Students will be expected to teach and plan literacy/language lessons, activities and units for these students. 2 HR./WK.; 2 CR.

45600: Teaching Content (Math, Science, and Social Studies) Using Both English and a Native Language

This fifteen-hour weekend seminar is designed to develop an interdisciplinary approach to teaching Math, Science, and Social Studies using both English and a native language (e.g., Chinese, Haitian, and Spanish). Prospective bilingual teachers will be provided with knowledge, interdisciplinary content skills, and specific language-related skills on how to use available materials and resources (i.e., standard glossaries and curriculum guides) when planning and integrating content-area learning experiences and/or interdisciplinary thematic units, using both English and one of the native languages specified above. 1 HR./WK.; 1 CR.

45800: Student Teaching and Integrative Seminar in Bilingual Education

Student teaching is full-time, five days a week for fifteen weeks. Students will have one main placement in grades 1-3 or 4-6 throughout the semester. In addition, they will be required to student teach for a minimum of 20 full days at the other level. The student teaching experience is designed to provide prospective bilingual childhood teachers with opportunities to teach and critically analyze teaching practices in monolingual and bilingual classrooms. Students will: develop and improve teaching strategies and organizational skills; practice the use of two languages in instruction to meet the academic, cognitive and emotional needs of all students, including the special needs child; practice formal and informal assessment techniques; examine special features of classroom management in the bilingual classroom; develop awareness of the many ways in which the classroom, home and community environment are supportive of the learner. 6 HR./WK.; 6 CR.

FACULTY**Megan Blumenreich, Assistant Professor**

B.A., Colby College; M.A., Teachers College, Columbia Univ., Ed.M., Ed.D.

Doris Cintrón, Associate Professor and Associate Dean

B.A., The City College, M.S.; Ed.M., Teachers College, Columbia Univ., Ed.D.

Joseph Davis, Assistant Professor

M.A., Columbia Univ.; M.S.P.H., Univ. of North Carolina; Ph.D., Columbia Univ.

Hubert M. Dyasi, Professor

B.Sc., Rhodes Univ. (South Africa), B.Ed., M.Ed.; Ph.D., Univ. of Illinois

Beverly Falk, Professor

B.A., Sarah Lawrence College; M.S.Ed, The City College; Ed.D., Teachers College, Columbia Univ.

Catherine Twomey Fosnot, Professor

B.S., Univ. of Connecticut; M.S., SUNY (Albany); Ed.D., Univ. of Massachusetts

Catherine Franklin, Assistant Professor

B.A., Univ. of Rhode Island; M.A., Lesley College Graduate School; Ed. D., Teachers College, Columbia Univ.

Vicki Garavuso, Assistant Professor

B.A., Lehman College; M.S., M.Ed., Bank Street College of Education; Ed. D., Teachers College, Columbia Univ.

Amita Gupta, Assistant Professor

B.Ed., Univ. of Dehli, B.Sc.; M.A., Annamalai Univ.; M.A., Teachers College, Columbia Univ., Ed.D.

Gretchen Johnson, Associate Professor and Chair

B.A., Queens College.; M.A., Yeshiva Univ.; Ph.D., New York Univ.

Adele MacGowan-Gilhooly, Associate Professor

B.A., Georgian Court College; M.A., Hunter College; Ed.D., Boston Univ.

Charles Malone, Assistant Professor

B.A., Eugene Lang College, New School Univ.; M.A., Univ. of California at Berkeley, Ph.D.

Kate Menken, Assistant Professor

B.A., Univ. of Pennsylvania, M.Ed.; Ed.D., Teachers College, Columbia Univ.

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Kristina Leeb-Lundberg

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Madelon Delany Stent



Department of Secondary Education

Professor Susan Semel, Chair • Department Office: NAC 6/207B • Tel: 212-650-7262

GENERAL INFORMATION

The City College offers the following undergraduate degrees in Secondary Education:

English Education (B.A.)

Art Education (B.A.)

Foreign Languages: Spanish (B.A.)

Mathematics Education (B.S.)

Music Education (B.A.)

**Science Education-Biology,
Chemistry, Earth Science and
Physics (B.S.)**

Social Studies Education (B.A.)

ADVISEMENT

The School of Education Office of Student Services (NAC 6/204; 212-650-5316) or the Office of the Chair (NAC 207B; 212-650-7262) will assist you in contacting the faculty member in charge of any of the programs above.

REQUIREMENTS FOR MAJORS

Preparation for teaching in secondary schools requires majoring in a field taught in the secondary schools (i.e. science, mathematics) and completing the educational sequence below.

Education Courses for Teaching Art K-12 and Music K-12 (B.A.)

Required Courses:

20500: Adolescent Learning and Development	4
22100: Urban Schools in a Diverse American Society	3
22101: Fieldwork: Schools	0.5
32500: Special Issues for Secondary School Teachers: Special Education, Second Language Acquisition and Literacy	4

41200: Teaching Reading and Writing in Secondary School Subjects	3
41900: Child Abuse and Health Education Seminar	0
46300: Student Teaching and Teacher Education Seminar	6
<i>One of the following:</i>	3
44400: Methods of Teaching Art (3 cr.)	
44700: Teaching Music in the Secondary Schools (3 cr.)	

Total Credits: 23.5

Education Courses for Teaching Biology, Chemistry, Earth Science, Physics (B.S.) and English, Math, Social Studies (B.A.)

Required Courses:

20500: Adolescent Learning and Development	4
32500: Special Issues for Secondary School Teachers: Special Education, Second Language Acquisition and Literacy	4
41200: Teaching Reading and Writing in Secondary School Subjects*	3
41900: Child Abuse and Health Education Seminar	0
44100-44700: Methods of Teaching in Secondary Schools	3
45101-45104: Development of the Secondary School: Philosophy, Urban Issues and Curriculum Development in Secondary School	3
46300: Student Teaching and Teacher Education Seminar	6

Total Credits: 23

* English Education Program only

Education Courses for Teaching Spanish (B.A.)

Required Courses:

20500: Adolescent Learning and Development	4
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22200: The School in American Society: Bilingual Education in the Urban School	3
35600: Language, Mind and Society	3
32500: Special Issues for Secondary School Teachers	4
41100: Field-based Inquiry: Teaching of Spanish	2
41200: Reading and Writing Instruction in Secondary School Subjects	3
44500: Methods of Teaching in the Secondary Schools: Spanish	3
46500: Student Teaching in the High School	4
46600: Seminar on the Teaching of Spanish and Literacy in Secondary Schools	2

Total Credits: 28

COURSE DESCRIPTIONS

Each of the following courses carries a designation of EDSE unless otherwise noted.

20500: Adolescent Learning and Development

How theories and research on learning and development manifest themselves in urban settings for teachers of adolescents. Teacher-centered and student-centered, human and technology-based approaches promoting independent, self-regulated adolescent learners. Cultural implications and classroom applications: learning, intelligence, motivation, affect, parenting styles, and development (cognitive, social moral), classroom communication and management strategies. Fieldwork activities in exemplary junior high and high school classrooms structured to meet State standard and to help prepare students to pass the ATS-W. 4 HR./WK.; PLUS 45 HOURS FIELDWORK; 4 CR.

32500: Special Issues for Secondary School Teachers: Special Education, Second Language Acquisition and Literacy

Nature of students with disabilities and special health-care needs. Effects of disabilities on learning and behavior. Identifying strengths, individualizing instruction, and collaborating to prepare students to highest achievement levels, literacy and independence. Language acquisition/literacy development by native English speakers and English language learners. Developing listening, speaking, reading, and writing skills. Fieldwork related to the study of students with disabilities, students learning English as a second language, and literacy issues. 4 HR./WK., PLUS 45 HOURS FIELDWORK; 4 CR.

41100: Field-based Inquiry: Teaching of Spanish

Through field-based investigations of the teaching of Spanish in secondary schools, students are expected to understand how theoretical and empirical foundations of the teaching of Spanish are implemented in the classrooms; to develop inquiry skills and processes, gather information and be able to organize this information in meaningful ways, reflect and critique this information, its presentation modes and the inquiry processes used to gather the given information. 2 HR./WK.; 2 CR.

41200: Teaching Reading and Writing in Secondary School Subjects

For perspective teachers in secondary school subject areas. Explore the roles of reading and writing in supporting learning across the curriculum. Current research and theory will be discussed and methods of incorporating literacy activities will be developed. 3 HR./WK.; 3 CR.

41900: Child Abuse and Health Education Seminar

Definitions, indicators, and the impact of sexual abuse, physical abuse, emotional abuse, and neglect on the child and his/her family. The course will also focus on the process of reporting these types of abuse, with special emphasis on the role of the classroom teacher. 2 HR./WK.; 0 CR.

44100: Methods of Teaching English in Secondary Schools

Since English classrooms emphasize the complex interactions between reading, writing, listening, and speaking, this course, required for all English Education students, explores the pedagogical theories, teaching practices, and curriculum

trends confronting English teachers today. The course work facilitates the move from student to teacher with increased ease, interest, knowledge, and professionalism. Advance approval required. FIELD WORK: 2 HOURS, 5 WEEKS; 3 CR.

44200: Methods of Teaching Secondary School Social Studies

Principles and methods of teaching Social Studies in secondary schools. Students will see these principles and methods in use in as part of their 10 hours of fieldwork experience. Topics include: lesson planning, classroom management, co-operative learning, questioning, remediation, enrichment, motivation, assigning homework, testing and assessment, reading in Social Studies, writing and note taking in Social Studies, problem solving, an overview of the secondary school curriculum in Social Studies, the use of technology in the secondary school curriculum, teaching methodology for students with special needs, methodology used for students learning English as a second language, literacy in the Social Science area classroom. 3 HR./WK.; 3 CR.

44300: Methods of Teaching Secondary School Science

Principles and methods of teaching science in secondary schools. Topics include: lesson planning, classroom management, co-operative learning, questioning, remediation, enrichment, motivation, assigning homework, testing and assessment, problem solving, an overview of the secondary school curriculum in science, the use of technology in the secondary school curriculum, teaching methodology for students with special needs, methodology used for students learning English as a second language, literacy in the Science area classroom. 3 HR./WK.; 3 CR.

44400: Methods of Teaching Art

Principles and practices of teaching art in elementary and secondary schools with special reference to learning standards, objectives, techniques, and assessment. Analysis of art curriculum and curriculum planning. 3 HR./WK. PLUS 10 HOURS FIELDWORK; 3 CR.

44600: Methods of Teaching Secondary School Mathematics

Principles and methods of teaching Mathematics in secondary schools. Students will see these principles and methods in use in as part of their 10 hours of fieldwork experience. Topics include: lesson planning, classroom management, co-operative learning, questioning, remediation, enrichment, motivation, assigning homework, testing and assess-

ment, reading in mathematics, writing and note taking in mathematics, problem solving, an overview of the secondary school curriculum in mathematics, the use of technology in the secondary school curriculum, teaching methodology for students with special needs, methodology used for students learning English as a second language, literacy in the Mathematics area classroom. 3 HR./WK.; 3 CR.

44700: Methods of Teaching Music

Principles and practices of teaching music in elementary and secondary schools with special reference to learning standards, objectives, techniques, and assessment. Analysis of music curriculum; curriculum planning. 3 HR./WK. PLUS 10 HOURS FIELD WORK; 3 CR.

45101: Development of the Secondary School: Philosophy, Urban Issues and Curriculum Development in Secondary School English

History, philosophy and role of education. Evolution of High School curricula; instructional planning and multiple research-validated instructional strategies for teaching within the full range of abilities. Adapting curricula for students with special needs/second language learning students. Literacy development by native English speakers and English language learners. Using technology in the curriculum. 3 HR./WK.; 3 CR.

45102: Development of the Secondary School: Philosophy, Urban Issues and Curriculum Development in Secondary School Social Studies

The history, philosophy and role of education; the evolution of the social studies curriculum; instructional planning and multiple research-validated instructional strategies for teaching within the full range of abilities; adapting the curriculum for students with special needs and second language learning students; literacy development by native English speakers, as well as English language learners; the use of technology in the curriculum. 3 HR./WK.; 3 CR.

45103: Development of the Secondary School: Philosophy, Urban Issues and Curriculum Development in Secondary School Science

The history, philosophy and role of education; the evolution of the science curriculum; instructional planning and multiple research-validated instructional strategies for teaching within the full range of abilities; adapting the curriculum for students with special needs and second language

learning students; literacy development by native English speakers, as well as English language learners; the use of technology in the curriculum. 3 HR./WK.; 3 CR.

45104: Development of the Secondary School: Philosophy, Urban Issues and Curriculum Development in Secondary School Mathematics

The history, philosophy and role of education; the evolution of the mathematics curriculum; instructional planning and multiple research-validated instructional strategies for teaching within the full range of abilities; adapting the curriculum for students with special needs and second language learning students; literacy development by native English speakers, as well as English language learners; the use of technology in the curriculum. 3 HR./WK.; 3 CR.

46300: Student Teaching and Teacher Education Seminar (Grades 6-12)

This seminar, a continuation of the Teacher Education Seminar offered to first semester juniors, will be taken concurrently with student teaching. The focus is on the students' reflection of their teacher education preparation. There will be a final presentation along with the submission of a professional portfolio. 27 HR./WK.; 6 CR.

46500: Student Teaching in the High School (Spanish 7-12)

Students must be in their assigned schools for a two hour block of time five days per week for seventeen consecutive weeks. Coreq.: 43000 series. 10 HR./WK.; 4 CR.

46600: Seminar on the Teaching of Spanish and Literacy in Secondary Schools

Designed to explore the secondary schools' teaching of Spanish to native speakers and foreign language learners, with emphasis on developing oral, and literacy skills among secondary schools students. Curricula, literature and related language learning technologies, programs, methods, tests and diverse assessment and evaluation instruments will be studied. 2 HR./WK.; 2 CR.

FACULTY

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School of Engineering

The School of Engineering

Professor Josphe Barba, Dean • Office: Steiman 142 • Tel: 212-650-5435

The Profession of Engineering and Computer Science

Engineering, including Computer Science, may be broadly defined as harnessing nature for the service and convenience of society. An engineer or computer scientist is specifically trained to plan and develop the structures, devices, and systems, and to supervise the processes, that bring about this objective. Engineering differs from pure science in that it seeks to use scientific facts for improvements and progress within the limitations of materials, costs, and time.

The student who contemplates an engineering/computer science career should score above average in mathematics and science. Intellectual curiosity, an ability to see things from a fresh point of view, and tenacity in solving problems are also essential. Because engineers and computer scientists typically work in teams, the ability to get along with colleagues is usually important. Because engineers and computer scientists must communicate with clients, the ability to use clear, correct English is crucial. In addition, to achieve career success, the engineer/computer scientist must cultivate such qualities as tact, understanding, and willingness to accept responsibility.

In the City College School of Engineering, students receive a broad-based general education as well as professional training. The goal is twofold: to educate students to the level of excellence in their chosen engineering discipline and to help them achieve those other qualities necessary not only for a successful career but also for a rewarding life.

Engineering and Computer Science Ethics

In order to maintain high standards of conduct and uphold and advance the dignity of the engineering and computer science profession, engineers and computer scientists are committed to the following: exercising integrity and impartiality in the service of employers, clients, and the public; striving to increase competence in engineering and computer science while enhancing the prestige of the profession; and using knowledge and skill for the betterment of human welfare. Statements of standards for relations with the public, clients, and employers are available from technical societies and from the Accreditation Board for Engineering and Technology (ABET). The School of Engineering is also affiliated with the Order of the Engineer, a nationwide organization open to engineering seniors, who accept an obligation to maintain high ethical standards in their professional and personal behavior.

History

The City College School of Engineering is the sole entity for engineering education within The City University of New York. Its origins date from 1916, when the Board of Trustees authorized a curriculum leading to the Diploma of Junior Civil Engineer. In 1917, more extensive courses in chemical, civil, electrical, and mechanical engineering were established within the natural science curriculum of the College of Liberal Arts and Science. In 1919, the School of Technology was established with four engineering programs lead-

ing to the degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, and Mechanical Engineer, as well as the degree of Bachelor of Science in Engineering. After 1936, the latter degree was replaced by the degrees of Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Electrical Engineering, and Bachelor of Mechanical Engineering.

Effective September 1962, the Board of Higher Education approved a change in the name of the School of Technology to the School of Engineering and Architecture.

In December 1962, the Regents of the University of the State of New York reduced the number of degree designations authorized for engineering programs. The new degree designations for the School became Bachelor of Engineering and Master of Engineering. Authority was given to the College to indicate the branch of engineering in parentheses after the degree title, e.g. Bachelor of Engineering (Chemical Engineering), Master of Engineering (Civil Engineering). These designations have been in effect since September 1, 1963.

Effective July 1968, the Board of Higher Education approved the separation of the School of Engineering and the School of Architecture. The latter is now called the School of Architecture, Urban Design and Landscape Architecture.

Since September 1963, under the authority of The City University of New York (CUNY), the School of Engineering has offered advanced study leading to the degree of Doctor of Philosophy. The doctoral program is available to students from the Biomedical, Chemical, Civil, Electrical

and Mechanical Engineering degree programs.

Beginning September 1968, The City College School of Engineering has offered a four-year curriculum leading to a Bachelor of Science degree in Computer Science. Since September 1969, a Master of Science degree in Computer Science has also been offered. Through CUNY, the Doctor of Philosophy degree in Computer Science is also available.

Since September 1999, the Doctor of Philosophy degree in Biomedical Engineering has been offered. Since September 2000 the degree of Master of Science (Biomedical Engineering) and the degree of Bachelor of Engineering (Computer Engineering) are available. Since September 2002 the degree of Bachelor of Engineering (Biomedical Engineering) has been offered.

Mission

The mission of the School of Engineering is:

- I.** To be a school of national preeminence among public schools of engineering and computer science, recognized for the excellence of its instructional and research programs;
- II.** To provide readily accessible, quality undergraduate and graduate education in a broad range of fields to a highly diverse student body, including traditionally underrepresented minorities and women, working adults, and immigrants;
- III.** To maintain and expand the program of fundamental and applied research in areas of national interest, particularly in technologies with relevance to New York City, its metropolitan region and New York State;
- IV.** To provide public service and continuing professional education opportunities to New York City and State, the local community in which the institution resides, the engineering and computer science professions, and society at large.

Goal Statement

The goal statements of the School of Engineering are:

- 1.** Attract and maintain a world class faculty devoted to the synergistic activities of teaching and research;
- 2.** Increase the competitive position of the school for attracting high achieving students;
- 3.** Educate students to meet fully the Engineering Criteria 2000 mandated program outcomes for graduates;
- 4.** Continuously enhance the quality and technological relevance of graduate education and research programs;
- 5.** Implement appropriate instructional delivery and support systems that facilitate access by a highly diverse student body;
- 6.** Encourage multi-disciplinary approaches to both teaching and research in keeping with current technological progress in today's world;
- 7.** Develop partnerships with industry, government, and other external organizations that will enhance the School's educational and research activities;
- 8.** Attract the external resources necessary to support cutting-edge research;
- 9.** Assist in the preparation of K-14 students for further education in engineering and computer science; and
- 10.** Provide continuing education, technological expertise and public service to the engineering and computer science professions, the local community, and the state and city governments.

Accreditation

Except for the newly established Computer Engineering and Biomedical Engineering programs, all undergraduate curricula and Biomedical Engineering leading to the baccalaureate degree in engineering are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

The undergraduate curricula leading to the bachelor's degree in engineer-

ing and the graduate curricula leading to the master's degree in engineering are registered by the New York State Department of Education as meeting educational requirements for the license of Professional Engineer in the State of New York. The City College is accredited by the New York State Department of Education and by the Middle States Association of Colleges and Secondary Schools.

The School of Engineering is an institutional member of the American Society for Engineering Education. It participates in the Society's Engineering College Administrative Council and in its Engineering College Research Council. The School is also a member of the Association of Engineering Colleges of New York State.

Officers of Administration

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Associate Dean, Undergraduate Affairs
Steinman 209, 212-650-8020

Professor Mumtaz Kassir

Associate Dean, Graduate Studies
Steinman 152, 212-650-8030

Dr. A. Ramona Brown

Assistant Dean, Student Programs
Steinman 2M7, 212-650-8040

Undergraduate Admissions

DEGREE PROGRAMS

Currently, programs are offered leading to undergraduate degrees in the following majors:

Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Computer Science
Electrical Engineering
Mechanical Engineering

FRESHMAN ADMISSION REQUIREMENTS

For information about academic requirements, application procedures, placement examinations, and special admissions programs, consult the Admissions section of this *Bulletin*.

Because mathematics and physics are of such great importance in engineering, it is recommended that students choose as many courses as possible in these subjects while still in high school. High school students should also concentrate on perfecting their use of English in reading and writing.

TRANSFER STUDENTS

Information about application procedures, placement examinations, and evaluation of transfer credits can be found in the Admissions section of this *Bulletin*. For other questions, refer to the Office of Admissions, A-100, (212) 650-6448.

In general, highest priority is given to graduates of CUNY community colleges holding an approved A.S. degree in Engineering Science. (Students pursuing a degree in Engineering Technology should note that no technical courses in the technology program are transferable to any engineering program.) Students who are pursuing an A.A.S. degree should note that their coursework might not fulfill their major degree or general education requirements. High priority is also given to students from CUNY senior colleges who have completed an approved pre-engineering course of study. For more information about articulation with CUNY colleges call (212) 650-8020, or visit the website of CUNY TIPPS (Transfer Information & Program Planning System) <http://www.tipps.cuny.edu>. Please note that the CUNYTIPPS web site is to be used as an on-line reference tool and is not binding. All final decisions regarding the transferability of courses remain with the College and the School of Engineering.

Other students are admitted to the School of Engineering or the College

of Liberal Arts and Science on the basis of the math and science courses they have completed, the total number of credits completed, and their college (sometimes high school) GPA. It should be noted that transfer students without a senior college or CUNY community college degree must meet certain minimum GPA requirements in order to be admitted to the School of Engineering in any capacity. Students who do not meet School of Engineering criteria but who are otherwise eligible for admission to City College may enter the College of Liberal Arts and Science (CLAS), from which they may transfer to the School of Engineering when appropriate.

Students at other colleges who eventually wish to continue in engineering are advised to select pre-engineering programs in their colleges if such are available. The preparatory courses in these programs may be applicable to the desired engineering degree at City College.

In most cases, the credit structures at each college are different and students are likely to lose some credits in the transfer process. Because of this fact, and also because the adjustment process may be somewhat easier, students may find it advantageous to transfer at the earliest point allowed by regulations. The recommended alternative is to start at City College as a freshman.

SECOND-DEGREE STUDENTS

Students holding a valid undergraduate (four-year) or graduate degree from an accredited college and wishing to obtain an undergraduate degree in engineering or computer science will be admitted to the School of Engineering based on a transcript evaluation by the Associate Dean of Undergraduate Affairs. Upon admission, the Associate Dean will develop a suitable program for the student. Students may not deviate from this program without the approval of the Associate Dean. Students must apply for admission at least one month before the start of the semester they

wish to enter. Students wishing to enter with second-degree status should first visit the Admissions Office to obtain basic information as well as the proper forms. Note that the second degree must be different from the first and that students must meet the departmental residency requirements described below.

EVENING STUDENTS

The School of Engineering offers some evening courses. Major courses in all other curricula must be completed wholly or in large measure during the day.

RESIDENCY REQUIREMENTS

All transfer students (including second-degree students) entering the School of Engineering must satisfy the residency requirements (listed below) of the major department. Residency requirements specify the minimum number of credits that students must take at City College in their major to obtain a degree, and must be met regardless of the number of major transfer credits the student may claim. Courses required for the degree but not offered by the student's department and prefixed by the department initials (e.g., ChE, CE) are not considered major courses and do not count toward residency requirements.

Residency requirements are based on the total number of major courses in the department's curriculum, and are listed below. Note that the courses taken to satisfy residency requirements must include all 30000-level or higher courses (excluding pilot/experimental courses).

Credits

Biomedical Engineering (BME)	36
Chemical Engineering (ChE)	33
Civil Engineering (CE)	33
Computer Engineering (CpE)	36
Computer Science (CSc)	33
Electrical Engineering (EE)	36
Mechanical Engineering (ME)	36

TRANSFER CREDITS

Students who have completed 45 credits or more will have their evaluation completed by the School of Engineering. Students with 44 credits and fewer will have their evaluations completed by the Transfer Evaluation Services Unit of the Office of Admissions. In general, transfer credit is given only for courses completed in properly accredited programs. No credit will be given for any course in which the lowest passing grade (usually "D") was obtained, or in which a pass/fail grading system was used. No credit may be given in excess of the number of credits actually taken, or in excess of the number of credits listed for the comparable course in the CCNY curriculum.

Students graduating from a CUNY community college with an A.A. or A.S. degree will receive the full 60 credits to which they are entitled under the general CUNY articulation agreement between its community and senior colleges. Students should note that all credits might not be applied toward their particular degree requirements and may be granted in the form of blanket credits.

Transfer Credit for Major Courses

Major courses taken under a program accredited by ABET (Accreditation Board for Engineering and Technology) and passed with a grade of C or better will receive transfer credit at City College. Subject to the C-minimum requirement, transfer credit for engineering courses may also be awarded as follows:

1. Courses taken at an institution that has a formal articulation agreement with City College will receive transfer credit. Courses taken at an institution that has a formal articulation agreement with an ABET-accredited program at another institution may also receive transfer credit at City College, if such courses are covered by the articulation agreement.
2. Foreign students may receive credit by examination. Before being allowed to take such an examination, the student

must provide evidence that he or she has had similar courses. At the discretion of the evaluator, foreign students may also receive transfer credit by submitting sufficiently detailed curricular materials.

The above notwithstanding, the School of Engineering reserves the right to withhold transfer credit for any academic reason it considers justifiable.

Transfer Credit for Liberal Arts Courses

Liberal Arts (General Education) requirements for the six engineering programs are given later under English and Liberal Arts Courses.

Transfer courses that are the equivalent of General Education courses will receive credit up to the limit of the curriculum. Transfer courses that are not equivalent may receive credit if (1) they are bona fide liberal arts courses (see below); and (2) they show significant overlap with General Education courses. Thus, students attending other colleges who anticipate transferring to the City College School of Engineering should familiarize themselves with the General Education requirements and take equivalent courses where possible.

Bona fide liberal arts courses are courses in the social sciences or humanities that are intended to enrich a student's understanding of the world. Note that the General Education requirement does not accommodate skills, professional, or technical courses (such as photography, drawing, musical instrument techniques, non-literature language courses and the like, professional courses including accounting, management, law, actuarial math and the like, or technical courses including statistics, neuroscience, experimental psychology and the like). Such courses will not receive transfer credit as Liberal Arts (General Education) courses in the School of Engineering.

The Office of Student Programs

The mission of the School of Engineering's (SOE) Office of Student Programs (OSP) is to develop and implement comprehensive academic support services and programs to address a wide variety of needs of the School's undergraduate student population. Its primary function is to integrate students within the School by providing academic, career, leadership, and professional development programs, services, and activities as a model for retaining its students from their entry point through graduation.

Major retention thrusts under the auspices of OSP include the Program for the Retention of Engineering Students (PRES) and its successful transfer student companion program, Transfer Recruitment and Retention at City College (TRACC). PRES is a national model established in 1987 and its success in retention and achievement earned its distinction as the 1997 Recipient of The White House Presidential Award for Excellence in Mathematics, Science, and Engineering Mentoring. PRES provides targeted support to underrepresented minorities, women, and the disabled.

The OSP is directly responsible for the academic advisement, academic monitoring, and registration of lower-division students, provides academic counseling to students in both the undergraduate and graduate programs. Other OSP services, programs and activities include: coordination of the school-wide student scholarships and grants; academic support in introductory and major engineering coursework, peer mentoring activities, leadership training and development through the Engineering Leadership Program, and career planning and development, and job placement services through the ESCEP (Engineering Students Cooperative Education Program). In addition, the OSP manages the undergraduate engineering and science research referral and placement process for the NSF Louis Stokes

Alliance for Minority Participation (AMP), and other engineering and science research programs.

The OSP oversees student life in the School through many initiatives, such as The Council of Engineering Student Organization Presidents and Faculty Advisors. The Diversity in Engineering Corporate Advisory Board (DECAB) supports OSP efforts by providing guidance and assistance with students' professional development and information on and assistance with job opportunities and placement.

Coordination of the School's K-16 outreach and education activities is accomplished through the OSP to recruit highly talented students into engineering. In addition, coordination of special events, such as the School of Engineering Graduation and its Honors and Awards ceremonies, as well as special city-wide recruitment events are implemented through the OSP.

Offices and Classrooms

David B. Steinman Hall (coded T on maps) is the primary engineering building. It houses the offices of the Dean, Associate Deans of Graduate Studies and Undergraduate Affairs, Office of the Assistant Dean of Student Programs, the administrative offices and all laboratories, research facilities, computer rooms, and conference rooms of the Departments of Biomedical, Chemical, Civil, Electrical, and Mechanical Engineering. A modern lecture hall is located on the first floor. The administrative offices of the Computer Science Department are in NAC 8/206. The Computer Engineering Program is co-administered by the Departments of Computer Science and Electrical Engineering. It should be noted that many of the actual classrooms for engineering subjects are found in various other buildings on the campus.

Laboratories and Research

Chemical Engineering

The Chemical Engineering Department provides six laboratories as part of its teaching facilities. These are, the Chemical Engineering Science Laboratory, the Unit Operations and Control Laboratory, the Particulate Science Laboratory, the Interfacial Chemistry Laboratory, the Bioprocessing Laboratory, and the Computer Laboratory. Safety procedures and training are emphasized in all laboratories.

In the Chemical Engineering Science Laboratory students make measurements of various thermodynamic properties such as vapor pressure and of transport properties such as viscosity, thermal conductivity and gas diffusivities. The data is then used to estimate the parameters in the appropriate constitutive equations using the methods learned in the statistics course. Students also study the mechanism of conductive, convective, and thermal radiation heat transfer.

In the Unit Operations and Control Laboratory students get hands on experience operating and characterizing the behavior of a wide variety of the types of equipment used in chemical plants. Among these are several heat exchangers, pumps, a piping network for studying fluid flow, flow meter apparatus, a distillation column, a chemical reactor, a packed column, a fluidized bed, a mixing tank, a drying oven, and a gas membrane separator. Most equipment is of pilot plant scale. Many experiments have computer interfaces. The distillation column is equipped with a control module that gives the students experience with the use of feedback control in the operation of equipment. Students also learn how to use a process chromatograph in conjunction with some of the other experiments.

The Powder Science and Technology Laboratory is attached to the course with the same name (ChE 45200) and is given together with it as demonstration of theoretical principles presented

in class. The students are first introduced to powder characterization such as particle size, size distribution (using standard sieves and a light scattering instrument) and shape and surface structure using optical and electron microscopes. Instruments to measure powder specific surface area and pore volume using gas adsorption (BET and gas pycnometry) and mercury intrusion are also presented.

Characterization of bulk powders properties is achieved in the Jenike Shear Cell used to measure powder-yield loci at different initial compression levels. This is a special instrument, characteristic of powder engineering, used to determine powder flowability as well as for the design of powder storage vessels such as hoppers and bins. Finally, the MikroPul Hosokawa Micron Powder Characteristics Tester provides six mechanical measurements with one easy-to-use instrument, including 1) angle of repose, 2) compressibility, 3) angle of spatula, 4) cohesiveness, 5) angle of fall and 6) disperse-ability. Measuring such properties has great importance in the design of storage hoppers, feeders, conveyors and other powder processing equipment. The laboratory also has a significant research component dedicated to the measurement of dry powder flows in different geometries and the study of powder granulation (size-enlargement). Principles of these processes are also demonstrated to students using the existing research equipment.

The Interfacial Chemistry Laboratory provides students with exposure to some surface modification chemistry and the standard techniques used for the characterization of surface properties. Written and verbal reports are required. In addition to use of instrumentation, students will familiarize themselves with surface preparation and modification techniques, including self-assembly, evaporation, spin coating, and Langmuir-Blodgett techniques.

The Bioprocessing Laboratory is equipped with a bioprocess system that includes a fermentation bioreactor, an ultrasonic cell homogenizer, an

isoelectric focusing prep cell, and, for final purification, a chromatographic separation system. Additional equipment includes Applikon 3 and 7 liter fermenters with an ultrasonic cell separator to permit cell recycle. On-line instrumentation includes an Aber Instruments live-cell probe and a methanol feed control system. All modules are computer accessible and capable of feedback control. This lab is used in conjunction with both the graduate and undergraduate courses in bioprocessing to provide hands on training. Typical experiments are introductory microbiology, bioreactor operation and control, and protein purification.

The computer laboratory provides students with access to approximately 24 PCs and two printers on a local area network Applications software including the Aspen Engineering Suite, SuperPro Designer, Visio, Mathematica, and Matlab are available on these machines as well as E-mail and Internet access capability. The lab also provides workspace so that student design or study teams can work together. This lab is available from 9 AM to 9 PM weekdays and on weekends by previous arrangement.

Civil Engineering

The Department of Civil Engineering has the following laboratories: Materials of Engineering, Soil Mechanics, Fluid Mechanics, Environmental Engineering, Highway and Airfield, and Traffic/Transportation Engineering.

The Materials of Engineering Laboratory houses an Instron 8500 Series Universal Testing Machine. This machine is digitally controlled and capable of applying 55 kips (250 kN) dynamic loads. Supporting electronic control, data acquisition and computer software systems are available. Additional equipment for the static, dynamic and fatigue testing of materials includes testing machines for tension, compression, transverse bending and torsion investigation. The laboratory contains hardness testing machines, impact testers, electric strain gauge consoles, and

assorted peripheral equipment. Facilities for casting, curing and testing concrete are also available and include the following: walk-in variable temperature and humidity control environmental chamber, diamond tipped saw for cutting concrete, computer controlled servo-hydraulic compression test machine for 600 kip load capacity, ultrasonic pulse-velocity meter, and maturity meters. Complete facilities for nondestructive evaluation of materials and structures are also available and include: ground-penetrating radar with 400 MHz antenna, ultrasonic transmitters, oscilloscopes, function generators and accelerometers.

The Soil Mechanics Laboratory is equipped to perform standard identification tests of soils, such as grain size distribution, liquid and plastic limits, shear strength, and compaction properties. In addition, facilities to perform detailed testing of undisturbed samples (consolidation and triaxial shear) are available and used regularly. A moist room is available for long-term sample storage.

The Fluid Mechanics Laboratory is equipped for studying both compressible and incompressible fluid media. Flow rates up to five cubic feet per second of water are provided by each of three independent high-pressure systems equipped with constant-head controls. Two low-constant-head supply tanks located in the laboratory provide lesser discharge capacities. The laboratory contains a 52-foot long tilting flume, a water tunnel, a subsonic wind tunnel, an air jet, pumps, turbines, a hydraulic bench, and various units for the study of frictional phenomena involving water and oil.

A one-dimensional Laser Doppler Anemometer (LDA) is used for the study of flow velocities in pipes and near the flow boundaries. In addition, the lab has a state-of-the-art wave tank, 6 ft. wide by 4 ft. high and 40 ft. long. It is equipped with a computer controlled five-paddle wave generator. This system can produce single waves, random waves, and angle waves. A two-dimensional Laser

Doppler Velocimeter (LDV) equipped with computer controlled 3-D traverse and fully automated data acquisition system is used in the wave tank for studying beach hydraulics and offshore similitudes. The lab is also equipped with a tilting sand flume for studying flow through highly porous media and groundwater contamination. A fully automated freeze and thaw machine is also available for graduate research work.

The Environmental Engineering Laboratory is equipped for experimental evaluation of unit processes and operations in water and wastewater treatment as well as analysis of all physical, chemical and microbiological water quality parameters. The experimental facilities include settling columns, suspended and attached growth biological reactors, computer-controlled bioreactor for kinetic studies, a bench scale UV chamber, a 12-gpm 15-foot bubble contactor for ozone studies complete with ozone generator, gas and liquid phase ozone residual monitors and off-gas destructor, a 1000-ft pipe loop system for water instability studies, and all conventional experimental devices used in determination of chemical dose requirements. An environmental chamber for temperature-controlled experiments is also available.

The analytical capabilities of the laboratory include gas chromatography-mass spectrometer with purge/trap, inductive-coupled plasma spectrometer (ICP) gas chromatograph with EC and FID detectors, total organic carbon analyzer, ion chromatograph, water quality autoanalyzer, UV-visible doublebeam spectrophotometer with stopped-flow device, and phase contrast/epifluorescence research microscope. Field monitoring equipment includes water quality monitors with multiple probes and fluorometers.

The Traffic/Transportation Engineering Laboratory has both personal computers and UNIX workstations with their peripherals to provide students opportunities to work with traffic and transportation software for

course work and transportation research. The laboratory has a variety of software, including SOAP84, HCS, PASSER II-90, TRANSYT-7F, NETSIM, AAP, PRIMAVERA, AutoCAD, and software for GIS. The laboratory also contains basic equipment necessary to conduct traffic engineering studies such as traffic counters and measuring wheels.

The Highway and Airfield Laboratory offers facilities for investigating the properties of the basic materials and mixtures that comprise pavements. A variety of strength and stability equipment and other apparatus are available for determining rheological and physical properties and for experiments in designing and testing bituminous mixes. The additional facilities of the Soils and Materials Laboratories make possible the study of mineral aggregates and their blends, soil-stabilization phenomena, and mix-design and properties of Portland cement concrete. Other facilities in the Chemical Engineering Department's Materials Research Laboratory extend the capacity to conduct thermoanalytic studies on standard and composite materials.

Computer Engineering

The Computer Engineering Program shares laboratory facilities in the Departments of Computer Science and Electrical Engineering.

Computer Science

The Department of Computer Science has substantial computing facilities, including two student PC laboratories, large Unix labs, and specialized laboratories for computer architecture, image processing, network protocols, operating systems, and parallel programming. Computer vision and speech processing labs are under construction. Wireless and high-speed internet connections are provided. All labs are equipped with laser printers.

The UNIX labs are equipped with state-of-the-art Sun Ultra workstations running Solaris. These labs provide software for graphics, image processing, numerical computation and logic design, and a variety of programming

languages (such as C/C++, Java, Fortran, Scheme, and Assembly). The labs also provide database development environments, such as Oracle and MySQL.

The PC labs utilize the Microsoft Windows XP environment, and provide a wide range of software for both students and faculty.

The Computer Architecture Lab is equipped with high-end IBM and Sun workstations. Students use VHDL to program reconfigurable boards supplied by Altera.

The Image Processing Lab features dual-processor Dell workstations with high-end Nvidia Quadro 4 graphics boards, running Linux.

The Network Protocol Lab is equipped with the latest networking devices, such as CISCO switches, routers, ATM switches and a network traffic simulator/analyzer. Also deployed are high-end Sun Ultra workstations and video capture capability for studying video multicasting.

The Operations System Lab is equipped with Sun Blade workstations.

The Parallel Programming Lab provides a small Beowulf cluster based on Red Hat Linux. This lab provides students and faculty with a prototyping environment for development and study of high performance computing.

In addition, the Computer Science Department is affiliated with the CCNY Center for Algorithms and Interactive Scientific Software (CAISS). CAISS operates a laboratory with extensive facilities for symbolic computation, including a 132 node Beowulf cluster.

Electrical Engineering

The undergraduate EE laboratory facilities comprise the core teaching laboratories, advanced senior level design laboratories and computer support facilities.

The newly renovated computer-controlled core laboratories are designed to give students hands-on experience on both analog and digital electronic circuits and in measurement apparatus currently used to characterize circuits and systems. Data acquisition using LabVIEW computer control software with GPIB interfaced measurement

equipment is used to give the students hands-on experience in the fundamentals in communications, computer and control engineering.

All of the introductory core labs consist of laboratory stations (2 students per station) which have the following computer and measurement equipment: personal computers running both LabVIEW and Electronics Workbench (analog and digital circuit simulation software); a GPIB plug and play controller card; a data acquisition-generation board with 8 analog input lines and 2 analog output lines, 24 digital scope with GPIB storage module; a Hewlett Packard GPIB and RS-232 interfaced Digital Multimeter; a Hewlett Packard Triple Output Power Supply, a Hewlett Packard GPIB and RS-232 interfaced 15 MHz function generator.

The Analog Communications Laboratory uses the Lab-Volt Company's signal generators, receivers, noise generators, and spectrum analyzer for the analysis of the performance of AM, SSB, DSB, and FM communication systems.

The Computer Engineering Laboratory is designed to give students the capacity to perform high-level microcontroller programming and virtual emulation. The laboratory consists of 5 stations (2 people per station) each with: a PC; a Motorola Microcontroller Development System, a Motorola Emulator and specialized assembler software and C Cross compilers. In addition, the laboratory has a Hewlett Packard 16-channel logic analyzer and assorted electronics components for laboratory exploration.

The advanced design laboratories include Local Area Network (LAN), Photonics Engineering, and Advanced Electronics. The LAN laboratory consists of IBM Multimedia PC's, Protocol Analyzers and several network design and simulation packages such as OPNET and COMNET. In addition, two ATM switches (2.4 Gbps) and a CISCO Router are available.

The Semiconductor Laboratory includes Si Ge diode detectors, semi-

conductor quantum well structure lasers (670 nm), semiconductor double-barrier tunneling diode, an HP 4145B Semiconductor Parameter Analyzer, an HP 4142 DC module and HP 4140 Pico-Amp Meter, optical power meters, optical loss analyzer as well as assorted optical components (lenses, filters, etc.).

The Control Engineering Laboratory uses the Feedback Inc. analog servo-fundamentals trainer, which consists of an analog unit and a mechanical unit. The mechanical unit has a servomotor with position and velocity sensors. The analog unit allows students to wire the servomotor in a closed loop configuration and independently vary the position and velocity feedback gains. The trainer is interfaced to a PC running LabView software to acquire and display signals on a virtual oscilloscope. The six stations are networked to a printer to allow students to print the virtual oscilloscope display.

The Photonics Laboratory is designed to give a variety of laboratory experiences in optics, lasers, spectroscopy and fiber optics. Equipment includes laser diodes, a HeNe laser, a white light source, a fiber optic spectro-radiometry system, single and multimode fibers, laser power meters and a variety of optical components.

The NASA Remote Sensing Computer Laboratory is designed to provide computer resources to students involved in environmental engineering and remote sensing. Equipment comprises: 14 Dell Optiplex PII computers; 2 Dell 500 MHz PIII computers; 1 Dell 2300 network server; 24 port dual-speed internet hub; Tektronix Phaser 740P color network printers; Proxima DP 9250 LCD multimedia projector; MATLAB software (Mathworks Inc.); Arc View GIS software, DEC Visual Fortran 99 and a HP 6200 color flatbed scanner.

The laboratory facilities are supported by significant computer resources which include both the Department UNIX network comprising over 90 SUN workstations as well as a large number of PCs in the PC Microcomputer Laboratory.

Mechanical Engineering

The Department of Mechanical Engineering provides separate laboratories for the study of aero-thermal-fluid engineering, manufacturing, material science, mechatronics, dynamics and controls, and CAD. A Senior Design Projects Fabrication and Test Laboratory and a machine shop serve the entire department. A personal computer center, open all day, is available for the convenience of students. In the Aero-Thermal-Fluid Laboratory, major experiments involve a refrigeration unit, a water turbine unit, a wind tunnel unit, an air pipe flow unit, a fin heat transfer unit, and a heat exchanger.

The Engineering Materials Laboratory includes extensive facilities for the preparation of specimens for metallographic examination using modern digital imaging analysis system, testing machinery for tension, compression, hardness, impact, fracture, fatigue, stress relaxation, and ultrasound characterization; equipment for heat treatment; as well as videocassette recording and projection devices.

The Mechatronics Laboratory teaches the use of various electromechanical devices, sensors and actuators. The devices include strain gauges, thermocouples, piezoelectric accelerometers, LVDT's, instruments for signal generation, filtering and amplification, stepper and DC servo motors, linear slides, and assorted electromechanical items (such as solenoids, relays, micro-switches, infrared proximity sensors, piezoelectric buzzers, strobe lights, fans, blowers, etc.). All these devices are controlled by PC-based data acquisition, microcontrollers, and programmable logic controllers (PLCs).

The Dynamics and Controls Laboratory contains equipment for dynamic balancing, vibration testing, and various feedback control units for rectilinear and translational mechanical systems, level and flow, thermal and pressure systems and digital and analog servo-motor systems.

The Computer Aided Design Laboratory facility has twenty-six Dell Dimension 8200 series computers, a

Dell PowerEdge 2500 server, two HP Color LaserJet 4600dn printers, an HP LaserJet 5100 printer, and a wide-screen monitor. The Department also has a Multimedia Distance Learning Facility which includes twenty-four Pentium PC's, document camera, LCD projector and whiteboard. In addition, the Department maintains twenty-seven Sun UNIX workstations and sixteen Pentium PC's in its other three computer laboratories. These systems are equipped with mechanism design, mathematics, finite element, boundary element and computer-aided manufacturing software, including PRO-ENGINEER, Solid Works, LS-DYNA, ABAQUS, MathCAD, MATLAB, Mathematica, FLUENT, NASTRAN-4D and MasterCAM.

A modern Computer-Aided Manufacturing (CAM) Laboratory facility contains four CNC machining centers and a computer-integrated manufacturing (CIM) system, together with industrial grade robots: three articulate arm types (2 SCORBOTS and 1 FANUC) and one SCARA.

Somewhat more specialized laboratories, established to facilitate advanced experimental research work, provide specific concentrations of apparatus and equipment to allow the study of various phenomena in such fields as solid mechanics, composites, environmental and fluid sciences, aero-sciences, and heat transfer engineering.

The machine shop is well equipped for fabricating and maintaining all experimental facilities, both undergraduate and research.

Research

In recent years, several million dollars in grants per year have been awarded to City College School of Engineering faculty for conducting research projects that have attracted international attention. These faculty members are an integral part of the undergraduate teaching team. The grant agencies include NSF, NASA, ONR, U.S. Army, AFOSR, EPA, USDOT, NYCDOT, DOE, ARPA, and NIH. City College is also connected to ARPANET.

A brief sampling of the ongoing research activities follows.

In the area of Electrical Engineering: digital slow-scan video, packet voice video systems, spread spectra, semiconductors, integrated circuits, digital signal processing, image processing, material characterization, digital optical computing, machine vision, identification and control, microwave engineering, parallel processing, knowledge-based engineering, robotics, computer communications, and local area networks.

In Biomedical Engineering: fluid and mass transfer aspects of arterial disease, microcirculatory heat and mass transfer, and orthopedic mechanics.

In the area of Chemical Engineering: turbulence, low Reynolds number hydrodynamics, two- and three-phase bubble flow in capillaries, arterial fluid flow, cholesterol metabolism models, drug release polymers, tissue engineering, fluidized and trickle beds, coal liquefaction, conversion catalysis and hydrolysis, low-temperature electromagnetic properties of semiconductors and coal chars, extraction with mixtures of critical solvents, dynamic process simulation systems, dynamic modeling and control of FCC, coal gasification, municipal waste incineration and power generation systems, control of complex processing systems.

In the area of Computer Science: computer graphics, image processing, multimedia, virtual reality, computational geometry, mathematics of computation, cryptography, artificial intelligence, neural networks, mathematical fluid dynamics and simulation, networks, distributed computing, information management and virtual organization, economics of information, and social issues in computing.

In the area of Mechanical Engineering: fracture mechanics and crack propagation, solid mechanics, ferro- and piezoelectric materials, thin films, composite materials characterization and ultrasound microscopy, random vibrations, turbomachinery, aerodynamic turbulence, gas dynamics and shock waves, aerostructures, microelectronic cooling, moving phase change boundaries.

In the area of Civil Engineering: earthquake effects on structures and

structural control, fracture mechanics, experimental mechanics, probabilistic methods in structural design, seepage of pollutants through soil/water systems, solid waste disposal, modeling and simulation in travel demand forecasting, value capture financing techniques in transportation, highway maintenance systems and load analysis for highways.

INSTITUTES AND CENTERS

Institute for Biomedical Engineering

The Institute is a uniquely integrated endeavor dedicated to providing students in the Chemical, Civil, Electrical and Mechanical Engineering departments with access to a diverse faculty, unique research opportunities, and encouragement to pursue graduate studies in biomedical engineering. It is part of the New York Center for Biomedical Engineering, NYCBE, a multi-institutional consortium of the School of Engineering at City College, the CUNY Medical School, the Hospital for Special Surgery/Cornell University Medical College, and Mount Sinai School of Medicine. Since its founding in 1994, faculty and staff from more than a dozen health care institutions in the New York area have either taught courses in the center or have served as research advisors for student projects.

Benjamin Levich Institute for Physicochemical Hydrodynamics

The Benjamin Levich Institute is an internationally recognized research center for the study of fundamental problems of flow and transport in complex fluid, fluid-like media and interface systems. Faculty members participating in the Institute are from Chemical Engineering, Mechanical Engineering, and Physics. With the Institute's excellent laboratory and computational facilities, their current scope of research is in five major areas: granular flows, low Reynolds number hydrodynamics, non-Newtonian fluid mechanics, computational fluid mechanics, and transport along interfaces.

Institute for Municipal Waste Research

The principal objective of the Institute is to mobilize the excellent intellectual resources of the CUNY faculty to assist in solving the urgent problem of effective, economical, and efficient disposal of municipal waste in New York City. The research program entails development of innovative technologies to treat municipal wastewaters in order to safeguard the quality of the surrounding natural waters and new disinfection methods that will protect the quality of drinking water. The Institute's research is funded in part by New York City and State agencies.

Institute for Ultrafast Spectroscopy and Lasers (IUSL)

The IUSL is a multidisciplinary research laboratory devoted to conducting basic and applied research in the frontiers of photonic science and technology; to help develop a skilled workforce for academic and industrial sectors by providing unique educational and training opportunities for students and scholars; to provide a core for major photonic initiatives, as well as to identify and participate in the development of emerging technology areas. Faculty members, researchers and students from the Physics, Electrical Engineering, Earth and Atmospheric Sciences Departments of CCNY, and visiting scholars from abroad participate in various IUSL research projects.

CUNY Institute for Transportation Systems

The CUNY Institute for Transportation Systems has been established at The City College in cooperation with other units of the City University of New York. The mission of the Institute is to carry out interdisciplinary research on all modes of transportation and to train transportation professionals.

CUNY Institute for Urban Systems (CIUS)

CIUS is a multi-campus CUNY institute that investigates urban infrastructure using the themes of new technology,

infrastructure, institutions and finance. The Institute combines engineering and social science research in addressing major problems of urban areas.

Center for Advanced Engineering Design and Development (CAEDD)

The primary mission of CAEDD is to conduct, coordinate, and promote design-oriented, applied research and development for industry. It also encourages and fosters interdisciplinary engineering design and manufacturing education by the academic departments in the School of Engineering. CAEDD is an interdepartmental unit which transfers faculty research and expertise in the School of Engineering into advanced technology needed in industry. It also serves as an outreach and referral service for small and large industrial firms seeking assistance with technical problems.

International Center for Environmental Resources and Development (ICERD)

This Center was established to bring together multidisciplinary teams of scientists and engineers to help tackle the diverse problems of water resources and environmental issues. It focuses on water resources and environmental research; air and water pollution crisis management; remote sensing and global change impact; environmental technology; and research, education and training programs.

University Transportation Research Center (UTRC)

UTRC is a federally supported center that conducts research, training and technology transfer on issues of surface transportation, including road systems, public transportation and multi-modal systems. It is a consortium of twelve major universities, with the lead at CCNY.

Honors, Awards, and Professional Societies

Awards and Prizes

Awards and prizes presented by the School of Engineering are listed below. For detailed information on these and on many other award opportunities, contact Assistant Dean A. Ramona Brown, 212-650-8040, Chair of the Honors and Awards Committee.

Association of Old Crows Award
Engineering Alumni Awards
Engineering SEEK Scholars Award
Engineering Student Support Award
American Institute of Chemical Engineers Award
American Institute of Chemists Award
A.S.C.E. Associate Member Forum Prize
A.S.C.E. Robert Ridgway Student Chapter Prize
Babcock and Wilcox Award
Seymour and Ruth Brown Graduate Scholarship
Theodore Charros Scholarship
Con Edison Scholarship
Eliza Ford Prize
GEM Fellowships
Donald Griff Scholarships
Grove Foundation Scholarship
Steven L. Heller Award
Heymann Scholarship Award
Paul A. Karmel Memorial Award in Electrical Engineering
Stanley Katz Memorial Award
Samuel and Stella Kaufman Scholarship
Rose Lederman Scholarship
Sam and Clara Linder Scholarship
Gerard and Doris Lowen Machine Design Scholarship
Ernest and Edith Macklin Award
Leo Macklin Scholarships
Charles A. Marlies Award
Benjamin and Beluah Massey Award
F.O.X. McLaughlin Awards
Mechanical Engineering Department Awards
Merck and Company Fellowship
Henry S. Myers Memorial Award
NACME Corporate Scholar Award
NASA/NACE USAR Scholarship

NSF CSEM Scholarship Sandor I. Oesterreicher Prize
Patell Memorial Award in Chemical Engineering
Pope, Evans, and Robbins Scholarships
J. Charles Rathbun Awards
Judith Resnick Award
Samuel Rudin Scholarships
Harry Schwartz Scholarship
Harold Shames Award in Biomedical Engineering
Elaine and Harold Shumel Scholarship
Society of Military Engineers (SAME) Scholarship
David B. Steinman Awards
Bayram Vural Memorial Prize
Leonard S. Wegman Co., Inc. Scholarship

Honor Societies

Tau Beta Pi is the United States Engineering Honor Society. Seniors and juniors in the top fifth and top eighth of their respective classes are eligible for election under rigorous standards of scholarship, character, leadership, and service to the School. Honor societies for individual disciplines have chapters in all our Engineering departments.

Eta Kappa Nu is the national electrical engineering honor society, which has for its purpose the reward and stimulation of high scholarship and professional achievement. Outstanding senior and junior students are eligible for membership; election is based on unimpeachable character and undoubted ability, as evidenced by scholarship.

Pi Tau Sigma is the national mechanical engineering honor society. Election is limited to the top quarter of the junior class and top third of the senior class, and is based on standards of character, service to the School, and promise of future success in the field of mechanical engineering.

Chi Epsilon is the national civil engineering honor society. Juniors and seniors in the top third of their respective classes are eligible for membership; election is also based on character, practicality, and sociability.

Omega Chi Epsilon is the national

chemical engineering honor society. Membership is limited to students who have completed a substantial number of chemical engineering credits and have demonstrated a high level of scholastic achievement and excellent character.

Golden Key International Honor Society is an academic honors organization recognizing scholastic achievement and excellence in all undergraduate fields of study.

Professional Societies and Organizations

Student chapters of the following societies have been formed: American Society of Civil Engineers (ASCE), American Institute of Chemical Engineers (AIChE), American Society of Mechanical Engineers (ASME), Biomedical Engineering Society (BMES), Institute of Electrical and Electronic Engineers (IEEE), Society of Automotive Engineers (SAE), Society of Manufacturing Engineers (SME), American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE), American Institute of Aeronautics and Astronautics (AIAA), and Association for Computing Machinery (ACM). Broad-based engineering organizations on campus include the National Society of Black Engineers (NSBE), Latin American Engineering Students Association-Society of Hispanic Professional Engineers (LAESA-SHPE), Society of Women Engineers (SWE), and Korean-American Scientists and Engineers Association (KSEA). During each semester, lectures are delivered before these societies by prominent professionals; students are also encouraged to present their own papers. In addition to these professional and technical societies, the School of Engineering sponsors a Concrete Canoe Club, open to all SOE students.

National engineering societies offer students substantial competitive awards for papers, oral and poster presentations, and design competitions on certain specified topics. Other competitive awards for research are offered to graduates by these societies.

Overview of the Curricula

DEGREES OFFERED

Bachelor of Engineering
Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Engineering
Electrical Engineering
Mechanical Engineering

Bachelor of Science
Computer Science

Master of Engineering
Biomedical Engineering
Chemical Engineering
Civil Engineering
Electrical Engineering
Mechanical Engineering

Master of Science
Biomedical Engineering
Computer Science

Doctor of Philosophy (through the CUNY Graduate Center)
Biomedical Engineering
Chemical Engineering
Civil Engineering
Computer Science
Electrical Engineering
Mechanical Engineering

The curricula in engineering and computer science are designed to prepare the student for practice in the field of choice. Courses in the major provide a firm grounding in the principles of the various disciplines; these basic principles are applied and expanded in a series of design or similar courses. All of these courses emphasize the development of engineering viewpoints, attitudes, and methods of approach to problems.

The curricula offered by the School of Engineering also provide a background in written and oral English and the humanities. The School of Engineering offers programs that start from the freshman level and continue to the highest academic levels, up to and including the doctorate.

Transferring Between Program

Though basic (non-major) courses in the computer science and engineering curricula are similar, certain courses are unique to each program. Students are strongly advised to consult with an advisor when choosing a major program to ensure that credits are not lost when transferring. Thus, it is usually possible to transfer from one field to another during the first few semesters with little or no loss of credit. Students who initially pursue a degree other than those offered by the School of Engineering are likely to lose some credits if they transfer to engineering or computer science.

English and Liberal Arts Courses (General Education)

English and Liberal Arts (General Education) requirements for the Bachelor of Science degree in computer science and for the Bachelor of Engineering degrees in the engineering programs are listed below:

General Education/Liberal Arts Requirements:

English 11000: Freshman Composition (3 cr.)
 English 21007: Writing for Engineering (3 cr.)

Eligible courses that can be used to fulfill the general education requirement must be equivalent to or selected from only those courses listed as meeting the objectives of the following four clusters: i) Professional and Ethical Responsibilities Cluster (outcome f), ii) Communication Cluster (outcome g), iii) Global and Societal Cluster (outcome h), and iv) Contemporary Issues Cluster (outcome j). A list of approved courses is posted on the School of Engineering web site at <http://www.cuny.cuny.edu/engineering/genreq.html> and can be viewed at the Office of Undergraduate Affairs (T-209) or the Office of Student Programs (T-2M). These courses may not include courses in accounting, business, creativity, design, language skills, performance, professional, studio and technical courses such as statistics, neuroscience, experimental psychology, etc. This list is subject to periodic review and updates.

BME students must take five approved courses and Engr 30000 (Social, Economic, and Cultural Impact of Biomedical Technology) for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

ChE students must take six approved courses for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

CE students must take six approved courses for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

CpE students must take six approved courses for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

CSc students must take five approved courses and Speech 11100 (Foundations of Speech Communication) for a total of 18 credits of which at least 3 credits must be at the 20000 level or higher. The five courses must satisfy at least three of the four approved general education clusters. Students may be exempted from Speech 11000 by passing a speech proficiency examination, in which case they must take another speech course.

EE students must take five approved courses and Engr. 27600 (Engineering Economics) for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

ME students must take six approved courses for a total of 18 credits of which at least 6 credits must be at the 20000 level or higher. The six courses must satisfy at least three of the four approved general education clusters.

Credit Requirements

The Bachelor of Engineering degree and the Bachelor of Science in Computer Science degree require the satisfactory completion of 126–135 credits. In the School of Engineering, not all credits passed or transferred count toward the degree. These non-degree credits include, but are not limited to, all pre-calculus math courses. Credit is also not granted for skills courses, as defined earlier. Students with non-degree courses, whether remedial or otherwise, will accumulate more credits than students whose total credits count toward their degree.

Except for special cases, the maximum number of credits allowed per semester is eighteen. Students who wish to take more than eighteen credits in any one semester must obtain permission from the Office of Undergraduate Affairs. If permission is granted, the student will not be allowed to drop any School of Engineering courses.

Curricular Guidance

Freshmen and transfer students not eligible for pre-calculus (Math 19500) should meet with a general advisor (T-209 or T-2M7) prior to entering the College and also at registration, if required. They meet with this advisor until they take Calculus I. At that time, and from then on, they consult with an advisor in their department.

Transfer students eligible for Calculus I or higher mathematics courses should meet with the Office of Undergraduate Affairs before their first semester at City College to receive their first program. From then on, depending on the courses for which they are eligible, they meet either with an advisor in their department or with the freshman advisor.

All students are required to see an advisor at least once a semester for program planning. They may see them at other times to discuss other matters of concern such as objectives and performance. For special problems, students may consult with the Office of Undergraduate Affairs. Referrals to specialized College services are made when deemed appropriate.

Committee on Course and Standing

The Committee enforces academic standards and graduation requirements. It monitors the academic performance of students and serves as an arbiter in evaluating transfer credits, second degree candidates' programs, petitions for substitution of courses, and other problems related to grades, attendance, guidance, and graduation.

All requests to the Committee must be in writing. The Committee is the final authority on questions of courses and standing.

In many cases, the Associate Dean of Undergraduate Affairs can act for the Committee or advise more appropriate action, so students may discuss their problems with him/her before filing a formal appeal to the Committee. Any decision of the Associate Dean when he/she acts for the Committee may be appealed to the full Committee.

Academic Standards

Grade Point Average (GPA)

One requirement for graduating is an average of C (GPA of 2.0) or better for all courses relevant to the student's degree. Calculation of the GPA is described in the Academic Requirements section of this Bulletin. Note that once a student passes a course, only the first passing grade is counted in the GPA. Since a grade of D is passing, students who receive a grade of D and subsequently retake the course will not have the new grade included in the GPA except for courses requiring a minimum grade of C. In these courses all grades will count, up to and including the C.

Quality Point Accumulation (QPA)

Another requirement for graduation is a Quality Point Accumulation (QPA) of zero or better in the student's major courses. Unless stated otherwise, major courses include only courses offered by the student's department and no other courses. For example,

computer science courses, although required for the civil, electrical, and mechanical engineering degrees, are not included in QPA calculations for those majors. QPA calculation in the computer engineering degree counts all computer science and electrical engineering courses.

Computing the QPA

In calculating QPA, the following weighting factors apply:

A = +2
B = +1
C = 0
D = -1
F = -2

F represents here all failing grades including F, FAB, FIN, FPN, WF, and WU. The weighting factors are multiplied by the number of credits for each course, and the results of all multiplications are added together. A final score of zero is equivalent to a C average. Negative scores are equivalent to averages lower than C; positive scores are equivalent to averages higher than C.

One advantage of this method is that it allows failing or marginal students to determine the grades required in their remaining major courses to graduate.

Note that the CUNY-wide "F" Repeat policy, described in the front of this Bulletin, does not apply to Engineering QPA calculations.

Use of Graduate Courses

Permission to substitute a graduate course for an undergraduate course requires a GPA of 2.75 or better plus the approval of the Associate Deans of Undergraduate Affairs and Graduate Studies and the departmental graduate advisor.

Retaking Engineering Courses

On application by the student, the Associate Dean of Undergraduate Affairs will allow students in their senior year to repeat courses in order to improve their major QPA. Only five such retakes will be allowed (not more than two per semester) and these must be courses for which the previous passing grade was D. Courses with grades of C or better may not be

retaken, and no course, once passed with a grade of D, may be retaken more than once. If a student is permitted to retake a course, both the new grade and the original grade of D will be counted in the major QPA.

Pass-Fail Option

Students enrolled in the School of Engineering must take all courses for a qualitative letter grade. That is, they are not allowed to take the pass-fail option except when it is the only option of grade for a course.

College-Wide Examinations

All City College students, including those majoring in Engineering, are required to pass a number of college-wide examinations including the CUNY/ACT Basic Skills Tests in Reading and Writing, the Mathematics Placement Test, and the CUNY Proficiency Examination (CPE). Descriptions of these examinations, including their applicability to second degree students, are located in the Academic Requirements section of this Bulletin.

Probation and Dismissal

Students who do not maintain a C average overall or a minimum QPA of zero in their major will be placed on academic probation. As long as they are on academic probation they will not be allowed to take more than twelve credits per semester. Students on academic probation whose grades do not improve will be dismissed from the School of Engineering.

Definitions of probation and satisfactory academic progress are located in the Academic Requirements section of this *Bulletin*.

Summary of Graduation Requirements

In order to be eligible for graduation, the student must meet the following criteria:

Achieve a minimum overall average of C (GPA of 2.0).

Achieve a minimum quality point accumulation (QPA) of zero.

Obtain a grade of C or better in all the relevant mathematics, science and major courses specified in the program.

Satisfy the credit distribution requirements of the degree.

Fulfill the residency and credit requirements of the degree.

Pass the CUNY/ACT Basic Skills Tests in Reading and Writing.

Pass the Mathematics Placement Test.

Pass the CUNY Proficiency Examination (CPE).

Cooperative Education Plans in Engineering

COOP/ENG is an optional educational plan offered to School of Engineering students. The plan involves alternating periods of full-time academic study with periods of full-time career-related employment. Assignment locations are not only in the New York metropolitan area, but out of town as well. Participation is voluntary.

Students who participate in COOP/ENG can expect to benefit by the experience in many ways, among the more important of which are:

Learning to put theory into practice.

Earning financial support for college.

Increasing motivation and stimulation to continue academic studies.

Growing in maturity, practicality, and responsibility.

Greatly enhancing job opportunities upon graduation.

To participate in COOP/ENG, the student must have completed at least 30 credits toward the degree and meet the required academic standards. The student must also submit a report on progress and accomplishment for each work period. It is important to note the following:

No academic credits are given for the work experience; and COOP/ENG normally extends the time needed to complete the degree requirements.

Work periods are not just summer jobs, although the summer may be included in a fall or spring work assignment.

In the past, cooperative education employers have included governmental agencies such as US Army Corps of Engineers and NASA, as well as large private organizations such as IBM and GE. The COOP/ENG program is administered by the Office of Student Programs in the School of Engineering.

Student Responsibilities

For academic matters, students are responsible for the material covered in the Academic Requirements section of this *Bulletin*, in the introductory section of the School of Engineering portion, and in their specific department write-ups. For matters related to conduct, students are responsible for the disciplinary material covered in Appendix B of this *Bulletin*.

Department Programs

Prescribed curricula for the seven School of Engineering programs are presented in the following pages. Mathematics and science subjects upon which long sequences depend are of prime importance and should be taken as soon as the student is ready for them. If a section in one of these subjects is closed the student should, if possible, select a different section of the same subject and rearrange other subjects as necessary. Freshmen and sophomores should pay particular attention to early completion of the prescribed work in mathematics, physics, chemistry, and computer science.

It is the student's responsibility to meet with a faculty advisor each semester for program planning and advisement. Students who have not taken any courses in their major will meet with an advisor in Steinman Hall Room T-209 or T-2M7. Once a student has begun taking major courses, he or she will meet with a department advisor in the advisor's office. Students

with specific problems may always consult with an advisor in the Office of Undergraduate Affairs, T-209.

Students who are behind in completing prerequisite courses should consider attending one or more summer sessions. The basic science courses and many liberal arts non-science courses are generally offered during the summer, as are some School of Engineering courses.

Curricula in engineering and computer science are designed so that the full-time day student, sustaining no failures, may complete the bachelor's curriculum in four calendar years. Often, however, because of the timing of courses or schedule conflicts, a student will have to attend one or two additional semesters. In addition, because certain courses in all curricula are considered difficult, students may elect to take fewer total credits during the semesters in which they take those courses. This might also lengthen their stay at the College. Finally, students who must hold a job, even a part-time job, should reduce their course loads below those recommended in the program descriptions. Most math, science, and engineering courses are sufficiently challenging to require a full measure of the student's energy and attention; the longer stay in the College that this delay entails is almost always compensated for by higher grades.

Evening students should select math and science courses in preference to humanities courses on beginning their college work, since the humanities courses will round out programs in later years when schedule difficulties might prevent the selection of a full program of technical courses.

Where courses have prerequisites, the prerequisite must be taken before registering for the desired course. Exceptions must be in writing by the department chair. Students who register without such permission will be dropped from the course.

The School of Engineering reserves the right to change curricular requirements for matriculated students at any time if such changes are necessary to

remain in compliance with the guidelines of the Accreditation Board for Engineering and Technology and the Computer Science Accreditation Board. Also, courses will not be given unless warranted by the registration.

Every effort has been made to ensure that the material in this section of the *Bulletin* is consistent with the material presented in the Academic Requirements section of the *Bulletin* and in the individual program sections. If there are inconsistencies, students are strongly advised not to attempt their own interpretation but to consult with the Office of Undergraduate Affairs, T-209. An erroneous interpretation of the requirements by a student may not be accepted by the College.

Engineering Course Descriptions

10100: Engineering Design

An introduction to engineering practice through hands-on investigations, computer applications, design projects and student presentations in the fields of structures and robotics/electronics. The first segment of the course consists of a structural design module. In this module, the behavior of materials and structural members is explored. Concepts of structural safety and equilibrium are developed and students are introduced to structural analysis of a steel truss bridge and build a model bridge. The second portion of the course consists of a robotics or electronics module. The robotics module focuses on basic mechanisms, kinematics, feedback, and computer control by considering the operation of several robotic devices. Students then engage in a robotic design which may include software or hardware or both. The electronics module introduces student to Boolean algebra, number bases and binary arithmetic, logic circuits, timing diagrams, counters and display services. The students then design and construct a digital clock. All investigations and design projects are performed in groups and presented in oral and/or written form. Computers are used for documentation, data analysis and robot control. Pre- or coreq.: Math 19500 (min. C grade). Open only to transfer students who have not completed Math 20200 (or 20202). 3 HR./WK.; 1 CR.

10300: Computer-Aided Analysis Tools for Engineers

An introduction to computer aided analysis techniques necessary for the study of electrical engineering and the design of electrical systems. Concepts introduced through short lectures are examined thoroughly during computer workstation-based workshops. Among the topics studied are: functions of real variables and their graphs, complex numbers and phasors, linear algebra, difference equations with applications to signal processing, and an introduction to system analysis. Prereq.: Math 20100 (or 20102) (min. C grade), Engr 10100. 3 HR./WK.; 2 CR.

20400: Electrical Circuits

Basic circuit laws. Methods of circuit analysis. Circuit theorems. Operational amplifiers. Capacitors and inductors. Sinusoids and phasors. Sinusoidal steady state analysis. Frequency response. Prereq.: Phys 20700 (min. C grade); pre- or coreq.: Math 20300 (min. C grade). 3 HR./WK.; 3 CR.

23000: Thermodynamics

Introductory concepts and definitions. Zeroth Law and absolute temperature. Work and Heat. First Law and applications. Second Law, Carnot theorems, entropy, thermodynamic state variables and functions and reversibility. Power and refrigeration cycles, ideal gas mixtures, gas-vapor mixtures and the psychrometric chart. Introduction to statistical thermodynamics. Prereq.: Chem 10300 (or 10301) (min. C grade). Pre- or coreq.: Phys 20800 (min. C grade), Math 20300 (min. C grade). 3 HR./WK.; 3 CR.

27600: Engineering Economics

History of economic thought from the engineering point of view of modeling and control: Adam Smith to Keynes to Krugman and Thurow. Nature of the corporation. Balance sheet analysis. Time value of money: simple and compounded interest, annuities and loans, cash flow, profitability analysis and DCF rate of return. Cost estimation, cost benefit analysis. Risk analysis: forecasting, cash flow, simple probability theory, decision trees. Prereq.: Math 20102 (20100). (min. C grade). 3 HR./WK.; 3 CR.

30000: Social, Economic and Cultural Impact of Biomedical Technology

This course emphasizes community health care concerns in an urban environment. It has two central themes: (a) assessment of biomedical technology in the context of urban health needs, and (b) social and cultural impact of biomedical technology. Prereq.: Soc 10500 or Anth 10100 or Eco 10000 or Phil 34903 or any honors program liberal arts course. 3 HR./WK.; 3 CR.

30100: Introduction to Satellite Remote Sensing and Imaging

This introductory remote sensing course covers different environments where remote sensing can be applied, including discussion about a variety of space platforms and selected sensors that orbit the Earth. Emphasis is placed on the application of remote sensing on the interactions between the hydrosphere, biosphere, geosphere and atmosphere as well as bioproductivity and geophysical/geochemical processes in the oceans. 3 HR./WK.; 3 CR.



Department of Biomedical Engineering

Professor John Tarbell, Chair • Office: Steinman 404C • Tel: 212-650-6841

GENERAL INFORMATION

The City College offers the following undergraduate degree in Biomedical Engineering:

B.E. (BME)

PROGRAMS AND OBJECTIVES

Biomedical engineering (BME) is the application of engineering principles and physical and mathematical concepts to solve problems in medicine and biology. Biomedical engineering has been a critical component of the technological advances in medicine and health care delivery that has dramatically transformed the prevention, diagnosis, and treatment of disease in the last few decades. Whether in the area of biomedical imaging, biosignal processing, medical instrumentation, biomechanics, biomaterials and implants, drug delivery, or cell and tissue engineering, these advances are continuing to accelerate.

Our newly developed undergraduate biomedical engineering program consists of an innovative, interdisciplinary curriculum that will produce critical thinkers with effective problem-solving skills. We believe a biomedical engineer with a bachelor's degree should be well grounded in the basic engineering principles found in traditional mechanical, chemical, and electrical engineering subjects. We also believe the BME graduate should possess a solid background in biology and physiology, and develop an appreciation for the complexity of living systems. By combining this background with both breadth and depth in biomedical engineering topics, our biomedical engi-

neering graduates will be prepared for work in industry or for entrance into medical school or graduate school.

MISSION

The mission of the Department of Biomedical Engineering at The City College, in conformity with the mission of the School of Engineering, is:

- I.** To educate well-rounded and conscientious biomedical engineers capable of becoming leaders in our society.
- II.** To carry out basic and applied research leading to new scientific ideas, systems, and devices in biomedical engineering.
- III.** To offer advice, service, and support to industry, government agencies, schools, community groups and professional societies.

PROGRAM EDUCATIONAL OBJECTIVES

Consistent with the mission, the following Undergraduate Program Educational Objectives are established to provide a quality education in biomedical engineering:

- A.** To ensure students have an understanding of biology and physiology along with the capability to apply advanced mathematics, science, and engineering to solve problems at the interface of engineering and the biological sciences.
- B.** To develop creative, critical thinkers who have learned effective problem solving skills that will prepare them for life-long learning.
- C.** To develop students who have the analytical abilities necessary to model and simulate chemical, electrical, mechanical, and biological systems.

- D.** To ensure students have the ability to design and conduct relevant experiments as well as to make measurements on, and analyze and interpret data from living systems.
- E.** To create graduates who are able to design a biomedical system, device, or process to meet desired goals with the ability to address problems associated with the interaction between living and non-living materials and systems.
- F.** To create graduates who function effectively, whether working on multidisciplinary teams or independently.
- G.** To develop in students the understanding of professional and ethical responsibility along with the social, economic, and ethical impact of engineering solutions on the health care system and society at large.
- H.** To foster the ability to communicate effectively to audiences of different backgrounds, including biologists, medical professionals, fellow engineers, as well as lay people.
- I.** To encourage the participation of students from groups traditionally underrepresented in the field of biomedical engineering.
- J.** To provide the necessary preparation for a successful career in the graduate's field of choice, including industry, medicine, and biomedical research.

PROGRAM OUTCOMES

Upon graduation our students are expected to have:

- a.** an ability to apply mathematical, scientific and engineering knowledge;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;

- c. an ability to design a system, component, or a process to meet desired needs;
- d. an ability to function on multi-disciplinary teams;
- e. an ability to identify, formulate, and solve real world biomedical engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues and a knowledge of emerging areas in biomedical engineering;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
- l. preparation for pursuing advanced degrees.

ADVISEMENT

Dr. Philip Payton
Administrative Director
Steinman 403A, 212-650-5283

TRANSFER CREDITS

The Biomedical Engineering Department grants transfer credits for legitimate biomedical engineering courses having engineering/science content that matches City College courses. Note that only courses with grades of C or better are accepted for transfer credits. Students with more than 30 credits cannot transfer.

ACCREDITATION

The B.E. (BME) program application for accreditation by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET) will be made at the earliest possible stage.

REQUIREMENTS FOR MAJORS

Biomedical Engineering majors must complete the following:

Math and Science Requirements

Required Courses (* Minimum grade of "C" required.)

Mathematics:

20100: Calculus I*	3
20200: Calculus II*	3
20300: Calculus III*	4
39100: Methods of Differential Equations*	3
39200: Linear Algebra and Vector Analysis for Engineers*	3

Biology:

10100: Biological Foundations I	4
22900: Cell and Molecular Biology	4
32100: Physiological Processes	3

Physics:

20700-20800: General Physics*	8
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Chemistry:

10301-10401: General Chemistry *	8
21000: Applied Chemistry for Biomedical Engineering	3

Total Math and Science Credits 46

English and Liberal Arts Requirements

Required Courses

ENGL 11000: Freshman Composition	3
ENGL 21007: Writing for Engineering	3
ENGR 30000: Social, Economic, and Cultural Impact of Biomedical Technology	3

Liberal Arts Electives

Refer to the School of Engineering section for details. 15

Total English and Liberal Arts 24

GENERAL REQUIREMENTS FOR MAJORS

Required Courses

10000: New Freshman Seminar (unless exempt)	0
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Engineering:

10100: Engineering Design I	1
10300: Analysis Tools for Engineers	2
20400: Electrical Circuits	3

Chemical Engineering:

22900: Chemical Engineering Thermodynamics I	3
34100: Transport Phenomena I	3

Mechanical Engineering:

24600: Engineering Mechanics	3
33000: Mechanics of Materials	3

Total General Engineering Credits 18

Biomedical Engineering Requirements

Required Courses

Engineering:

10100: Introduction to Biomedical Engineering	1
22000: Biomedical Engineering Tools	3
30500: Dynamical Systems and Modeling	3
31000: Experimental Methods in Biomedical Engineering	3
40500: Biomedical Transducers and Instrumentation	3
45000: Biomedical Engineering Senior Design I	3
46000: Biomedical Engineering Senior Design II	3
50100: Cell and Tissue Mechanics	3
50200: Cell and Tissue Transport	3
50300: Cell and Tissue - Biomaterial Interactions	3
50500: Image and Signal Processing in Biomedicine	3

Biomedical Engineering Electives

Select two of the following: 6

Biomedical Engineering:

50400: Cell and Tissue Engineering (3 cr.)	
59000: Biomedical Engineering Independent Study (3 cr.)	

Chemical Engineering:

51200: Pharmaceutical Applications of Chemical Engineering (3 cr.)	
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Physics:

42200: Biophysics (3 cr.)	
Any graduate BME course where prerequisites are satisfied	

Total Biomedical Engineering Credits 37

Other Technical Electives

Select one of the following*: 3-5

Biology:

40100: Physiological Transport Systems I	
46400: Introduction to Neurobiology	
48200: Molecular Biology of the Gene	
48300: Laboratory in Biotechnology	

Chemistry:

26100: Organic Chemistry I	
26200: Organic Chemistry Laboratory I	
26300: Organic Chemistry II	

Chemical Engineering:

33000: Chemical Engineering
Thermodynamics II

Computer Science:

10200: Introduction to Computing
10400: Discrete Mathematical
Structures I

Electrical Engineering:

33000: Electromagnetics

Mechanical Engineering:

32200: Computer Methods in
Engineering

Mathematics:

37500: Elements of Probability Theory
39500: Complex Variables for
Scientists and Engineers
Any course from BME Technical
Electives

* Pre-med students must take the Organic Chemistry sequence (Chem 26100, 26200, 26300) in place of the Technical Elective and one BME Elective. This will increase the pre-med total credits by 2.

Total Credits for Major: 128-130

ADDITIONAL REQUIREMENTS FOR GRADUATION

Apply for graduation during registration for the last semester. Minimum GPA of 2.00. Minimum QPA of zero. Pass CUNY Proficiency Exam (CPE). Residency Requirement: 30 credits of 30000-level or higher Biomedical Engineering courses.

Recommended Sequence of Courses**First Semester:**

Math 20100: Calculus I (3 cr.)
Chem 10301: General Chemistry I (4 cr.)
Bio 10100: Foundations of Biology I (4 cr.)
BME 10100: Introduction to BME (1 cr.)
Eng 11000: Freshman Composition (3 cr.)
One Liberal Arts course (3 cr.)

Second Semester:

Math 20200: Calculus II (3 cr.)
Chem 10401: General Chemistry II (4 cr.)
Phys 20700: General Physics I (4 cr.)
Engr 10100: Engineering Design I (1 cr.)

Eng 21007: Writing for Engineering (3 cr.)

One Liberal Arts course (3 cr.)

Third Semester:

Math 20300: Calculus III (4 cr.)
Phys 20800: General Physics II (4 cr.)
Chem 21000: Applied Chemistry for BME (3 cr.)
Engr 10300: Analysis Tools for Engineers (2 cr.)
One Liberal Arts course (3 cr.)

Fourth Semester:

Math 39100: Differential Equations (3 cr.)
ChE 22900: Chemical Engineering Thermodynamics I (3 cr.)
Engr 20400: Electrical Circuits (3 cr.)
ME 24600: Engineering Mechanics I (3 cr.)
BME 22000: BME Tools (3 cr.)
One Liberal Arts course (3 cr.)

Fifth Semester:

Math 39200: Linear Algebra/Vector Analysis (3 cr.)
ChE 34100: Transport Phenomena I (3 cr.)
BME 30500: Dynamical Systems and Modeling (3 cr.)
Bio 32100: Physiological Processes (3 cr.)
ME 33000: Mechanics of Materials (3 cr.)

Sixth Semester:

BME 50100: Cell and Tissue Mechanics (3 cr.)
BME 40500: Biomedical Transducers and Instrumentation (3 cr.)
BME 31000: Experimental Methods in BME (3 cr.)
Bio 22900: Cell and Molecular Biology (4 cr.)

Seventh Semester:

BME 50200: Cell and Tissue Transport (3 cr.)
BME 50300: Cell and Tissue Biomaterial Interactions (3 cr.)
BME 50500: Image and Signal Processing in Biomedicine (3 cr.)
BME 45000: BME Senior Design I (3 cr.)
Engr 30000: Impact of Biomedical Technology (3 cr.)

Eighth Semester:

Two BME Technical electives (6 cr.)
Technical elective (1 course) (3-5 cr.)

BME 46000: BME Senior Design II (3 cr.)

One Liberal Arts course (3 cr.)

COURSE DESCRIPTIONS**10100: Introduction to Biomedical Engineering**

An overview of the field of biomedical engineering designed to acquaint the students with its interdisciplinary nature; research areas presented by the biomedical engineering faculty. 1 HR./WK.; 1 CR.

Chem 21000: Applied Chemistry for Biomedical Engineers

Introduces students to organic chemistry and biochemistry principles relevant to the study of the human body. Topics covered include hydrocarbons, functional groups, and structure and function of biomolecules (lipids, carbohydrates, proteins, and nucleic acids), along with their interactions; and introduction to molecular genetics. Prereq.: Chem 10401 (min. C grade); engineering majors only. 3 HR./WK.; 3 CR.

22000: Biomedical Engineering Tools

Development of tools necessary in biomedical engineering, including statistics, measurement and error, experimental design, graphics and other computational tools, visualization, microscopy methods, problem-solving skills, gathering relevant information on interdisciplinary sources from online and library sources, and development of both written and oral technical presentations. Topics will be introduced via real-world biomedical engineering problems. Prereqs.: Phys 20800, Engr 21007; pre- or coreq: Engr 10300, BME 10100. 3 HR./WK.; 3 CR.

30500: Dynamical Systems and Modeling

This course addresses the development and analysis of mathematical models for time varying systems. The dynamical systems employed as examples will be of mechanical, electrical and chemical origin and will include those associated with physiological control, dynamics and vibrations, electrical circuits and chemical reactions. Topics include systems of ordinary differential equations, Laplace transforms, transfer functions, frequency response analysis, dynamics of feedback systems and controller design. Prereq.: Phys 20800, Engr 10300, Engr 20400, ME 24600 & ChE 22900; pre- or coreq.: Math 39200. 3 HR./WK.; 3 CR.

31000: Experimental Methods in Biomedical Engineering

This course focuses on the principles of experimental design, application of statistics, and interpretation of data; modular

hands-on laboratory experiments in bio-transport, biological control, signal analysis, imaging, biomechanics, biomaterials, and cell and tissue engineering. Prereq.: BME 22000, ChE 34100 & ME 33000; pre- or coreq.: BME 40500 & Bio 22900. 1 CLASS, 3 LAB HR./WK.; 3 CR.

40500: Biomedical Transducers and Instrumentation

A major task in biomedical engineering is measuring and analyzing physiological signals. This course will introduce the theoretical concepts fundamental to this task focusing on the 'front end' of biomedical instrumentation. Topics covered include biomedical sensors, analog signal processing using operational amplifiers, and analog-to-digital conversion. Applications covered include conventional methods for the measuring of biological potentials (ECG, EEG), temperature, blood pressure and flow, bone strain and chemical sensors. Prereq.: BME 30500. 3 HR./WK.; 3 CR.

45000: Biomedical Engineering Senior Design I

The first course of a two-course sequence in which a year-long group project will be undertaken to design and construct a biomedical engineering device or system. Course topics include project planning and management as well as the regulatory, ethical, and legal aspects of medical device systems. Pre- or coreq.: BME 31000 and Engr 30000. 3 HR./WK.; 3 CR.

46000: Biomedical Engineering Senior Design II

The second course of a two-course sequence in which a year-long group project will be undertaken to design and construct a biomedical engineering device or system. Course topics include project planning and management as well as the regulatory, ethical, and legal aspects of medical device systems. Prereq.: BME 45000. 3 HR./WK.; 3 CR.

50100: Cell and Tissue Mechanics

The application of mechanics to the functioning of the human body at all levels from the cellular to the tissue, organ and whole body. The applications of rigid object mechanics to ergonomics, orthopaedic and sports biomechanics are considered with analysis of the knee, hip, and spine. Introductory continuum mechanics is used to describe the models of hard tissues such as bone and dentin and soft tissues such as skin, muscle, blood vessels, articular cartilage, tendons and ligaments. Prereq.: CE 33200 or ChE 31000 or EE 33000 or ME 33000. 3 HR./WK.; 3 CR.

50200: Cell and Tissue Transport

Modeling and interpretation of transport in living tissue. Topics include momentum and mass transport in arteries, water and solute exchange in the microcirculation, active transport and exchange mechanisms in epithelia with application to the kidney, water movement in cartilage and bone, gas exchange in the lungs, and bioheat transfer. Prereq.: CE 35000 or ChE 34100 or EE 33000 or ME 35600. 3 HR./WK.; 3 CR.

50300: Cell and Tissue-Biomaterial Interactions

This course is concerned with the reaction and interaction of both inert and bioactive foreign materials placed in the living human body. Topics to be discussed include biocompatibility; characterization of non-living biomaterials; reaction of biological molecules with biomaterial surfaces; host response to implants; effects of degradation on implant materials; bioactive surfaces; resorbable implant materials; standardization and regulation of implant materials; in vitro and in vivo biomaterial testing methods; orthopaedic and other specific applications of biomaterials; and introduction to tissue engineering. Prereq.: CE 33200 or ChE 31000 or EE 30600 or ME 33000. 3 HR./WK.; 3 CR.

50400: Cell and Tissue Engineering

Applications and design of cellular and biomaterial microstructures for use in biomedical engineering applications. This course begins with an introduction to the structure, function and biosynthesis of cell surface macromolecules, followed by the discussion of current methods and applications in cell and tissue engineering. Topics include matrix molecules and their ligands, construction of biomimetic environments, biomaterials for tissue engineering, genetic approaches in cell and tissue engineering, and tissue engineering applications. Pre- or coreq.: BME 31000. 3 HR./WK.; 3 CR.

50500: Image and Signal Processing in Biomedicine

This course introduces basic medical imaging and biomedical signal processing methods. It will present medical imaging modalities such as computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET). Students will gain understanding in the basic physics of image acquisition and the algorithms required for image generation. In biomedical signal processing the emphasis is on bio-potentials such as electroencephalograms (EEG) and electrocardiograms (ECG). Basic image enhance-

ment and image analysis will be presented in the context of x-ray imaging and microscopy. The course will include linear systems, random processes, and estimation theory. Students will gain hands-on experience in image and signal processing through Matlab programming in class and in assignments. Prereq.: BME 40500 or (EE 25900 and EE 30600 and EE 33000). 3 HR./WK.; 3 CR.

59000: Biomedical Engineering Independent Study

An independent research and/or design project performed under the direction of a faculty mentor. At the conclusion of the project a written project report must be submitted to the undergraduate advisor. Prereq.: Formal (written) commitment of a faculty member submitted to the undergraduate advisor. 3 HR./WK.; 3 CR.

ENGR 30000: Social, Economic, and Cultural Impact of Biomedical Technology

This course emphasizes community health care concerns in an urban environment. It has two central themes: (a) Assessment of biomedical technology in the context of urban health needs, and (b) Social and cultural impact of biomedical technology. Prereq.: Soc 10500 or Anth 10100 or Eco 10000 or Phil 34903. 3 HR./WK.; 3 CR.

FACULTY

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Department of Chemical Engineering

Professor Irvn H. Rinard, Chair • Department Office: Steinman 322 • Tel: 212-650-7232

GENERAL INFORMATION

The City College offers the following undergraduate degree in Chemical Engineering:

B.E. (Ch.E.)

OVERVIEW

Chemical engineering is a field of broad scope, encompassing many activities of immense benefit to society. It is also a field that is currently developing rapidly in many new challenging and exciting areas such as biotechnology, electronics, materials, nanotechnology, biomedical engineering, materials discovery and development, and microreaction technology to name just a few. The pace of global competition is rapidly changing the ways in which chemical engineers must carry out their traditional tasks of process research, development, design, and plant operations.

What sets chemical engineering apart from the other engineering professions is the key role played by chemistry. Chemical engineers use chemistry to transform less desirable forms of matter into those that are more desirable. Examples are transforming natural gas into ammonia and this into fertilizer and many other products or converting a residual oil in a refinery into gasoline, kerosene, and heating oil. Many of the products that we use today such as plastics, synthetic fibers, medicines, soaps, and paints are the result of these transformations. Biochemical transformations are becoming increasingly important in the production of a wide range of useful products such as antibiotics.

Transformations by chemical or biochemical reaction are not the whole

story. Products must be purified and unwanted byproducts separated for safe disposal. So separation technology is also an important aspect of chemical engineering. And both reaction systems and separations must be combined into processes in order to carry out the overall goal of converting feed materials into desirable products. This will require additional operations such as mixing, heat transfer, and materials transfer. To do this chemical engineers must have a strong background in basic science and mathematics; a thorough mastery of the relevant engineering science such as thermodynamics, heat and mass transfer, materials science, and reaction kinetics; as well as engineering economics, process safety, and process design.

A degree in chemical engineering prepares one to pursue any number of career paths. These include process research and development, product discovery and development, plant design and operation, sales and customer support, and for those so inclined, management. Chemical engineering also prepares the graduate for many other career paths such as medicine, biomedical engineering, law, government, and environmental protection.

PROGRAM EDUCATIONAL OBJECTIVES

Consistent with the mission, the following Program Educational Objectives are established to provide a quality education in chemical engineering:

- A.** All graduates of the program will have a broad background in:
- (a) the principles and practice of chemical engineering,

- (b) the mathematics and science underlying these principles, and
- (c) the history, culture, and affairs of the world that they will encounter upon graduation;

- B.** All graduates will be prepared to enter the traditional areas of chemical engineering practice and related fields;
- C.** All graduates of the program will have the interpersonal skills required to perform their professional duties as well as be prepared to assume leadership roles at appropriate times in their careers.

PROGRAM OUTCOMES

We expect that our students at the undergraduate level will have:

- a.** an ability to apply knowledge of mathematics, science and engineering;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;
- c.** an ability to design a system, component, or a process to meet desired needs;
- d.** an ability to function on multidisciplinary teams;
- e.** an ability to identify, formulate, and solve chemical engineering problems;
- f.** an understanding of professional and ethical responsibility;
- g.** an ability to communicate effectively;
- h.** the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- i.** a recognition of the need for, and an ability to engage in, life-long learning;

j. a knowledge of contemporary issues;
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ACCREDITATION

The B.E. (Ch.E.) program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology.

REQUIREMENTS FOR MAJORS

All Chemical Engineering majors are required to take the following courses:

Math and Science Requirements

Chemistry:

10301-10401: General Chemistry*	8
26100: Organic Chemistry I	3
26200: Organic Chemistry Laboratory I	2
26300: Organic Chemistry II	3
33000: Physical Chemistry I	3
33200: Physical Chemistry II	3

Mathematics:

20102: Calculus I*	3
20202: Calculus II*	3
20300: Calculus III*	4
39100: Methods of Differential Equations*	3
39200: Linear Algebra	3

Physics:

20700-20800: General Physics*	8
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*Minimum grade of "C" required.

Total Math and Science credits 54

English and Liberal Arts Requirements

Refer to the School of Engineering section for details.

Total English and Liberal Arts credits 24

Engineering Requirements

10000: New Freshman Seminar	0
Engineering:	
10100: Engineering Design I*	1
10300: Analysis Tools for Engineers	2
Chemical Engineering:	
22800: Introduction to Chemical Engineering Principles and Practice	4
22900: Chemical Engineering Thermodynamics I	3

31000: Introduction to Materials Science	3
33000: Chemical Engineering Thermodynamics II	3
33200: Chemical Reaction Engineering	3
34100: Transport Phenomena I	3
34200: Transport Phenomena II	3
34500: Separation Operations	3
34600: Transport Operations	3
34900: Probability, Statistics, and Design of Experiments	2
36000: Chemical Engineering Science Laboratory	2
43200: Chemical Reactions	3
46000: Unit Operations Laboratory	2
46200: Separation Operations and Control Lab	2
49500: Chemical Engineering Design Project	3
47900: Process and Control	3
49600: Chemical Engineering Design Project	3
Total Required Engineering Credits	51

Approved Technical Electives

Except for students in the Biomedical Engineering Concentration, no more than one Biomedical Engineering course (the group denoted by ***) can be selected:

Chemical Engineering:

45200: Powder Science and Technology (3 cr.)
46700: Polymer Science and Engineering (3 cr.)
49800: Honors Research in Chemical Engineering I (3 cr.)
49900: Honors Research in Chemical Engineering II (3 cr.)
51200: Pharmaceutical Applications of Chemical Engineering (3 cr.)
54800: Computational Methods in Chemical Engineering (3 cr.)
57700: Advanced Materials Engineering (3 cr.)
58000: Bioprocess Engineering (3 cr.)
59000: Nanotechnology (3 cr.)
59802: Fluidization (3 cr.)

Civil Engineering:

38000: Environmental Engineering (3 cr.)
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Mechanical Engineering

53600: Energy Conversion (3 cr.)

Engineering:

27600: Engineering Economics (3 cr.)

Biology:

32100: Introduction to Human Physiology and Biophysics (4 cr.)

Biomedical Engineering:***

50100: Cell and Tissue Mechanics (3 cr.)
 50200: Cell and Tissue Transport (3 cr.)
 50300: Cell and Tissue: Biomaterial Interactions (3 cr.)
 Other technical electives with approval of the department.

Total Elective Credits 9

*New transfer students who have successfully completed Calculus II (Math 20200 or 20202) should not take Engr 10100 & 10300. They are required to complete an additional ChE Technical Elective course.

**Departmental approval required.

***Students in the Biomedical Engineering Option must take 16 Technical Elective credits (including Bio 32100, ME 50100, 50200 and 50300) for a total of 131 degree credits.

Total Credits for Major 129–130

Additional Requirements for Graduation

Refer to the School of Engineering section for details.

RECOMMENDED SEQUENCE OF COURSES

First Semester*

Math 20102: Calculus I (3 cr.)
 Chem 10301: General Chemistry I (4 cr.)
 Engr 10100: Engineering Design I (1 cr.)
 Eng 11000: Freshman Composition (3 cr.)
 Two Liberal Arts electives (6 cr.)
17 Credits

*New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.

Second Semester

Math 20202: Analytical Geometry and Calculus II (3 cr.)
 Phys 20700: General Physics I (4 cr.)
 Chem 10401: General Chemistry II (4 cr.)

Engr 10300: Analysis Tools for Engineers (2 cr.)
One Liberal Arts elective (3 cr.)

16 Credits**Third Semester**

Math 20300: Analytical Geometry and Calculus III (4 cr.)
Phys 20800: General Physics (4 cr.)
Chem 26100: Organic Chemistry I (3 cr.)
ChE 22800: Introduction to Chemical Engineering Principles and Practice (4 cr.)
One Liberal Arts elective (3 cr.)

18 Credits**Fourth Semester**

Math 39100: Methods of Differential Equations (3 cr.)
Chem 26200: Organic Chemistry Lab I (2 cr.)
Chem 26300: Organic Chemistry II (3 cr.)
Chem 33000: Physical Chemistry I (3 cr.)
ChE 22900: Chemical Engineering Thermodynamics (3 cr.)
One Liberal Arts elective (3 cr.)

17 Credits**Fifth Semester**

Math 39200: Linear Algebra and Vector Analysis (3 cr.)
Chem 33200: Physical Chemistry II (3 cr.)
ChE 34100: Transport Phenomena I (3 cr.)
ChE 33000: Chemical Engineering Thermodynamics II (3 cr.)
ChE 34900: Probability, Statistics, and Design of Experiments (2 cr.)
Engl 21007: Writing for Engineers (3 cr.)

17 Credits**Sixth Semester**

ChE 31000: Introduction to Materials Science (3 cr.)
ChE 36000: Chemical Engineering Science Lab (2 cr.)
ChE 34200: Transport Phenomena II (3 cr.)
ChE 34500: Separation Operations (3 cr.)
ChE 34600: Transport Operations (3 cr.)

14 Credits**Seventh Semester**

ChE 43200: Chemical Reactions (3 cr.)
ChE 46000: Transport Operations Lab (2 cr.)
ChE 47900: Process and Control (3 cr.)
ChE 49500: Techniques of Chemical Engineering Design (3 cr.)
One Technical elective (3 cr.)
One Liberal Arts course (3 cr.)

17 Credits**Eighth Semester**

ChE 46200: Separation Operations and Control Lab (2 cr.)
ChE 49600: Chemical Engineering Design Project (3 cr.)
Three Technical electives (9 cr.)

14 Credits**ADVISEMENT**

All full-time faculty serve as undergraduate advisors.

COURSE DESCRIPTIONS**22800: Introduction to Chemical Engineering Principles and Practices**

Introduction to the techniques of chemical engineering. Basic calculations. Conservation of mass and the use of material balances. Major equipment types: functionality and linear models. Linear material balances for recycle processes. First law of thermodynamics and the use of energy balances. Reaction stoichiometry and energetics. Prereq.: Chem 10400; pre- or coreq.: Math 20300. 5 HR./WK.; 4 CR.

22900: Chemical Engineering Thermodynamics I

Basic concepts and definitions. Energy and the first law. Entropy and the second law. Pure component thermodynamics and the fundamental property relation. Thermodynamics of processes. Availability. Physical Equilibrium. Introduction to microscopic thermodynamics. The third law. Prereq.: ChE 10400, Phys 20700, Math 39100. 3 HR./WK.; 3 CR.

31000: Introduction to Materials Science

Basic concepts in the behavior of solid materials. Atomic bonding; crystal structure; crystal defects; alloys; insulators; metals. Mechanisms of corrosion; selection of materials of construction. Prereq.: ChE 22900; pre- or coreq.: Chem 34100. 3 HR./WK.; 3 CR.

33000: Chemical Engineering**Thermodynamics II**

Partial molar quantities. Thermodynamics of solutions. Activities and fugacities. Modeling of thermodynamic parameters. Chemical reaction equilibrium. The free energy minimization procedure for complex chemical reactions. Prereq.: ChE 22900, Math 39100. 3 HR./WK.; 3 CR.

34100: Transport Phenomena I

Introduction to the continuum theories of the transport of momentum, energy, and matter. Equations of continuity, motion, and energy for steady and unsteady state. Fluid mechanics, Navier-Stokes equations, boundary-layer theory, integral methods. Turbulent flow. Prereq.: ChE 22900, Math 39100 (min. C grade). 3 HR./WK.; 3 CR.

34200: Transport Phenomena II

Applications of the equations of change to heat and mass transport. Analytical and numerical methods in the analysis of heat conduction. Diffusion in binary and multi-component mixtures. Heat and mass transfer in laminar and turbulent flow. Radiant heat transfer. Interphase transfer. Prereq.: ChE 34100, Math 39200. 3 HR./WK.; 3 CR.

34500: Unit Operations I

Principles of single-stage and multi-stage contacting equipment. Phase equilibrium and phase diagrams. Analytical and graphical solutions to steady and unsteady state problems applied to liquid extraction, distillation, gas absorption, stripping, and other stage operations for binary and multicomponent systems. Prereq.: 22800; pre- or coreq.: ChE 33000; ChE 34200. 3 HR./WK.; 3 CR.

34600: Unit Operations II

Flow through pipes, packed and fluidized beds, and filtration equipment. Design of flow systems with non-Newtonian fluids and compressible flows. Design of continuous contacting equipment for heat and mass transfer; heat exchangers, packed towers. Prereq.: ChE 34100; pre- or coreq.: ChE 34200. 3 HR./WK.; 3 CR.

34900: Probability, Statistics, and Design of Experiments

The concept of probability. Probability distributions. Sampling. Testing of hypotheses. Linear regression. Analysis of variance. Design of experiments. Application to process modeling, reliability theory, and interpretation of experimental data. Prereq.: Phys 20800, coreq.: Math 39200. 2 HR./WK.; 2 CR.

36000: Chemical Engineering Science Laboratory

Quantitative laboratory studies and measurements of a heat of combustion; gas,

liquid and solid physical and transport properties and vapor-liquid equilibrium. The development of technical report writing skills, including the presentation and interpretation of experimental data, are stressed. Prereq.: ChE 33000, ChE 43900, Engl 21007; coreq.: ChE 34600. 5 HR./WK.; 2 CR.

43200: Chemical Reaction Engineering
Reaction kinetics, order of reaction, theory of absolute reaction rates. Reactor analysis and design, homogeneous batch, flow, and semibatch reactors. Catalysis, reactions of heterogeneous systems, heat- and mass-transfer effects. Examples from chemical and petrochemical industries. Prereq.: ChE 34200, ChE 33000. 3 HR./WK.; 3 CR.

45200: Powder Science and Technology
Characterization of particles and particle assemblies; packing of granular solids; powder mechanics and the design of hoppers; inter-particle forces and tribology in particulate systems. Bulk powder processing: mixing, separation, agglomeration, comminution, conveying and storing. Prereq.: ChE 34200, ChE 34600. 3 HR./WK.; 3 CR.

46000: Unit Operations Laboratory I
Quantitative laboratory studies of fluid flow, mixing, filtration, heat transfer. Steady and unsteady state studies using bench scale and plant equipment. Required reports include interpretation of experimental data and analysis of errors. Prereq.: ChE 34600; ChE 36000. 5 LAB HR./WK.; 2 CR.

46200: Unit Operations and Process Control Laboratory II
A continuation of ChE 46000. Diffusional processes; absorption, distillation, drying; advanced heat transfer; process control. Reports emphasize proper presentation and interpretation of laboratory data. Prereq.: ChE 34500, ChE 34600, ChE 46000, ChE 47900. 5 LAB HR./WK.; 2 CR.

46700: Polymer Science and Engineering
The chemistry and physics of polymeric materials. The kinetics and control of polymerization reactions. Analysis of the mechanical and flow behavior of polymeric solids and melts. Thermodynamics of polymer solutions. Prereq.: ChE 26100, ChE 33300. 3 HR./WK.; 3 CR.

47900: Chemical Process Dynamics and Control
Process dynamics and modeling. Measurement instrumentation, final control elements, and controllers.

Linearization, Laplace transforms, and transfer functions. Frequency response. Stability analysis. Design of single-input, single-output controllers. Dynamic simulation. Interaction and multivariable control. Plant-wide control. Prereq.: ChE 34500, ChE 34600; pre- or coreq.: ChE 43200. 3 HR./WK.; 3 CR.

49500: Techniques of Chemical Engineering Design
Cost estimation and profitability analysis. Douglas' hierarchical decision approach to conceptual design. Economic evaluation of process alternatives. Flowsheet simulation using ASPEN. Process operability analysis of the impact of control strategy, hazard and safety considerations, environmental constraints, and startup and operations on plant design. Prereq.: ChE 22800, ChE 33300, ChE 34500, ChE 34600; pre- or coreq.: ChE 43200, ChE 47900. 6 DESIGN HR./WK.; 3 CR.

49600: Chemical Engineering Design Project
Design of a chemical plant as the capstone design project. Students select process routes for the manufacture of a designated product and carry the design from the conceptual stage through a developmental design and an operability analysis. CAD. Professional ethics. Prereq.: ChE 43200, ChE 47900, ChE 49500. 6 DESIGN HR./WK.; 3 CR.

49803: Honors Research in Chemical Engineering I
Topics chosen for their particular or current interest to undergraduate students who wish to prepare for graduate studies. Each student works with a single professor. Prereq.: approval of the department. 3 CR.

49903: Honors Research in Chemical Engineering II
A continuation of ChE 49802-49803. Prereq.: Approval of the department. 3 CR.

51200: Pharmaceutical Applications of Chemical Engineering
Topics in controlled drug delivery: design of devices, commercial successes and failures, mechanisms of release devices as well as relevant background in mass transfer, structure and design of materials, electrical devices, and pharmacokinetics are also addressed. Prereq.: at least one junior level course in one of the engineering disciplines. 3 HR./WK.; 3 CR.

54800: Computational Methods in Chemical Engineering
Concept of error; roots of implicit equations; interpolation of data; approximation of functions; numerical quadrature:

Newton-Cotes, Gaussian extrapolation methods; numerical solution of ODE's: Lipschitz condition. Euler, Multistep, Runge-Kutta methods; numerical solution of simultaneous linear equations; calculation of eigenvalues. Issues of convergence, stability, and error. Prereq.: Math 39200, ChE 33000, ChE 34200, ChE 43000. 3 CLASS, 1 REC. HR./WK.; 3 CR.

57700: Advanced Materials Engineering
The "structure-property-processing" interrelationship. Review of the crystal structures of metals, ceramics, semiconductors and polymers. Thermodynamics of materials. Rate processes in solids. Materials properties: thermal, electromagnetic, optical and dielectric. Material synthesis; basis of nanotechnology, semiconductor processing, and polymer synthesis. Prereq.: ChE 31000 or Chem 33200 or Phys 32100 and/or permission of instructor. 3 HR./WK.; 3 CR.

58000: Bioprocess Engineering
Introduction to the production of chemicals by microorganisms. Basics of biochemistry and cell structure with emphasis on prokaryotic microbes. Enzymes and their biotechnological uses. Introduction to recombinant DNA technology and genomics. Operation, design and scale-up of bioreactors. Selection, design and scale-up of separation and purification equipment. Safety considerations. Prereq.: ChE 34500, ChE 34600, Chem 26100; Pre- or coreq.: ChE 49500. 3 HR./WK.; 3 CR.

59000: Nanotechnology
Introduction to nanotechnology and its applications in the development and synthesis of soft materials. Prereq.: ChE 33000, ChE 34600, Chem 33200. 3 HR./WK.; 3 CR.

59802: Fluidization
The theory and practice of fluidization; general behavior of fluidized beds both static and flowing, mass transfer and heat transfer, modeling of chemical reactions in fluidized beds. Prereq.: ChE 34100, ChE 34200, ChE 34600. 3 HR./WK.; 3 CR.

FACULTY**Alexander Couzis, Professor**

B.S. (Ch.E.), National Technical Univ. (Greece); M.S., (Ch.E.) Univ. of Michigan, Ph.D (Ch.E.)

Morton M. Denn, Albert Einstein**Professor**

B.S.E. (Ch.E.), Princeton Univ.; Ph.D., Univ. of Minnesota

M. Lane Gilchrist, Jr., Assistant**Professor**

B.Ch.E., Louisiana State Univ.; Ph.D., Univ. Of California (Davis)

Leslie L. Isaacs, Professor

B.Sc.(Ch.E.), Columbia Univ.; Ph.D., M.I.T.

Ilona Kretzschmar, Assistant Professor

Diploma (Chemistry), Technical Univ. of Berlin

Jae W. Lee, Assistant Professor

B.S. (Ch.E.), Seoul National Univ.; Ph.D., Carnegie Mellon Univ.

Charles Maldarelli, Professor

B.S. (Ch.E.), Columbia Univ., M.S.(Ch.E.), D.Eng.Sc.(Ch.E.)

Jeffrey Morris, Associate Professor

B.A., Georgia Institute of Technology; M.S., California Institute of Technology

Irven Rinard, Professor and Chair

B.Ch.E., Univ. of Delaware; M.Sc., M.I.T., D.Sc. (Ch.E.)

David S. Rumschitski, Herbert G.**Kayser Professor**

B.S. (Math/Ch.E.), Cooper Union; M.S. (Ch.E.), Univ. of California (Berkeley), Ph.D. (Ch.E.)

Reuel Shinnar, Distinguished Professor

B.Sc. (Ch.E.), Technion, Israel, Dipl. Eng., M.Sc. (Ch.E.); D.Eng.Sc., Columbia Univ.

Carol A. Steiner, Professor

B.S. (Chem.), M.I.T.; M.S. (Chem./Biochem. Engrg.), Univ. of Pennsylvania, Ph.D. (Ch.E.)

Gabriel Tardos, Professor

Dipl. Eng., Polytech. Bucharest, Roumania; M.Sc. (M.E.), Technion, Israel, D.Sc.

PROFESSORS EMERITI

Andreas Acrivos

Robert A. Graff

Morris Kolodney

Harvey L. List

Robert Pfeffer

Herbert Weinstein

Department of Civil Engineering

Professor John Fillos, Chair • Department Office: Steinman 119 • Tel: 212-650-8000

GENERAL INFORMATION

The City College offers the following undergraduate degree in Civil Engineering:

B.E. (C.E.)

PROGRAMS AND OBJECTIVES

Civil engineers design, build, and manage the infrastructure of civilization, which includes buildings, bridges, highways, water supply systems, and other public works. These services are the cornerstone of the discipline, although no longer the limiting scope.

A civil engineering background provides a broad-based education that can be applied to many areas of interest within both the private and public sectors. In addition to the traditional engineering practice involving the design and construction of buildings and bridges using conventional materials, experience in new construction technology has led many civil engineers to obtain employment in areas as varied as the aerospace, computer and biomedical fields. No longer a matter of simply building roadways, transportation engineering now develops systems to move people and products with previously unforeseen efficiency using advanced computer and monitoring technology. Environmental engineering, once limited to the construction and maintenance of water quality and waste management systems, is now an integral part of world-wide efforts to preserve and restore the health and welfare of our air, land and water resources.

Civil engineers start their professional employment in any number of posi-

tions at organizations ranging from small consulting firms to large contractors and government agencies. It is not uncommon for the civil engineer to begin at the analysis and design level, and achieve in time managerial positions overseeing projects with enormous regional and national economic impact. Alternatively, the civil engineering curriculum enables graduates to pursue careers in other fields such as medicine, law and business administration.

To pursue any of these objectives, the curriculum offers three options: Environmental/Water Resources; Structural and Construction Engineering; and Transportation Engineering.

MISSION

The mission of the Department of Civil Engineering at The City College of New York, inspired by a tradition of access and excellence, is to educate and prepare students to be leaders in the civil engineering profession as practicing engineers, researchers, or educators. The department will continue its tradition of educating students of diverse backgrounds, including traditionally underrepresented minorities and women. The department also commits itself to maintaining a diverse faculty of scholastic excellence and dedication to the highest quality education.

PROGRAM EDUCATIONAL OBJECTIVES

Consistent with the mission, the following Program Educational Objectives are established to provide a quality

education in civil engineering, balancing practice and theory:

- A.** Provide the technical, scientific, and analytical skills necessary to succeed in the civil engineering profession;
- B.** Provide the critical thinking and effective communication skills necessary to succeed professionally;
- C.** Promote understanding of ethical, economic, social, and environmental issues;
- D.** Prepare and encourage students to pursue advanced degrees and life-long learning;
- E.** Develop instructional and research collaborations with stakeholders;
- F.** Conduct research in areas of local, national, and global importance;
- G.** Serve the community and the civil engineering profession;
- H.** Improve access for an increasingly diverse student body.

PROGRAM OUTCOMES

The Program Educational Objectives listed above are the basis for the following Program Outcomes expected of all graduates receiving the B.E. (C.E.) degree:

- a.** an ability to apply knowledge of mathematics, science and engineering;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;
- c.** an ability to design a system, component, or a process to meet desired needs;
- d.** an ability to function on multi-disciplinary teams;
- e.** an ability to identify, formulate, and solve real world civil engineering problems;
- f.** an understanding of professional and ethical responsibility;

- g. an ability to communicate effectively;
 h. the broad education necessary to understand the impact of engineering solutions in a global and societal context;
 i. a recognition of the need for, and an ability to engage in life-long learning;
 j. a knowledge of contemporary issues;
 k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ACCREDITATION

The B.E. (C.E.) program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

GENERAL REQUIREMENTS

Prerequisite to any Civil Engineering course is a passing grade in CUNY/ACT Basic Skills tests in Reading and Writing and CUNY Skills Assessment Test (SKAT) in Mathematics. Students wishing to take Engineering Electives other than those listed below must obtain permission in writing from the department advisor and the Associate Dean for Undergraduate Affairs.

REQUIREMENTS FOR MAJORS

All Civil Engineering majors must complete the following:

Math and Science Requirements

Chemistry:

10301-10401: General Chemistry* 8

Computer Science:

10200: Introduction to Computing 3

Mathematics:

20100: Calculus I* 3

20200: Calculus II* 3

20300: Calculus III* 4

39100: Methods of Differential Equations* 3

39200: Linear Algebra and Vector Analysis for Engineers 3

Physics:

20700-20800: General Physics* 8

Total Math and Science Credits 35

*Minimum grade of "C" required.

English and Liberal Arts (General Education) Requirements

Refer to the School of Engineering section for details.

Total English and Liberal Arts (General Education) Credits 24

Engineering Requirements

10000: New Freshman Seminar 0

Engineering:

10100: Engineering Design I* 1

20400: Electrical Circuits 3

23000: Thermodynamics 3

Civil Engineering:

20900: Structural and Site Plans 3

23100: Introduction to Structural Mechanics** 3

26400: Civil Engineering Data Analysis 3

31600: Civil Engineering Decision and Systems Analysis 3

32600: Transportation Planning 3

32700: Transportation Systems Engineering 3

33200: Mechanics of Deformable Bodies 4

33500: Computational Methods in CE 3

34000: Structural Analysis 3

34500: Soil Mechanics 3

35000: Fluid Mechanics** 3

36500: Hydrology and Hydraulic Engineering 3

37200: Environmental Impact Assessment 3

40100: Review of Engineering Fundamentals 1

40500: Civil Engineering Management 3

43500: Dynamics of Civil Engineering Systems 3

44100: Reinforced Concrete 3

47400: Environmental Engineering 3

50900: Senior Design Project 3

Total Required Engineering Credits 63

*New Transfer students who have successfully completed Calculus II (Math 20200) should not take Engr 10100. They are required to complete an additional CE course.

**Minimum grade of "C" required.

Environmental/Water Resources

Specialization Core 6

Civil Engineering:

45100: Environmental Water Resources (3 cr.)

48200: Environmental Engineering II (3 cr.)

Specialization Electives 6

Civil Engineering:

51003: Independent Study* (3 cr.)

57100: Water Quality Analysis (3 cr.)

H6200: Engineering Hydrology (3 cr.)

H7700: Biological Systems in

Environmental Engineering (3 cr.)

Biology:

35000: Microbiology (4 cr.)

Chemistry:

26100: Organic Chemistry I (3 cr.)

Structural and Construction Engineering

Specialization Core 6

Civil Engineering:

44000: Finite Element Analysis of

Structures (3 cr.)

44200: Structural Design (3 cr.)

Specialization Electives 6

Civil Engineering:

51003: Independent Study* (3 cr.)

53000: Advanced Strength of Materials

(3 cr.)

55000: Advanced Reinforced Concrete

(3 cr.)

59000: Foundation Engineering (3 cr.)

G2300: Advanced Steel Design (3 cr.)

Mechanical Engineering:

46100: Engineering Materials (3 cr.)

Transportation Engineering

Specialization Core 6

Civil Engineering:

52000: Traffic Engineering (3 cr.)

54000: Highway Engineering (3 cr.)

Specialization Design Electives 6

Civil Engineering:

50500: Construction Project

Management (3 cr.)

51003: Independent Study* (3 cr.)

52500: Geometric Design of Facilities

(3 cr.)

52600: Rail System Design (3 cr.)

54100: Highway and Airport

Construction (3 cr.)

59000: Foundation Engineering (3 cr.)

54500: Urban Transportation (3 cr.)

**Departmental approval required.*

Total Credits for Major 134

Additional Requirements for Graduation

Refer to the School of Engineering section for details.

RECOMMENDED SEQUENCE OF COURSES

First Semester*

Math 20100: Calculus I (3 cr.)
Chem 10301: General Chemistry I (4 cr.)
Engr 10100: Engineering Design I (1 cr.)
Eng 11000: Freshman Composition (3 cr.)
Two Liberal Arts courses (6 cr.)

17 Credits

**New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.*

Second Semester

Math 20202: Calculus II (3 cr.)
Phys 20700: General Physics I (4 cr.)
Chem 10401: General Chemistry II (4 cr.)
CSc 10200: Introduction to Computing (3 cr.)
Engl 21007: Writing for Engineering (3 cr.)

17 Credits

Third Semester

Math 20300: Calculus III (4 cr.)
CE 23100: Introduction to Structural Mechanics (3 cr.)
CE 26400: Civil Engineering Data Analysis (3 cr.)
Phys 20800: General Physics II (4 cr.)
CE 20900: Structural and Site Plans (3 cr.)

17 credits

Fourth Semester

Math 39100: Methods of Differential Equations (3 cr.)
CE 33200: Mechanics of Deformable Bodies (4 cr.)
CE 35000: Fluid Mechanics (3 cr.)
CE 37200: Environmental Impact Assessment (3 cr.)
Liberal Arts Elective (3 cr.)

16 Credits

Fifth Semester

Math 39200: Linear Algebra and Vector Analysis for Engineers (3 cr.)
CE 33500: Computational Methods in CE (3 cr.)
CE 34000: Structural Analysis (3 cr.)
CE 36500: Hydrology and Hydraulic Engineering (3 cr.)
CE 32600: Transportation Planning (3 cr.)
Liberal Arts course (3 cr.)

18 Credits

Sixth Semester

CE 31600: Civil Engineering Decision and Systems Analysis (3 cr.)
CE 34500: Soil Mechanics (3 cr.)
CE 32700: Transportation Systems Engineering (3 cr.)
CE 44100: Reinforced Concrete (3 cr.)
Engr 23000: Thermodynamics (3 cr.)
Liberal Arts course (3 cr.)

18 Credits

Seventh Semester

CE 40500: Civil Engineering Management (3 cr.)
CE 40100: Review of Engineering Fundamentals (1 cr.)
CE 43500: Dynamics of Civil Engineering Systems (3 cr.)
CE 47400: Environmental Engineering (3 cr.)
Two Specialization Elective courses (6 cr.)

16 Credits

Eighth Semester

CE 50900: Senior Design Project (3 cr.)
Engr 20400: Electrical Circuits (3 cr.)
Two Specialization Elective courses (6 cr.)
Liberal Arts course (3 cr.)

15 Credits

ADVISEMENT

All full-time faculty serve as undergraduate advisors. In particular the following faculty serve as program advisors and transfer credit evaluators:

Professor V. Diyamandoglu

Environmental/Water Resources

Professor M. Ghosn

Structural and Construction Engineering

Professor C. McKnight

Transportation Engineering

COURSE DESCRIPTIONS

20900: Structural and Site Plans

Graphical methods of conveying ideas and information related to civil engineering projects. Functional planning. Structural plans and details in steel and concrete. Topographic mapping. Earthwork projects. Prereq.: CSc 10200 and passing grades in all three CUNY/ACT; pre- or coreq.: Math 20300 (min. C grade). 4 HR./WK.; 3 CR.

23100: Introduction to Structural Mechanics

Laws of motion and equilibrium. Elements of vector algebra. Equilibrium of rigid bodies. Constraints, and reactions. Equilibrium of machines and hinged frames. Internal forces in trusses and beams. Shear and bending moment diagrams. Analysis of cable systems. Friction. Centroid and centers of gravity. Moments of inertia. Work and virtual work. Stability of equilibrium. Prereq.: Physics 20700 (min. C grade), CSc 10200 and passing grades in all three CUNY/ACT; pre- or coreq.: Math 20200 (or 20202) (min. C grade). 3 HR./WK.; 3 CR.

26400: Civil Engineering Data Analysis

Role of statistics and probability in civil engineering. Measurability and variability. Data collection. Descriptive analysis. Presentation of data in the context of civil engineering. Numerical descriptive statistics. Probability distributions and their application to civil engineering. Introduction to inferential statistics. Applications of civil engineering quality control. Linear correlation and regression analysis. Prereq.: CSc 10200 and passing grades in all three CUNY/ACT; pre- or coreq.: Math 20300 (min C grade). 2 CLASS, 3 LAB HR./WK.; 3 CR.

31600: Civil Engineering Decision and Systems Analysis

Civil Engineering systems analysis. Modeling and optimization of large scale CE systems, including structural, hydraulic, environmental and transportation systems, and construction projects. Economic evaluation of engineering projects. Decisions under uncertainty. Design as multi-dimensional resource allocation. Scheduling models. Applications to management and planning. Computer applications. Prereqs: CE 26400, 33500, Math 39200. 3 HR./WK.; 3 CR.

32600 Transportation Planning

Introduction to transportation planning concepts and methods. Travel demand forecasting. Transportation economics. Quantitative techniques in transportation planning: discrete choice models, regression

methods and optimization techniques. Societal impacts including environmental, land use, safety and quality of life issues. Project evaluation. Prereq: CE 26400; Pre- or co-req: CE 33500. 3 HR./WK.; 3 CR.

32700 Transportation Systems Engineering

Principles and practice of transportation engineering. Introduction to traffic engineering. Design, constructibility and maintenance needs of highways, streets, rails, airports, transit, waterways and inter-modal facilities. Introduction to latest technologies in transportation systems. Pre-req: CE 26400; Pre- or co-req: CE 34500. 3 HR./WK.; 3 CR.

33200: Mechanics of Deformable Bodies

Stresses and strains in elastic and inelastic materials subjected to axial, torsional, and flexural loads and combinations of loads for statically determinate and indeterminate configurations. Deformations and deflections due to loads and temperature. Combined stresses. Mohr circles and principal stresses. Introduction to energy methods. Castigliano's theorem. Stability of columns and critical loads. Testing of engineering materials. Stress-strain characteristics, including creep, shrinkage and hysteresis effects. Effects of temperature and impact loading on material properties. Prereq.: CE 23100 (min. C grade); pre- or coreq.: CE 26400, Math 39100 (min. C grade). 3 CLASS, 2 LAB HR./WK.; 4 CR.

33500: Computational Methods in Civil Engineering

Algorithmic formulation of the solution to civil engineering problems. Flowcharts. Solutions to algebraic and differential equations common to civil engineering. Matrix problems. Differentiation and integration. Optimization problems. Students will primarily use microcomputers and a programming language, spreadsheets and "macros" and symbolic calculations software. Prereq.: CSc 10200, CE 26400, Math 39100 (min. C grade); pre- or coreq.: CE 33200, Math 39200. 2 CLASS, 3 LAB HR./WK.; 3 CR.

34000: Structural Analysis

Loading systems. Structural determinacy, indeterminacy and stability. Analysis of two and three dimensional trusses and frames. Influence lines. Structural deflections. Methods of solving statically indeterminate structures. Introduction to structural safety and redundancy. Computer applications. Prereq.: CE 33200; pre- or coreq.: CE 33500, Math 39200. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

34500: Soil Mechanics

Introduction to geotechnical engineering. Index properties and classification of soils. Compaction. Mohr circles and failure theories of soils. Permeability, seepage and effective stresses. Consolidation. Drained and undrained shear strength. Stresses due to surface loads. Bearing capacity of footings. Lateral earth pressure. Introduction to slope stability. Testing of soils. Prereq.: CE 26400, CE 33200, CE 35000 (min. C grade). 2 CLASS, 3 LAB HR./WK.; 3 CR.

35000: Fluid Mechanics

Study of behavior of viscous and non-viscous fluids at rest and in motion through development and application of the principles of fluid statics, continuity, energy, momentum, similitude, and dimensional analysis. Applications include flow in open and closed conduits, the boundary layer, dynamics of drag and measurement of velocity and discharge. Prereq.: CE 23100 (min. C grade), CSc 10200; pre- or coreq.: Math 39100 (min. C grade). 3 HR./WK.; 3 CR.

36500: Hydrology and Hydraulic Engineering

Conservation of mass, energy, and momentum in hydraulic systems. Pipe networks and reservoir systems. Pumps and turbines. Uniform and non-uniform flow principles. Hydraulic jump. Introduction to hydrology, hydrograph, peak discharges, and runoff computation and design. Computer applications in hydraulics and hydrology. 2 CLASS, 3 LAB HR./WK.; 3 CR.

37200 Environmental Impact Assessment

Human and environmental impact assessment of engineering projects. Structure of the natural environment: atmosphere, soil, surface and ground water. Environmental pollutants: air, noise, water, solid waste. Effects of pollutants on humans and ecology. Federal regulations. Transport and transformation of pollutants in the environment. Prereq: CE 26400, Chem 10401 (minimum grade of C), Pre- or coreq: CE 35000. 3 HR./WK.; 3 CR.

40100: Review of Engineering Fundamentals

Review of core requirements including: engineering math, chemistry, computational methods, economics and ethics. Review of civil engineering fundamentals including statics, dynamics, strength of materials and fluid mechanics. General engineering

fundamentals including: Material science, thermodynamics and electrical circuits. Testing of student competence in all these topics. The course will be offered on a Pass/Fail basis. 3 HR./WK.; 1 CR.

40500: Civil Engineering Management

Introduction to civil engineering management. Development of a project team for effective delivery; project delivery roles. Roles, rights and obligations of civil engineers. Ethical and professional responsibilities of civil engineers. Project life cycle analysis Project costs and financing. Project administration; change orders, claims and dispute resolution. Group project. Prereqs: CE 34000, 31600. 3 HR./WK.; 3 CR.

43500: Dynamics of Civil Engineering Systems

Kinematics and kinetics of particles. Work-energy and impulse momentum principles. Systems of particles. Kinematics of rigid bodies. Plane motion of rigid bodies. Introduction to vibration of structures: Free and forced vibration, undamped and damped motion. Response to harmonic and arbitrary loading. Earthquake response spectra. Equivalent lateral load analysis and design. Prereq.: CE 33200, CE 33500, Math 39200. 3 HR./WK.; 3 CR.

44000: Finite Element Analysis of Structures

Review of basic concepts of structural analysis. Energy methods. Stiffness & flexibility methods. Fundamentals of Finite Element Method. Uniaxial and beam elements. Analysis of trusses and frames. Plane stress and plane strain elements. Computer applications. Prereq.: CE 33500, CE 34000, Math 39200. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

44100: Reinforced Concrete

Principles of reinforced concrete design. Proportioning concrete mixes. Safety factors as influenced by uncertainties in the design and construction processes and as they relate to public safety. Design of singly and doubly reinforced beams, T-beams, and one-way slabs. Cracking, deflection and serviceability criteria. Design of columns subjected to combined axial load and bending. Prereq.: CE 26400, CE 34000. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

44200: Structural Design

Analysis and design of beams, girders, tension and compression members, and other components of structural frames.

Rational basis of safety factors and specifications and their public safety ramifications. Load and Resistance Factor Design. Prereq.: CE 26400, CE 34000. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

45100: Environmental Water Resources

Water and water pollution in the natural world. The hydrologic cycle. Atmospheric, surface and subsurface water. Hydrographs, unit hydrographs and flow routing. Mechanisms of contaminant transport. Sources and remediation of water pollution. Pollution in surface and groundwater. Design problems. Prereq.: CE 35000 (min. C grade), CE 36500. 3 HR./WK.; 3 CR.

47400 Environmental Engineering

Physical, chemical and microbiological characterization of water, wastewater and air quality. Remediation objectives and regulatory constraints. Conventional unit operations and processes for potable water, domestic wastewater and air quality control. Handling of process sidestreams. Prereq: CE 36500 and CE 37200. 2 LECT. HRS, 3 LAB HR./WK.; 3 CR.

48200: Environmental Engineering II

Determination of design parameters and preliminary design of conventional water and wastewater treatment operations and processes using bench-scale experiments and commercially available computer software. The topics include aeration, sedimentation (flocculant and hindered), disinfection chemistry and kinetics, activated carbon adsorption for removal of soluble organics, precipitation and ion-exchange for hardness removal of domestic wastewaters for carbon removal. Prereq.: CE 47400. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

50500: Construction Project Management

Overview of the project management cycle; anatomy of a project from briefing and conception to commissioning and operations; phase out. Project funding and cash flow. Construction planning, project scheduling and site control. The construction management process; interactive roles of promoter, engineer/architect and builder/contractor. Computer applications using Primavera Project Planning software. Prereq.: CE 33500; pre- or coreq.: CE 39100. 3 HR./WK.; 3 CR.

50900: Senior Design Project

Major culminating design experience emphasizing multi- and interdisciplinary collaboration, and incorporating engineering standards and realistic constraints that include the following considerations:

economic, financial, environmental, sustainability, constructability, ethical, health and safety, social and political. Prereq.: CE 32600, CE 32700, CE 47400 and CE 44100. 5 DESIGN HRS/3 CR.

51000: Independent Study

The student will pursue a program of independent study under the direction of a full-time faculty member of the department with the approval of the undergraduate advisor. The program may consist of an extensive design project, an experimental investigation, or an analytical study. A final engineering report describing the work done and the outcomes must be submitted to the Department at the end of the study. Prereq.: departmental approval. 3 CR.

52000: Traffic Engineering

Analysis of road user, vehicle and roadway characteristics as they affect the traffic engineering function. Traffic studies, capacity and level of service analysis, traffic control and intersection design. Prereq.: CE 32600 and CE 32700. 3 HR./WK.; 3 CR.

52500: Geometric Design of Facilities

Functional design of traffic facilities including plans and profiles, intersection and other interchange areas, parking, etc. Computer aided design methods and procedures using Eagle Point and PDS interfacing AUTOCAD. Prereq.: CE 32700. 3 HR./WK.; 3 CR.

52600: Rail System Design

Design of light and heavy rail facilities for passenger and freight operations. Track structure. Alternative technologies for construction, guidance and communications. Maintenance of way. Prereq.: CE 37500. 3 HR./WK.; 3 CR.

53000: Advanced Strength of Materials

Introduction to elements of elasticity including basic ideas of stress, strain, and constitutive relations. Theories of failure and fracture. Analysis of unsymmetrical bending. Shear center and shear flow. Torsion. Twisting of thin-walled sections. Buckling criteria. Prereq.: CE 33200, CE 33500, Math 39200. 3 HR./WK.; 3 CR.

54000: Highway Engineering

The design of highway alignment and route location. Basic elements of highway design, including pavement type, earthwork and drainage. Importance and consequences of maintenance and engineering economics; life-cycle cost analysis. Prereq.: CE 32600 and CE 32700. 3 HR./WK.; 3 CR.

54100: Highway and Airport Construction

Overview of highway and airport engineering and construction; highways vs. airports; urban vs. rural highways. Construction planning, organization and cost estimating; construction scheduling using computer packages, e.g., Primavera; construction tracking. Construction operations: mobilization, removal, disposal, placement; management of equipment, material, labor, money; cash flow accounting. Construction specifications: quality assurance/quality control (QA/QC); investigation of environmental impacts and mitigation measures. Site investigation and project preparation. Prereq.: CE 32600 and CE 32700. 3 HR./WK.; 3 CR.

54500: Urban Transportation

Historical development of urban transportation. Alternative modal operating characteristics, capacity and productivity. Societal goals, costs, financing, and current issues. Conventional public transit for hire modes, U.S. and other countries. Prereq.: CE 32600. 3 HR./WK.; 3 CR.

55000: Advanced Reinforced Concrete

Mechanical properties of reinforced concrete materials including shrinkage, and creep. Ultimate load theory and ultimate strength design. Moment-curvature and load-deflection relationships. Columns subjected to biaxial bending. Combined shear and torsion. Design of flat plates and two-way slabs. Yield line theory. Prereq.: CE 33500, CE 44100. 3 HR./WK.; 3 CR.

57100: Water Quality Analysis

Acid-base titration curves and acid-base indicators, alkalinity and the carbonate system, buffer intensity and design, optical methods of analysis, the spectrophotometer and Beer's law, colorimetric analysis of phosphate, colorimetric analysis of ammonia, chelation analysis of iron, calcium carbonate equilibria, solubility product determination, Chemical Oxygen Demand, determination of forms of aqueous chlorine, reactions of aqueous chlorine with ammonia, adsorption on activated carbon, kinetics of ferrous iron oxidation. Prereq.: CE 474000. 2 CLASS, 2 LAB HR./WK.; 3 CR.

59000: Foundation Engineering

Soil exploration and sampling. Engineering properties of soils. Bearing capacity and settlement of foundations. Beams on elastic foundation. Design of footings and mats. Bearing capacity and settlement of piles and pile groups. Analysis of pile-raft foundations. Design of retaining structures. Slope stability. Prereq.: CE 33500, CE 34500. 3 HR./WK.; 3 CR.

59800: Topics in Civil Engineering*

Topics chosen for their particular or current interest to undergraduate students.
Prereq.: departmental approval.
3 HR./WK.; 3 CR.

59900: Topics in Civil Engineering Design*

Topics chosen for their particular or current interest to undergraduate students.
Prereq.: departmental approval. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

**Various courses designated CE 59800 and CE 59900 will be offered whenever there is sufficient student demand as evidenced by pre-registration forms or petitions.*

FACULTY**Anil Agrawal, Associate Professor**

B.Tech. (C.E.), IIT (India); M.Eng.(C.E.), Univ. of Tokyo; Ph.D. (C.E.), Univ. of California (Irvine); P.E. (New York)

Cynthia Chen, Assistant Professor

B.A., Nan Kai Univ.; M.S., NJIT; Ph.D., University of California (Davis)

Vasil Diyamandoglu, Assistant**Professor**

B.S.(C.E.), Bogazici Univ. (Istanbul, Turkey), M.S.(C.E.); Ph.D.(C.E.), Univ. of California (Berkeley)

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B.E. (C.E.), The City College; M.S. (C.E.), New York Univ., Ph.D.; P.E. (New York)

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Feng-Bao Lin, Associate Professor

B.S. (C.E.), National Taiwan Univ., M.S. (C.E.); Ph.D., Northwestern Univ.; P.E. (New York, Connecticut)

Claire E. McKnight, Associate Professor

B.Arch., Univ. of Illinois, M.U.P., Ph.D. (Public Policy Analysis)

Norbert Oppenheim, Professor

B.S., Univ. of Paris; M.S., Univ. of California (Berkeley), Ph.D.

Robert E. Paaswell, Distinguished**Professor**

B.A., Columbia Univ., B.S., M.S.; Ph.D., Rutgers Univ.; P.E. (New York)

Neville A. Parker, Herbert Kayser**Professor**

B.E. (C.E.), The City College; M.E. (Civil), Cornell Univ., Ph. D. (Env. Systems Engrg.); P.E. (D.C.); R. Eng. (Tanzania).

Thomas Price, Assistant Professor

B.S. (C.E.), Tulane Univ.; M.S. (Applied Mech.), Stanford Univ.; Ph.D. (C.E.), Univ. of Washington; P.E. (Louisiana, New York)

Kolluru Subramanian, Associate**Professor**

B.Tech. (C.E.), Indian Inst. of Technology (New Delhi); M.S. (Struct. Engr.), Univ. of Toledo; Ph.D. (Struct. Engr. and Materials) Northwestern Univ.

Megan B. Wiley, Assistant Professor

Sc.B (C.E.) Brown Univ.; M.S., Stanford Univ., Ph.D.

Ann E. (Beth) Wittig, Assistant**Professor**

B.S., Univ. of California (L.A.); Ph.D., Univ. of Texas (Austin)

PROFESSORS EMERITI**J. E. Benveniste****G. Donald Brandt****Carl J. Costantino****Norman C. Jen****Charles A. Miller****Gerald Palevsky****George Papoulas****Ming L. Pei****Joseph Pistrang****Eli Plaxe****Edward S. Reitz****Morris D. Silberberg****James R. Steven**

Computer Engineering

(A JOINT PROGRAM OF THE DEPARTMENTS OF COMPUTER SCIENCE AND ELECTRICAL ENGINEERING)

Professor Roger Dorsinville, Co-Director • Department Office: Steinman 602 • Tel: 212-650-7248

Professor Douglas Troeger, Co-Director • Department Office: NAC 8/206 • Tel: 212-650-6631

Dr. Samuel Fenster, Administrative Director • Steinman 617 • Tel: 212-650-6594

GENERAL INFORMATION

The City College offers the following undergraduate degree in Computer Engineering:

B.E. (Cp.E.)

OVERVIEW

Computer engineering is the study of the design, analysis, and application of computer systems. It involves a balanced view of hardware, software, hardware-software tradeoffs, and the basic modeling techniques used to represent the computing process. Computer engineers design computer systems that include a wide range of embedded systems, consumer products, telecommunication systems, parallel processors and many others. Besides design work, computer engineers find many openings in such service fields as financial and information systems, network administration, and many others.

The undergraduate curriculum includes a year of English and six Liberal Arts courses, along with appropriate mathematics and sciences. Topics integrated in the computer engineering curriculum include some of the core subjects in both electrical engineering and computer sciences. Through a variety of elective courses students are then able to pursue special interests in a number of focused areas such as computer architecture, software engineering, digital signal processing, VLSI (very large-scale integrated circuits), networks, image analysis, databases, embedded systems, etc.

Computer Engineering at City College is a discipline jointly administered by the Departments of Computer Science and Electrical Engineering. The faculty

of these departments enhance their teaching activities with a number of active research programs in such areas as digital signal processing, computer architecture, computer communications, computer security, pattern recognition, image analysis, software engineering, verification and testing, VLSI, and CAD. Advanced undergraduate students are encouraged to participate in these research efforts.

MISSION

The mission of the CCNY Computer Engineering program, in conformity with the mission of the School of Engineering, is:

- I.** To educate well-rounded and conscientious computer engineers capable of becoming leaders in their profession.
- II.** To carry out basic and applied research leading to new ideas, systems, and devices in computer engineering and related interdisciplinary areas.
- III.** To offer advice, service, and support to industry, government agencies, schools, community groups and professional societies.
- IV.** To ensure that the above is carried out in appropriate and modern facilities that are conducive to learning.

PROGRAM EDUCATIONAL OBJECTIVES

In order to achieve the above mentioned mission the faculty and students of the Computer Engineering program have established the following undergraduate Program Educational Objectives:

- A.** To educate students for successful careers in computer engineering or related areas and to instill a desire for continued learning;

- B.** To make students aware of contemporary environmental, economic and technological issues;
- C.** To prepare students for problem solving duties in computer engineering or related areas by thorough training in methods of engineering analysis and computational use, including integrating the basic mathematical, engineering and scientific principles;
- D.** To develop the skills needed for the design process, including the ability to identify and formulate real world computer engineering problems, to carry out background research, to obtain worldwide information, to think creatively, to work individually and in teams, to synthesize information, to evaluate results and to communicate effectively;
- E.** To foster an understanding for engineering measurements and their uncertainties and to teach and train students in carrying out experiments and in data analysis techniques;
- F.** To educate students in the issues of hardware, software and hardware-software design tradeoffs;
- G.** To infuse in our students an understanding of their ethical and professional responsibilities.

PROGRAM OUTCOMES

The Program Educational Objectives listed above are the basis for the following Program Outcomes expected of all graduates receiving the B.E. (Cp.E.) degree:

- a.** an ability to apply knowledge of mathematics, science and engineering;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;

- c. an ability to design a system, component or a process to meet desired needs;
- d. an ability to function on multi-disciplinary teams;
- e. an ability to identify, formulate and solve real world computer engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in global and societal context;
- i. a recognition of the need for, and an ability to engage in, life-long learning;
- j. a knowledge of contemporary issues;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
- l. competence in computational and simulation tools;
- m. competence in engineering probability;
- n. competence in software engineering;
- o. competence in hardware design.

REQUIREMENTS FOR MAJORS

All Computer Engineering majors must complete the following:

Math and Science Requirements

Chemistry:

General Chemistry for Engineers or General Chemistry I* 3-4

Mathematics:

20100: Calculus I* 3
 20200: Calculus II* 3
 20300: Calculus III* 4
 39100: Methods of Differential Equations* 3
 39200: Linear Algebra and Vector Analysis for Engineers * 3

Physics:

20700-20800: General Physics* 8

Total Math and Science Credits 27

*Minimum grade of "C" required.

English and Liberal Arts Requirements

Refer to the School of Engineering section for details.

Total English and Liberal Arts Credits 24

Engineering Requirements

10000: New Freshman Seminar	0
Engineering:	
10100: Engineering Design I*	1
10300: Computer-Aided Analysis Tools for Electrical Engineers	2
20400: Electrical Circuits	3
Computer Science:	
10200: Introduction to Computing**	3
10400: Discrete Mathematical Structures I**	3
21000: Computers and Assembly Language Programming**	3
21200: Data Structures**	3
22000: Algorithms	3
22100: Software Design Laboratory	3
32200: Software Engineering	4
33200: Operating Systems	3
34200 & 34300: Computer Organization and Laboratory	4
Electrical Engineering:	
20500: Linear Systems Analysis I	3
21000: Switching Systems	3
22100: Electrical Engineering Laboratory I	1
24100: Electronics I	3
30600: Linear Systems Analysis II	3
31100: Probability and Statistics	3
31200: Communication Theory	3
32200: Electrical Engineering Laboratory II	1
33000: Electromagnetics	3
42500: Computer Engineering Laboratory	1
45700: Digital Integrated Circuits	3
46000: Computer Communication Systems	3

Total Required Engineering Credits 65

*New transfer students who have successfully completed Calculus II (Math 20200) should not take Engr 10100. They are required to complete an additional 1 credit advanced laboratory elective course from Computer Science or Electrical Engineering.

**Minimum grade of "C" required.

Electives

The elective course requirements include 3 credits of Practice/Ethics Issues, 3 credits from Engineering Science Electives, and 3 credits each from the CSc and EE Elective Lists.

Practice/Ethics Issues:

One of the following courses: 3

Computer Science:

37500: Social Issues in Computing (3 cr.)

Electrical Engineering:

43800: Management Concepts for Engineers (3 cr.)

Engineering:

27600: Engineering Economics (3 cr.)

30000: Social, Economic and Cultural Impact of Biomedical Technology (3 cr.)

Engineering Science:

One of the following courses: 3

Electrical Engineering:

33900: Semiconductor Materials & Devices (3 cr.)*

Engineering:

23000: Thermodynamics (3 cr.)

Computer Science:

One of the following courses: 3

30100: Numerical Issues in Scientific Programming (3 cr.)

30400: Introduction to Theoretical Computer Science (3 cr.)

33500: Programming Language Paradigms (3 cr.)

33600: Introduction to Database Systems (3 cr.)

41200: Computer Networks (3 cr.)

42000: Compiler Construction (3 cr.)

42200: Computability (3 cr.)

42800: Formal Languages and Automata (3 cr.)

43000: Distributed Computing (3 cr.)

43200: Parallel Processing (3 cr.)

43500: Concurrency in Operating Systems (3 cr.)

43800: Real-Time Computing Systems (3 cr.)

44000: Computational Methods in Numerical Analysis (3 cr.)

44200: Systems Simulation (3 cr.)

44600: Mathematical Optimization Techniques (3 cr.)

44800: Artificial Intelligence (3 cr.)

45000: Combinatorics and Graph Theory (3 cr.)

45400: Topics in Computer Architecture (3 cr.)

47000: Image Processing (3 cr.)

47100: Computer Vision (3 cr.)

47200: Computer Graphics (3 cr.)

47300: Web Site Design (3 cr.)

47500: Windows Programming (3 cr.)

47800: Topics in Multimedia and Image Processing (3 cr.)

47900: Digital Libraries (3 cr.)
 48000: Computer Security (3 cr.)
 48600: Introduction to Computational Complexity (3 cr.)

Electrical Engineering:

One of the following courses: 3

33300: Introduction to Antennas, Microwaves and Fiber Optics (3 cr.)
 33900: Semiconductor Materials & Devices (3 cr.)*
 34200: Electronics II (3 cr.)
 35700: Electric Power Engineering (3 cr.)
 37100: Linear Feedback Systems (3 cr.)
 44100: Electronic Devices and Semiconductor Materials (3 cr.)
 45100: Communication Electronics (3 cr.)
 45200: Fiber Optical Communications (3 cr.)
 45300: Digital Signal Processing (3 cr.)
 45400: Physical Electronics (3 cr.)
 45600: Elements of Control Theory (3 cr.)
 45800: Introduction to Lasers (3 cr.)
 45900: Microprocessors (3 cr.)
 46200: Photonic Engineering (3 cr.)
 46300: Wireless Communications (3 cr.)
 46600: Dynamics and Control of Aerospace Vehicles (3 cr.)
 51000: Independent Study (3 cr.)**

Total Elective Credits 12

Senior Design Course

Choose *one* of the following sets of courses:

CSc 59866 and CSc 59867: Senior Project I and II (6 cr.)
 EE 59868 and EE 59869: Senior Design I and II (6 cr.)

Total Senior Design Credits 6

Total Credits for Major 134

**Can be counted as either an Engineering Science or an Electrical Engineering Elective.*

***Departmental approval required.*

Additional Requirements for Graduation

Refer to the School of Engineering section for details.

Recommended Sequence of Courses

First Semester*

Math 20100: Calculus I (3 cr.)
 General Chemistry for Engineers (3 cr.)

Engr 10100: Engineering Design I (1 cr.)
 Engl 11000: Freshman Composition (3 cr.)

Two Liberal Arts courses (6 cr.)

16 credits

**New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.*

Second Semester

Math 20200: Calculus II (3 cr.)
 Phys 20700: General Physics I (4 cr.)
 Engr 10300: Computer-Aided Analysis Tools for Electrical Engineers (2 cr.)
 CSc 10200: Introduction to Computing (3 cr.)
 CSc 10400: Discrete Mathematical Structures I (3 cr.)
 Engl 21007: Writing for Engineering (3 cr.)

18 credits

Third Semester

Math 20300: Calculus III (4 cr.)
 Phys 20800: General Physics II (4 cr.)
 Engr 20400: Electrical Circuits (3 cr.)
 CSc 21200: Data Structures (3 cr.)
 EE 21000: Switching Systems (3 cr.)

17 credits

Fourth Semester

Math 39100: Methods of Differential Equations (3 cr.)
 Math 39200: Linear Algebra and Vector Analysis for Engineers (3 cr.)
 CSc 22100: Software Design Lab (3 cr.)
 EE 20500: Linear Systems Analysis I (3 cr.)
 EE 24100: Electronics I (3 cr.)
 EE 31100: Probability and Random Processes (3 cr.)

18 credits

Fifth Semester

CSc 21000: Computers and Assembly Language Programming (3 cr.)
 CSc 22000: Algorithms (3 cr.)
 EE 22100: Electrical Engineering Laboratory I (1 cr.)
 EE 30600: Linear Systems Analysis II (3 cr.)
 EE 33000: Electromagnetics (3 cr.)
 EE 45700: Digital Integrated Circuits (3 cr.)

16 credits

Sixth Semester

CSc 32200: Software Engineering (4 cr.)

CSc 33200: Operating Systems (3 cr.)
 CSc 34200: Computer Organization (3 cr.)

CSc 34300: Computer Organization Laboratory (1 cr.)

EE 31200: Communication Theory (3 cr.)

EE 32200: Electrical Engineering Laboratory II (1 cr.)

Liberal Arts course (3 cr.)

18 credits

Seventh Semester

EE 42500: Computer Engineering Laboratory (1 cr.)

EE 46000: Computer Communication Systems (3 cr.)

Senior Design I (3 cr.)

Computer Engineering Elective (from CSc/EE elective lists) (3 cr.)

Engineering Science Elective (3 cr.)

Liberal Arts course (3 cr.)

16 credits

Eighth Semester

Computer Engineering Elective (from CSc/EE elective lists) (3 cr.)

Senior Design II (3 cr.)

Practice/Ethics Issues Elective (3 cr.)

Two Liberal Arts courses (6 cr.)

15 credits

ADVISEMENT

Students majoring in Computer Engineering are advised by the administrative director of Computer Engineering, and by the faculty of either Computer Science or Electrical Engineering whose expertise is closest to their academic interests.

FACULTY

All faculty of the Departments of Computer Science and Electrical Engineering participate in the Computer Engineering Program.

Department of Computer Science

Professor Douglas R. Troeger, Chair • Department Office: NAC 8/206 • Tel: 212-650-6631

GENERAL INFORMATION

The City College offers the following undergraduate degree in Computer Science:

B.S. (C.Sc.)

PROGRAMS AND OBJECTIVES

Computer Science deals with information: its storage, retrieval, and processing; its communication, control, and manipulation; its analysis, recognition, and display. This relatively new profession is concerned with computers, their organization, the theory that underlies them, and their application.

Computer scientists need a thorough background in mathematics as well as the ability to write programs in several programming languages. They concern themselves with the analysis of algorithms, data structures, computer systems, the structure of computer languages, human-computer interaction, and applied logic. Those computer scientists interested in applications of the computer will often also specialize in a particular field, such as mathematics, biology, economics, linguistics, physics, or psychology.

The field has experienced exceptional growth since its beginning. Opportunities in research, teaching, and professional practice are numerous. The Department of Computer Science, established in 1968, offers a broad curriculum in this branch of knowledge.

MISSION

The mission of the department of Computer Science at The City College, in conformity with the mission of the School of Engineering, is:

- I.** To educate well-rounded and conscientious computer scientists capable of becoming leaders in their profession.
- II.** To conduct basic and applied research in computer science and engineering.
- III.** To offer advice, service, and support to industry, government agencies, schools, community groups and professional societies.

PROGRAM EDUCATIONAL OBJECTIVES

In order to achieve the above mentioned mission the faculty and students of the Department of Computer Science have established the following Undergraduate Program Educational Objectives:

- A.** To provide students with the fundamental knowledge of scientific foundations, rigorous analysis, and creative design necessary for the practice of computer science and for advanced study in computer science;
- B.** To provide students with the broad education necessary for successful careers and life-long learning;
- C.** To develop the skills necessary for clear communication and responsible teamwork;
- D.** To infuse in our students an understanding of their ethical and professional responsibilities.

PROGRAM OUTCOMES

Upon graduation, our students are expected to have:

- a.** an ability to apply knowledge of mathematics, science and computing;
- b.** knowledge of net-centric computing, including preparation adequate for further work in areas such as computer graphics, digital libraries, multimedia or web-site design;
- c.** knowledge of computational techniques for science and engineering, including preparation adequate for further work in areas such as numerical analysis, systems simulation, optimization, image processing, or computer vision;
- d.** knowledge of theoretical computer science, including preparation adequate for further work in theoretical computer science itself or in related areas such as algorithm design, artificial intelligence, or computer security;
- e.** an ability to identify, formulate, and solve real world problems, working either alone or as a member of a team;
- f.** an understanding of the ethical, legal, and professional responsibilities associated with work in the computing field;
- g.** an ability to communicate effectively;
- h.** knowledge of software systems and paradigms, including preparation adequate for further work in areas such as databases, compilers, concurrency, or distributed computing;
- i.** recognition of the need for an ability to engage in life-long learning;

j. knowledge of architecture and networks, including preparation adequate for further work in areas such as computer architecture, computer networks, parallel processing, or real-time computing.

REQUIREMENTS FOR MAJORS

The satisfactory completion of 126 credits of prescribed and elective courses is required for the Bachelor of Science degree. The work comprises thirty liberal arts credits, twenty-five math and science credits, forty-seven credits of required Computer Science courses, twelve credits of Computer Science elective courses, six credits of technical electives, and six credits of free electives.

Mathematics

20100: Calculus I *	3
20200: Calculus II *	3
20300: Calculus III *	4
34600: Elements of Linear Algebra*	3

Science

Students are required to take at least twelve credits of science. These credits must include one of the following year-long sequences: 12

Biology:

10100-10200: Biological Foundations (8 cr.)*

Chemistry:

10301-10401: General Chemistry (8 cr.)*

Physics:

20700-20800: General Physics (8 cr.)* and at least one additional course in Biology, Chemistry, or Physics.

Total Math and Science Credits 25

*Minimum grade of "C" required.

English and Liberal Arts (General Education) Requirements 30

Refer to the School of Engineering Section for details.

Ethics and Social Issues: 3

One of the following (credit for only one out of these four courses will be given)

Computer Science:

37500: Social Issues in Computing (3 cr.)

Philosophy:

33400: Philosophy of Artificial Intelligence (3 cr.)

34902: Applied Ethics: Computer Ethics (3 cr.)

34903: Applied Ethics: Engineering Ethics (3 cr.)

Computer Science Requirements

10000: New Freshman Seminar	0
10200: Introduction to Computing	3
10400: Discrete Mathematical Structures	3
21000: Computers and Assembly Language Programming	3
21200: Data Structures	3
21700: Introduction to Simulation Science	3
22000: Algorithms	3
22100: Software Design Laboratory	3
30100: Numerical Issues in Scientific Programming	3
30400: Introduction to Theoretical Computer Science	3
32200: Software Engineering	4
33200: Operating Systems	3
33500: Programming Language Paradigms	3
34200: Computer Organization	3
34300: Computer Systems Design Laboratory	1
59866: Senior Project I	3
59867: Senior Project II	3

Total Required Credits 47

Electives

I. Computer Science Electives: 12

At least one course must be taken from four of the following five groups:

A. Theoretical Aspect of Computer Science:

42200: Computability (3 cr.)

42800: Formal Languages and Automata (3 cr.)

44800: Artificial Intelligence (3 cr.)

45000: Combinatorics and Graph Theory (3 cr.)

48600: Introduction to Computational Complexity (3 cr.)

B. Computational Techniques for Science and Engineering:

44000: Computational Methods in Numerical Analysis (3 cr.)

44200: Systems Simulation (3 cr.)

44600: Mathematical Optimization Techniques (3 cr.)

47000: Image Processing (3 cr.)

47100: Computer Vision (3 cr.)

47200: Computer Graphics (3 cr.)

C. Software Systems and Paradigms:
33600: Introduction to Database Systems (3 cr.)

42000: Compiler Construction (3 cr.)

43000: Distributed Computing (3 cr.)

43500: Concurrency in Operating Systems (3 cr.)

47500: Windows Programming (3 cr.)

D. Net-Centric Computing:

31100: XML Technologies (3 cr.)

31800: Internet Programming (3 cr.)

47300: Web Site Design (3 cr.)

47900: Digital Libraries (3 cr.)

E. Architecture and Networks

41200: Computer Networks (3 cr.)

43200: Parallel Processing (3 cr.)

43800: Real-Time Computing Systems (3 cr.)

48000: Computer Security (3 cr.)

II. Technical Electives 6

Technical electives for Computer Science majors may be either Computer Science electives (except CSc 10000 and CSc 31700) or advanced courses in the following areas: Biology, Chemistry, Earth and Atmospheric Sciences (EAS), Mathematics, Physics, and Chemical, Civil, Computer, Electrical, and Mechanical Engineering. Within these fields, the following courses are not acceptable:

1. Courses at the 10000 level.
2. Courses that have no prerequisites.
3. "Professional" courses, such as actuarial math.
4. Project and seminar courses.
5. Courses that substantially duplicate material covered in other courses for which credit has been granted.

III. Free Electives 6

Acceptable free electives are any courses offered by the College except the following:

1. Remedial courses, including pre-calculus math.
2. Courses at a lower level than required courses.
3. Courses that substantially duplicate material covered in other courses for which credit has been granted.

COURSE DESCRIPTIONS

4. Worker education and independent study courses.

Any substitutions require written permission of both the departmental advisor and Associate Dean of Undergraduate Affairs. Computer Science majors may use CSc 10000 only as a free elective, as long as the course is taken before the semester in which CSc 10200 is taken.

Total Elective Credits **24**

RECOMMENDED SEQUENCE OF COURSES

Students will take different course sequences, depending on their choice of science classes. One possible sequence is shown here.

First Semester*

Math 20100: Calculus I (3 cr.)

Eng 11000: Freshman Composition (3 cr.)

Speech 11100: Foundations of Speech Communication (3 cr.)

Chem 10301: General Chemistry I (4 cr.)

Science Elective (3 cr.)

16 Credits

*New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.

Second Semester

Math 20200: Calculus II (3 cr.)

CSc 10200: Introduction to Computing (3 cr.)

CSc 10400: Discrete Mathematical Structures I (3 cr.)

Liberal Arts course (3 cr.)

Chem 10401: General Chemistry II (4 cr.)

16 Credits

Third Semester

Math 20300: Calculus III (4 cr.)

CSc 21000: Computers and Assembly Language Programming (3 cr.)

CSc 21200: Data Structures (3 cr.)

CSc 21700: Introduction to Simulation Science (3 cr.)

Liberal Arts course (3 cr.)

16 Credits

Fourth Semester

Math 34600: Elements of Linear Algebra (3 cr.)

CSc 30400: Introduction to Theoretical Computer Science (3 cr.)

CSc 22000: Algorithms (3 cr.)

CSc 22100: Software Design Laboratory (3 cr.)

Eng 21007: Writing for Engineering (3 cr.)

15 Credits

Fifth Semester

Phys 20700: General Physics (4 cr.)

CSc 30100: Numerical Issues in Scientific Programming (3 cr.)

CSc 33500: Programming Language Paradigms (3 cr.)

CSc 32200: Software Engineering (4 cr.)

CSc 37500: Social Issues in Computing (3 cr.)

17 Credits

Sixth Semester

CSc 33200: Operating Systems (3 cr.)

CSc 34200: Computer Organization (3 cr.)

CSc 34300: Computer Organization Lab (1 cr.)

Two CSc Group Electives (6 cr.)

Free Elective (3 cr.)

16 Credits

Seventh Semester

Eco 10400: Introduction to Quantitative Economics (3 cr.)

CSc Group Elective (3 cr.)

Technical Elective (3 cr.)

Liberal Arts course (3 cr.)

CSc 59866: Senior Design Project I (3 cr.)

15 Credits

Eighth Semester

CSc Group Elective (3 cr.)

Technical Elective (3 cr.)

Free Elective (3 cr.)

Liberal Arts course (3 cr.)

CSc 59867: Senior Design Project II (3 cr.)

15 Credits

ADVISEMENT

All students are assigned to a full-time faculty member who can help them with registration and academic planning.

10000: Introduction to Programming and Computer Science

A breadth-first introduction to computer programming and computer science. Elementary programming in a modern object-oriented language such as C++ or Java; introduction to algorithms; brief overview of operating systems, computer networks, and databases; introduction to artificial intelligence. Free elective for CSc majors if taken before CSc 10200. 4 HR./WK.; 3 CR.

10200: Introduction to Computing

The structure and operation of a computer; concepts and properties of an algorithm and a programming language. Introduction to procedural programming in a modern programming language, such as C/C++, control structures, functions, recursion, arrays, pointers, strings, structure, and file I/O. Prereq.: Math 20100 (or 20102) (min. C grade). 2 CLASS, 2 REC. HR./WK.; 3 CR.

10400: Discrete Mathematical Structures

Introduction to the mathematics fundamental to all phases of computer science, from the formulation of problems to the understanding of their underlying structure, to the comparative analysis of the complexity of algorithms that can be used to solve these problems. The course introduces combinatorics, first-order logic, induction, set theory, relations and functions, graphs, trees, and number theory. Prereq: Math 20100 (or Math 20102) (min. C grade). 2 CLASS, 2 REC. HR./WK.; 3 CR.

21000: Computers and Assembly Language Programming

Computer structure, machine representation of data, addressing and indexing, computation and control instructions, assembly language and assemblers; procedures (subroutines) and data segments, linkages and subroutine calling conventions, loaders; practical use of an assembly language for computer implementation of illustrative examples. Prereq.: CSc 10200. 3 HR./WK.; 3 CR.

21200: Data Structures

Extension of the knowledge of algorithm design and programming gained in CSc 10200 with continued emphasis on the logic underlying the transition from specification to program. Particular attention is paid to issues arising in the implementation of larger programs: introduction of data structures and data abstraction; the basics of object-oriented programming. Introduction of recursion as a design tool.

Introduction of complexity analysis. Prereq.: CSc 10200 and 10400. 2 CLASS, 2 REC. HR./WK.; 3 CR.

21700: Introduction to Simulation Science

Project course in which students work as leaders or members of project teams. Individual oral presentations and written reports. Overview of applicable discrete and stochastic foundations: combinatorics, probability, and Monte Carlo. Introduction to modeling formalism with examples from numerical and logical processes. Simulation languages such as MATLAB simulation toolbox and GPSS are demonstrated. Student projects entail simulations of physical or social science problems. Emphasis on student presentations with statistical analysis and visual summaries. Prereq.: CSc 10400. 3 HR./WK.; 3 CR.

22000: Algorithms

Measuring algorithmic complexity (O-Notation); searching and sorting algorithms and their complexity; tree and graph algorithms and their complexity; classes of algorithms, such as divide-and-conquer, backtracking, greedy, probabilistic, etc. Computational complexity; the classes P and NP. Prereq.: CSc 21200 and [CSc 21700 or EE 31100]. 3 HR./WK.; 3 CR.

22100: Software Design Laboratory

Object oriented programming and design. Encapsulation, inheritance, and polymorphism are stressed. Significant programming projects, including team projects. Programming in Java. Prereq.: CSc. 21200. 3 HR./WK.; 3 CR.

30100: Numerical Issues in Scientific Programming

Numerical issues: roundoff error, truncation error, overflow and underflow errors. Numerical integration; solution of simultaneous equations; curve fitting. A thorough introduction to scientific programming, using a modern version of the Fortran or Matlab language. Written reports and oral presentation of projects. Prereq.: CSc 21700, CSc 22000, Math 20300 (min. C grade), Math 34600 (min. C grade). 3 HR./WK.; 3 CR.

30400: Introduction to Theoretical Computer Science

Finite state automata, pushdown automata, Turing Machines, and the languages they can recognize. Church's Thesis. Compatibility. The classes P and NP; NP-complete problems and intractable problems. Prereq: CSc 10400. 3 HR./WK.; 3 CR.

31100: XML Technologies

XML in industry. HTML and XML; XML publishing and document management; creating and editing XML documents. XML

schemas, XML schema modeling, namespaces, and object oriented schemas. XML schemas and relational databases. XSLT (Extensible Stylesheet Language Transformation) and XPATH. SOAP and WSDL. XSL:OF, for creating pdf and other common document formats from XML content. Prereq: CSc 22100. 3 HR./WK.; 3 CR.

31700: Introduction to the Internet

This course is intended to provide students with the background necessary for understanding the Internet. Discussed are the underlying technology, applications, and social implications of the World Wide Web. Cannot be used to fulfill CSc technical elective requirement. Prereq.: CSc. 10200 and at least junior standing. 3 HR./WK.; 3 CR.

31800: Internet Programming

This course provides advanced CSc/engineering majors with an understanding of web-based application development. Prereq.: CSc 22100 or EE 25900. 3 HR./WK.; 3 CR.

32200: Software Engineering

The software development life cycle from feasibility study to turnover to client. Documentation of design, program, and training materials. Rapid prototyping languages. Software development management: team roles and organization, the version control problem, maintenance issues. Use of CASE tools emphasized and illustrated in projects. Written reports and oral presentation of projects. Prereq.: Eng 21007, CSc 22000, CSc 22100. 3 CLASS, 2 LAB HR./WK.; 4 CR.

33200: Operating Systems

Overview of computer organization. Interrupts. Operating systems objectives and functions. Hardware protection mechanisms, dual mode operation. System calls. The evolution of operating systems. Process representation and control. Uniprocessor scheduling. Process synchronization: critical section problem, synchronization mechanisms, algorithms, language constructs, classical synchronization problems: issues of safety, liveness, and fairness. Deadlocks. Memory management and virtual memory. File management. I/O management and disk scheduling. Prereq.: CSc 22000. 3 HR./WK.; 3 CR.

33500: Programming Language Paradigms

Aspects of the design and implementation of functional, imperative, logic and object-oriented programming languages, presented via a sequence of interpreters. Topics include abstraction, parameter passing, type checking, inheritance, and continuations. Substantial programming assignments. Prereq.: CSc 22000, CSc 22100. 3 HR./WK.; 3 CR.

33600: Introduction to Database Systems

An introduction to database architecture. Levels of abstraction in a database system; physical database organization; abstract data models; relational databases and their query languages. Database design assignments. Prereq.: CSc 22100. 3 HR./WK.; 3 CR.

34200: Computer Organization

This course provides computer science and computer engineering students with an in-depth look at computer architecture and the hardware/software interface. The major topics are: computer abstractions and technology; the role of performance and measuring performance; SPEC. computer arithmetic; machine language: a comparative analysis of instruction sets of current processors using debuggers, simulators and by the partial reverse engineering of executables. The processor: datapath and control; RISC versus CISC; design, implementation (using VHDL), and verification (in simulation) of a simplified RISC processor using CAD tools. Enhancing performance with pipelining. Memory hierarchy, cache, virtual memory, performance issues. interfacing processors and peripherals; PCI chipset. Overview of multiprocessors, grid computing. Prereq.: CSc 21000 or EE 21000; coreq.: CSc 34300. 3 HR./WK.; 3 CR.

34300: Computer Systems Design Laboratory

Introduction to FPLD technology, logic synthesis, and rapid prototyping of digital systems using commercial CAD tools. Topics: Programmable Logic Technology. Sequential Design and Hierarchy. Synthesis of Digital Hardware using VHDL. State Machine Design, CPU Controller. A Simple Processor Design. Video Graphics Adapter (VGA) video display generation. Design PS/2 Keyboard interface. Design of PS/2 Mouse interface. Synthesis of a RISC processor as covered in CSc 34200. Students are required to prepare written reports and demonstrate their design. Corequisite: CSc 34200. 3 HR./WK.; 1 CR.

37500: Social Issues in Computing

A systematic and comprehensive overview of the social implications of computers. Public policy questions and the responsibility of computer professionals will be stressed. Topics include computers in the economy, in politics and government, in social institutions and in contemporary culture. Prereq.: at least sophomore standing. 3 HR./WK.; 3 CR.

41200: Computer Networks

Layer approach to understanding networks using the ISO model: physical layer, data link layer, network layer, and, as time permits, the transport, session, presentation,

and application layers. Prereq.: CSc 33200. 3 HR./WK.; 3 CR.

42000: Compiler Construction

Formal description of programming languages and techniques used in their compilation. Study of syntax, semantics, ambiguities, procedures replication, iteration, and recursion in these languages. Syntactic decomposition and the theory of compilers that are syntax-directed or recursively controlled. Prereq.: CSc 30400. 3 HR./WK.; 3 CR.

42200: Computability

Sheperdson-Sturgis machines. Elements of recursive function theory. The equivalence of the class of computable and recursive functions. Church's thesis; other models of computation: Post machines, Turing machines, semi-Thue systems, etc. Unsolvable problems and introduction to their classification. Subrecursive formalism. Prereq.: CSc 22000, CSc 30400. 3 HR./WK.; 3 CR.

42800: Formal Languages and Automata

Classes of languages; their description in terms of grammars and their recognition by automata. The Chomsky hierarchy; regular, context-free, context-sensitive and recursively enumerable languages. Application to parsing and compiler construction. Prereq.: CSc 30400. 3 HR./WK.; 3 CR.

43000: Distributed Computing

Basic model of distributed computing. Asynchronous and synchronous message passing. Algorithms for distributed termination detection and their correctness proofs. The correctness requirements of safety, liveness, and fairness in distributed computations. Synchronization algorithms. Communicating Sequential Processes. Higher level language constructs for synchronization algorithms. Verification methods. Several seemingly correct but actually incorrect algorithms will be shown for the above problems to appreciate the subtle correctness problems in distributed algorithms. Prereq.: CSc 33200. 3 HR./WK.; 3 CR.

43200: Parallel Processing

Models of computation, such as SISD, MISD, MIMD and SIMD. Algorithmic complexity. Parallel approaches to sorting, searching, and related problems. Combinatorial and numerical problems. Applications to graph theory, decision theory, and optimization. Prereq.: CSc 33200. 3 HR./WK.; 3 CR.

43500: Concurrency in Operating Systems

Mutual exclusion-software and hardware approaches. The correctness requirements

of safety, liveness, and fairness. Semaphores, monitors and other concurrent programming constructs. Classical synchronization problems. Axiomatic verification of concurrent algorithms. Models of distributed computation. Distributed termination detection. Time clocks, and ordering of events. Distributed Mutual Exclusion. Deadlocks in distributed systems. Prereq.: CSc 33200. 3 HR./WK.; 3 CR.

43800: Real-Time Computing Systems

Operating systems and architectural concepts of real-time systems. Review of I/O programming and basic machine language programming. Interrupt processes. Coding of specific device drivers using absolute addressing status registers, command signals, buffering. Timing considerations and applications. Concurrent processes, wait-send phenomena, and the use of semaphores. Prereq.: CSc 34200. 3 hr./wk.; 3 cr.

44000: Computational Methods in Numerical Analysis

Introduction to numerical algorithms for scientific computation. Basic concepts of numerical error. Interpolation, quadrature, solution of linear systems of equations, non-linear equations, ordinary differential equations. Some discussion of partial differential equations and numerical methods of solving them. Computer implementation aspects. Prereq.: CSc 30100. 3 HR./WK.; 3 CR.

44200: Systems Simulation

Simulation of dynamic stochastic systems using models involving numerical and logical processes. Modeling concepts, description in terms of entities, attributes, and activities, time flow mechanisms, queues, event-oriented vs. particle-oriented models. Generation of stochastic variates, collection and evaluation of statistics. Simulation languages. Computer projects using a general purpose language (e.g. Fortran or Matlab) and at least one simulation language (e.g. GPSS) will be assigned. Prereq.: CSc 30100. 3 HR./WK.; 3 CR.

44600: Mathematical Optimization Techniques

Maximization and minimization of functions of several variables, with and without constraints. Convex sets and functions, linear and dynamic programming, network flows. Prereq.: CSc 30100. 3 HR./WK.; 3 CR.

44800: Artificial Intelligence

State-space and problem-induction representations of problems. Heuristic methods. Mechanical theorem proving. Application of these techniques to artificial intelligence problems. Prereq.: CSc 30400. 3 HR./WK.; 3 CR.

45000: Combinatorics and Graph Theory

An introduction to combinatorial analysis and graph theory. Sample topics: principle of inclusion and exclusion, recurrence relations, zero-one matrices, partitions, Polya's Theorem, directed graphs, Prereq.: CSc 22000. 3 HR./WK.; 3 CR.

45400: Topics in Computer Architecture

Current developments in computer architecture chosen from: superscalar parallel/pipelined architectures: speculative execution; branch prediction; register renaming techniques. Students develop software for superscalar processors, both real and simulated. Prereq.: CSc 34200, CSc 34300. 3 HR./WK.; 3 CR.

47000: Image Processing

An intensive introduction to digital image processing. Image enhancement, digital filtering theory. Fourier transforms, image reconstruction, resampling, antialiasing, geometric transformations, scanline algorithms, warping, and morphing. Emphasis is on computational techniques. Substantial programming assignments. Prereq.: CSc 30100 and CSc 32200. 3 HR./WK.; 3 CR.

47100: Computer Vision

An intensive introduction to algorithms that recover information from images, motion sequences, multiple views, and 3D volumes. Topics include edge and region recovery, perspective, texture, object recognition, and 3D shape from shading/stereo/motion. Substantial programming assignments. Prereq.: CSc 30100 and CSc 32200. 3 HR./WK.; 3 CR.

47200: Computer Graphics

An intensive study of computer graphics. Graphics hardware, OpenGL API, raster scan conversion, clipping, geometric transformations, 3D viewing, visible surface determination, illumination, shading, splines, ray tracing and animation. Substantial programming assignments. Prereq.: CSc 30100 and CSc 32200. 3 HR./WK.; 3 CR.

47300: Web Site Design

The design and implementation of web sites from a Human-Computer Interaction viewpoint, with emphasis on user testing. Navigation design. Accessibility by persons with limitations in vision or motor ability is stressed and must be addressed in the final project. Prereq.: CSc 22100. 3 LAB HR./WK.; 3 CR.

47500: Windows Programming

Study of the Windows system. Architecture and the windows programming API. Covered topics include the OS kernel, Windows internals, evolution of Windows,

Windows graphics model, Windows and ATM font systems, Unicode, messaging system, and the user application interface, e.g., menu dialogs, icons, child controls and custom controls. Substantial programming assignments. Strong knowledge of C required. Prereq.: CSc 22100. 3 HR./WK.; 3 CR.

47800: Topics in Multimedia and Image Processing

Topics of current interest in image processing, computer vision, computer graphics, and multimedia. Prereq.: CSc 47000. 3 HR./WK.; 3 CR.

47900: Digital Libraries

An introduction to the principles and practice of digital libraries. Algorithms are drawn from computer vision, pattern recognition, image processing, and document processing. Topics include low-level image processing, texture, color constancy, shape from X, supervised and unsupervised training, and implementation issues regarding content based multimedia database. Programming assignments will be implemented in C++ or Java. Prereq.: CSc 32200, Math 34600 (min. C grade). 3 HR./WK.; 3 CR.

48000: Computer Security

An introduction to the principles and practices of computer security in various computing environments. Conventional encryption systems and classical cryptography. Confidentiality using conventional encryption. Public key cryptography and protocols for authentication and digital signatures. Recent cryptanalytic attacks on conventional and public key systems. Intruders, worms, viruses and trusted systems. Firewalls and internetwork security. A survey of applications and problems arising in contemporary computer security. Prereq.: CSc 22000, and CSc 30400. 3 HR./WK.; 3 CR.

48600: Introduction to Computational Complexity

An introduction to the performance and limitations of computer algorithms through a study of selected algorithms. Topics include primality testing and integer factorization, algorithms for integer programming and knapsack problems, reductions and NP-completeness, randomized algorithms, and experimental algorithms arising from new technologies such as molecular, neural, and quantum computing. Prereq.: CSc 21700, CSc 30400. 3 HR./WK.; 3 CR.

51001-51004: Independent Study

Independent study and research under the supervision of a mentor. Prereq.: departmental approval. HOURS VARY; 1-4 CR.

59800: Senior Project

Senior projects under the supervision of a mentor. Prereq.: departmental approval. HOURS VARY; 3 CR.

59866 and 59867: Senior Project I & II

This is a two semester capstone course. The student is required to complete a significant project in computer science or engineering under the mentorship of a faculty member. In addition to technical material required for successful completion of a specific project, topics include identification of a problem, background research, social, ethical and economic considerations, intellectual property and patents and proposal writing, including methods of analysis and theoretical modeling. A detailed project proposal is formulated in the first semester, and the project is completed in the second semester. Each student is required to write an in-depth report, and to make an oral presentation to the faculty. Senior year students only, or permission of the department. 3 CLASS AND 3 DESIGN HR./WK.; 3 CR. PER SEMESTER FOR TWO CONSECUTIVE SEMESTERS.

59900: Selected Topics in Computer Science

Topics of current interest in the field. Independent study and seminars. Prereq.: departmental approval. VARIABLE HR./ CR.

FACULTY

Michael Anshel, Professor

B.A. (Math), Adelphi Univ., M.S., Ph.D.

Octavio Betancourt, Professor

B.S. (Engr.), Univ. of Chile, M.S. (Math); Ph.D. (Math), New York Univ.

Gary S. Bloom, Professor

A.B. (Phys.), Oberlin College; M.S. (Phys.), Univ. of Arizona; Ph.D. (E.E.), Univ. of Southern California

Peter Brass, Associate Professor

Dipl. Math, Dr. Rer. Nat. (Math), Technical Univ. of Braunschweig

Stefan A. Burr, Professor

A.B. (Math), Univ. of California (Berkeley); M.A., Princeton Univ., Ph.D.

Izidor Gertner, Professor

M.S. (E.E.), KPI, Kaunas, Lithuania; Ph.D. (ECE), Technion (Israel)

Irina Gladkova, Associate Professor

B.S. (Mathematics), Donetsk State Univ.; Ph.D. (Mathematics) CUNY

Michael D. Grossberg, Assistant Professor

B.A., Univ. of Penn.; Ph.D., MIT

Akira Kawaguchi, Associate Professor

B.S. (Admin. Engr.), Keio Univ. (Japan), M.S.; M.S., Columbia Univ., Ph.D.

Devendra Kumar, Associate Professor

B.Tech. (E.E.), Indian Institute of Technology (Kanpur); M.A. (C.Sc.), Univ. of Texas at Austin, Ph.D.

Esther Levin, Professor

Ph.D. (EE), Technion, Israeli Institute of Technology

Stephen Lucci, Associate Professor

B.S. (Math), SUNY (Stony Brook); M.S. (C.Sc.), The City College; Ph.D. (C.Sc.), CUNY

Daniel McCracken, Professor

B.A. (Math), Central Washington Univ., B.A. (Chem); M.Div., Union Theological Seminary

Abbe Mowshowitz, Professor

B.S. (Math), Univ. of Chicago; M.S. (Math), Univ. of Michigan, Ph.D. (C.Sc.)

Janos Pach, Distinguished Professor

M.S., Eotvos Univ., Ph.D.; Candidate's Degree, Hungarian Academy of Sciences

Kaliappa Ravindran, Associate Professor

B.E. (E.E.), Indian Institute of Science, M.E. (C.Sc.); Ph.D. (C.Sc.), Univ. of British Columbia

George G. Ross, Professor

B.S. (Ch.E.), Cooper Union; M.S. (Ch.E.), New York Univ., M.S. (Math), Ph.D.

Douglas R. Troeger, Associate Professor and Chair

A.B. (Phil), Brown Univ., Sc. B. (Chem); Ph.D. (Math), Stevens Inst. of Tech.

Michael Vulis, Associate Professor

B.S. (Math), Leningrad State Univ. (Russia); M.S. (C.Sc.), CUNY, Ph.D. (Math)

Jie Wei, Associate Professor

B.S. (C.Sc.), Univ. of Sci. & Tech. of China (China); M.S. (C.Sc.), Chinese Academy of Sciences (China); Ph.D. (C.Sc.), Simon Fraser Univ. (Canada)

George Wolberg, Professor

B.E. (EE), Cooper Union, M.E. (EE); Ph.D. (C.Sc.), Columbia Univ.

Zhigang Zhu, Associate Professor

B.S., (CSc.), Tsinghua Univ., M.E., Ph.D.

PROFESSORS EMERITI

Stanley Habib

Valentin F. Turchin

Department of Electrical Engineering

Professor Roger Dorsinville, Chair • Department Office: Steinman 602 • Tel: 212-650-7248

GENERAL INFORMATION

The City College offers the following undergraduate degree in Electrical Engineering:

B.E. (E.E.)

PROGRAMS AND OBJECTIVES

Electrical engineers are involved in the design of components and systems, ranging from the smallest computer chips to large communication systems that span the earth and reach into intergalactic space. The invention of the transistor touched off a technological revolution that continues unabated today, including the development of lasers, fiber optics, microcomputers, satellite communications, control systems, and increasingly sophisticated signal processing algorithms, to name but a few areas.

The undergraduate program in electrical engineering welcomes students who have a solid preparation in mathematics and the sciences. The course of study trains students in analytical procedures to solve specific problems; in laboratory methods to examine complex electrical phenomena; and ultimately in design synthesis to meet specified criteria for systems required to perform specific functions. The program emphasizes mathematical modeling and abstract reasoning because electrical phenomena cannot normally be directly perceived safely by human senses. The program's core curriculum trains students to master the reasoning methods required for electrical engineering. Core areas include linear systems and controls, electromagnetic theory, electronics, communications,

and computers. Through a variety of elective courses, students are then able to pursue special interests in such areas as photonics, computer engineering, control systems, digital signal processing, networks, telecommunications, and microwaves.

The faculty of the department enhance their teaching activities with a number of active research programs in such areas as digital signal processing, computer engineering, communications, controls, and photonics. Advanced students are encouraged to participate in these research efforts.

MISSION

The mission of the Department of Electrical Engineering at The City College, in conformity with the mission of the School of Engineering, is:

- I.** To educate well-rounded and conscientious electrical engineers capable of becoming leaders in their profession.
- II.** To carry out basic and applied research leading to new ideas, systems, and devices in electrical engineering and related interdisciplinary areas.
- III.** To offer advice, service, and support to industry, government agencies, schools, community groups and professional societies.
- IV.** To insure that the above is carried out in appropriate and modern facilities that are conducive to learning.

PROGRAM EDUCATIONAL OBJECTIVES

In order to achieve the above-mentioned mission, the faculty and students of the Electrical Engineering Department have established the following Undergraduate Program Educational Objectives:

- A.** Perform effectively and ethically in a global multicultural environment in a global multicultural environment.
- B.** Contribute actively to the field by participating in professional societies, publishing, attending conferences and seeking patents.
- C.** Function effectively in multidisciplinary teams and progress to leadership roles.
- D.** Apply sound scientific knowledge and engineering principles to real world problems to meet the needs of society.

PROGRAM OUTCOMES

The Program Educational Objectives listed above are the basis for the following Program Outcomes expected of all graduates receiving the B.E. (E.E.) degree:

- a.** an ability to apply knowledge of mathematics, science and engineering;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;
- c.** an ability to design a system, component, or a process to meet desired needs;
- d.** an ability to function on multi-disciplinary teams;
- e.** an ability to identify, formulate, and solve real world electrical engineering problems;
- f.** an understanding of professional and ethical responsibility;
- g.** an ability to communicate effectively, including the use of information technology tools when appropriate;
- h.** the broad education necessary to understand the impact of engineering solutions in a global and societal context;

- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues: an appreciation of environmental, economic and technological issues and their impact on society;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
- l. preparation for pursuing advanced degrees;
- m. competence in computational and simulation tools;
- n. competence in engineering probability.

ACCREDITATION

The B.E. (E.E.) program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

REQUIREMENTS FOR MAJORS

All Electrical Engineering majors must complete the following:

Math and Science Requirements Required Courses

Chemistry:

General Chemistry* 3

Computer Science:

10200: Introduction to Computing 3

Mathematics:

20102: Calculus I* 3

20202: Calculus II* 3

20300: Calculus III* 4

39100: Methods of Differential Equations* 3

39200: Linear Algebra and Vector Analysis for Engineers* 3

Physics:

20700-20800: General Physics* 8

* Minimum grade of "C" required.

Total Math and Science Credits 30

English and Liberal Arts (General Education) Requirements

Refer to the School of Engineering section for details.

Total English and Liberal Arts (General Education) Credits 21

Engineering Requirements Required Courses

10000: New Freshman Seminar 0

Engineering:

10100: Engineering Design I* 1

10300: Computer-Aided Analysis

Tools for Engineers 2

20400: Electrical Circuits 3

23000: Thermodynamics 3

27600: Engineering Economics 3

Electrical Engineering:

20500: Linear Systems Analysis I 3

21000: Switching Systems 3

22100: Electrical Engineering

Laboratory I 1

24100: Electronics I 3

25900: Programming for Electrical

Engineering 4

30600: Linear Systems Analysis II 3

31100: Probability and Statistics 3

31200: Communication Theory 3

32200: Electrical Engineering

Laboratory II 1

32300: Electrical Engineering

Laboratory III 1

33000: Electromagnetics 3

33300: Introduction to Antennas,

Microwaves and Fiber Optics 3

33900: Semiconductor Materials and

Devices 3

34200: Electronics II 3

37100: Linear Feedback Systems 3

44100: Electronic Devices and

Semiconductor Materials 3

44400: Digital Computer Systems 3

59866: Senior Design I 3

59867: Senior Design II 3

Total Required Engineering Credits 64

*New transfer students who have successfully completed Calculus II (Math 20200 or 20202) should not take Engr 10100.

Instead, they are required to complete an additional EE Advanced Laboratory Elective course.

Electives

All majors must complete the credit requirements from the A and B Electives lists:

A. Lecture Electives 18

All majors, in consultation with their faculty advisor, must select 18 credits of Lecture Electives, at least 9 credits of which must be in Electrical Engineering courses.

Electrical Engineering:

35700: Electric Power Engineering (3 cr.)

45100: Communication Electronics (3 cr.)

43800: Management Concepts for Engineers (3 cr.)

45200: Fiber Optic Communications (3 cr.)

45300: Digital Signal Processing (3 cr.)

45400: Physical Electronics (3 cr.)

45500: Elements of Power Systems (3 cr.)

45600: Elements of Control Theory (3 cr.)

45700: Digital Integrated Circuits (3 cr.)

45800: Introduction to Lasers (3 cr.)

45900: Microprocessors (3 cr.)

46000: Computer Communication Systems (3 cr.)

46200: Photonic Engineering (3 cr.)

46300: Wireless Communications (3 cr.)

46400: VSLI Design (3 cr.)

51000: Independent Study (3 cr.) (departmental approval required)

Computer Science:

42000: Compiler Construction (3 cr.)

44000: Computational Methods in Numerical Analysis** (3 cr.)

47500: Windows Programming (3 cr.)

Mathematics:

32800: Numerical Analysis** (3 cr.)

43200: Theory of Functions of a Complex Variable (3 cr.)

43500: Partial Differential Equations, Integral Equations, Boundary Value Problems (3 cr.)

Physics:

32100: Modern Physics for Engineers (3 cr.)

45200: Optics (3 cr.)

Engineering***:

30100: Introduction to Satellite Remote Sensing and Imaging (3 cr.)

I0600: Applied Algebra (3 cr.)

I1100: Engineering Analysis (3 cr.)

I1200: Complex Variables (3 cr.)

Biomedical Engineering:

50100: Cell and Tissue Mechanics (3 cr.)

50200: Cell and Tissue Transport (3 cr.)
 50300: Cell and Tissue Biomaterial Interactions (3 cr.)

Biology:

32100: Introduction to Human Physiology and Biophysics (4 cr.)

Chemistry:

10401: General Chemistry II (3 cr.) (minimum grade of C required)

*** Credit can not be received for both Math 32800 and CSc 44000.*

**** For graduate courses, GPA of 2.75 or higher; minimum grade of C is required.*

B. Advanced Laboratory Electives 2

Two of the following courses:

Electrical Engineering:

42100: Local Area Network Laboratory (1 cr.)
 42200: Analog Laboratory (1 cr.)
 42500: Computer Engineering Laboratory (1 cr.)
 42600: Control Laboratory (1 cr.)
 42800: Photonics Engineering Laboratory (1 cr.)
 42900: Solid State Devices Laboratory (1 cr.)

Total Elective Credits 20

Total Credits for Major 135

Additional Requirements for Graduation

Refer to the School of Engineering section for details.

RECOMMENDED SEQUENCE OF COURSES**First Semester***

Math 20102: Calculus I (3 cr.)
 General Chemistry (3 cr.)
 Engr 10100: Engineering Design I (1 cr.)
 Eng 11000: Freshman Composition (3 cr.)
 Two Liberal Arts courses (6 cr.)

16 Credits

**New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.*

Second Semester

Math 20202: Calculus II (3 cr.)
 Phys 20700: General Physics I (4 cr.)
 CSc 10200: Introduction to Computing (3 cr.)

Engr 10300: Computer-Aided Analysis Tools for Electrical Engineers (2 cr.)
 Eng 21007: Writing for Engineering (3 cr.)

One Liberal Arts course (3 cr.)

18 Credits

Third Semester

Math 20300: Calculus III (4 cr.)
 Phys 20800: General Physics II (4 cr.)
 Engr 20400: Electrical Circuits (3 cr.)
 EE 21000: Switching Systems (3 cr.)
 One Liberal Arts course (3 cr.)

17 Credits

Fourth Semester

Math 39100: Methods of Differential Equations (3 cr.)
 Math 39200: Linear Algebra and Vector Analysis for Engineers (3 cr.)
 EE 20500: Linear Systems Analysis I (3 cr.)
 EE 22100: Electrical Engineering Laboratory I (1 cr.)
 EE 24100: Electronics I (3 cr.)
 EE 25900: Programming for EE (4 cr.)

17 Credits

Fifth Semester

EE 30600: Linear Systems Analysis II (3 cr.)
 EE 31100: Probability and Statistics (3 cr.)
 EE 32200: Electrical Engineering Laboratory II (1 cr.)
 EE 33000: Electromagnetics (3 cr.)
 EE 34200: Electronics II (3 cr.)
 One Lecture Elective course (3 cr.)

16 Credits

Sixth Semester

EE 31200: Communication Theory (3 cr.)
 EE 32300: Electrical Engineering Laboratory III (1 cr.)
 EE 33300: Introduction to Antennas, Microwaves and Fiber Optics (3 cr.)
 EE 33900: Semiconductor Materials and Devices (3 cr.)
 EE 37100: Linear Feedback Systems (3 cr.)
 One Lecture Elective course (3 cr.)

16 Credits

Seventh Semester

EE 44100: Electronic Devices and Semiconductor Materials (3 cr.)
 EE 44400: Digital Computer Systems (3 cr.)

Engr 23000: Thermodynamics (3 cr.)
 Two Lecture Elective courses (6 cr.)
 EE 59866: Senior Design I (3 cr.)

18 Credits

Eighth Semester

EE 59867: Senior Design II (3 cr.)
 Engr 27600: Engineering Economics (3 cr.)
 Two Lecture Elective courses (6 cr.)
 Two EE Advanced Laboratory Elective courses (2 cr.)
 One Liberal Arts course (3 cr.)

17 Credits

ADVISEMENT

All full-time faculty serve as undergraduate advisors. Students attending mostly in the evening should consult the Department bulletin board for special arrangements.

COURSE DESCRIPTIONS**20500: Linear Systems Analysis I**

Laplace Transform, s-domain circuit analysis, network functions, frequency response. Fourier series and Fourier Transform. Parseval Theorem. Prereq, Engr 20400; pre- or coreq.: Engr 10300, Math 39100 (min. C grade). 3 HR./WK.; 3 CR.

21000: Switching Systems

Analysis and synthesis of combinatorial circuits. Karnaugh maps. Analysis and design of sequential circuits. Digital computer and industrial applications. Prereq.: Math 20200 (or Math 20202) (min. C grade). 3 HR./WK.; 3 CR.

22100, 32200, 32300: Electrical Engineering Laboratory I, II, III

Experiments and design problems based on material drawn from the electrical engineering (Engr 20400, EE 21000, EE 24100, EE 34200). Test and measurement instruments, Virtual instruments and computer instrumentation, Electric and electronic circuits. Transient and frequency response, Logic circuits, Logic circuits, Discrete circuits. Operational amplifiers. 3 LAB HR./WK.; 1 CR. EACH. EE 22100: prereq.: Engr 20400, EE 21000; pre- or coreq: Engr 10300. EE 32200 prereq.: EE 22100, EE 24100. EE 32300 prereq.: EE 32200, EE 34200.

24100: Electronics I

Electronic devices and their use in analog circuits. Prereq.: Phys 20800 (min. C grade); pre- or coreq.: EE 20500 and EE 21000. 3 HR./WK.; 3 CR.

25900: Programming for Electrical Engineering

Part I. C++ and UNIX: UNIX preliminaries, C++ program format, data types, file I/O classes, overload operators, inheritance. Part II. Electrical engineering applications: projects on numerical solutions of linear equation systems, numerical differentiation/integration, least square approximations, etc. Prereq.: CSc 10200, Engr 10300; pre- or coreq.: Math 39100 (min. C grade), Math 39200 (min. C grade). 4 HR./WK., 4 CR.

30600: Linear Systems Analysis II

Discrete-time signals. Discrete-time systems. Linear, shift-invariant discrete-time systems. Convolution. The Z-transform. Transfer functions. The Fourier transform. Fourier analysis of discrete-time systems. Sampling in the time and frequency domains. Prereq.: EE 20500. 3 HR./WK.; 3 CR.

31100: Probability and Statistics

Sample space and probability theory. Density and distribution functions of single and multiple discrete and continuous random variables. Functions of random variables. Expectation, variance and transforms. Independence, covariance and correlation. Central limit theorem, weak/strong law of large numbers. Introduction to Random Processes. Confidence intervals, hypothesis testing, simple linear regression techniques, chi-square minimization methods. Prereq.: EE 20500. 3 HR./WK.; 3 CR.

31200: Communication Theory

Noise in amplitude and frequency modulation systems. Digital modulation techniques, baseband signal receiver, matched filter, probability of error. Prereq.: EE 31100. 3 HR./WK.; 3 CR.

33000: Electromagnetics

Complex vectors. Maxwell's Equations. Boundary conditions. Wave equation. Uniform plane waves. Polarization. Propagation in lossless and lossy media. Poynting Vector. Reflection and transmission of waves at normal and oblique incidence. Transmission lines (propagation, Smith Chart, transients). Topics in waves. Prereq.: Phys 20800, Math 39100 and 39200 (min. C grade). 3 HR./WK.; 3 CR.

33300: Introduction to Antennas, Microwaves and Fiber Optics

Antennas, antenna arrays, and applications. Propagation in free space, Microwave waveguides and resonators. Fiber-optic wave guides. Wave optics. Light sources and detectors. Prereq.: EE 33000 (or 33100). 3 HR./WK.; 3 CR.

33900: Semiconductor Materials and Devices

The crystal structure of solids. Introduction to quantum mechanics and quantum theory of solids. Charge carriers in semiconductors. Carrier transport phenomena. Carrier generation and recombination. Mathematical analysis of diffusion phenomena. Ambipolar transport. Surface effects. Basic structure of the pn junction. Prereq.: EE 33000 (or 33100). 3 HR./WK.; 3 CR.

34200: Electronics II

Electronic devices and circuits. Feedback amplifiers, regulated power supplies, oscillators. Comparators and Schmitt triggers. Logic gates and logic families. Flip-flops. Semiconductor memories. A/D and D/A conversion. Timing circuits. Prereq.: EE 24100. 3 HR./WK.; 3 CR.

35700: Electric Power Engineering

Analysis of magnetic circuits. Equivalent circuits and operations of power transformers, autotransformers, three-phase transformers. Basic principles of electromechanical energy conversion, single and double excitation. Elementary power systems and per-unit calculations. Power transmission, distribution, three-phase induction machines. Prereq.: EE 20500, EE 33000 (or 33100). 3 HR./WK.; 3 CR.

37100: Linear Feedback Systems

Analysis of feedback systems including block diagrams, signal flow graphs, time domain specifications, Routh's stability criterion, root locus, Bode and Nyquist diagrams, and state feedback. Prereq.: EE 20500; pre- or coreq: MATH 39100, 39200. 3 HR./WK.; 3 CR.

42100: Local Area Network Laboratory

Introduction to computer networks: local area network, wide-area network and interconnected network; packet switching and circuit switching. Design and simulation of various networks. Measurements and control of performance parameters such as throughput, delay and call blocking rate. Networks and services for simulations include datagram and virtual circuit (WAN), Ethernet and Token Bus (LAN). Pre- or coreq.: EE 46000. 3 LAB HR./WK.; 1 CR.

42200: Analog Communication Laboratory

Analog communication systems, including frequency translation, AM signal generation and reaction, double and single sideband modulation, FM signal bandwidth, narrow and wide angle modulation, FM signal generation and reception, frequency division multiplexing, and noise in FM. Prereq.: EE 31200. 3 LAB HR./WK.; 1 CR.

42500: Computer Engineering Laboratory

Introduction to the operation and applications of microcomputers and design experiments in computer interface engineering utilizing a microprocessor-based computer. Design projects include computer input-output device selection, program interrupt, on-line control, direct memory access, and circular input-output buffer. Prereq.: EE 44400 (or CSc 21000 and 34200). 3 LAB HR./WK.; 1 CR.

42600: Control Laboratory

Control of an analog servomechanism including velocity feedback, system following error, speed control, 3-term control, and frequency response. Prereq.: EE 37100. 3 LAB HR./WK.; 1 CR.

42800: Photonics Engineering Laboratory

Interferometers. Characteristics of CW laser. Diffraction through slits, gratings, pinholes, and sharp edges. Spatial filtering and holography. Radiometry and photometry. Polarization and wave plates. Pre- or coreq: EE 33000 (or 33100). 3 LAB HR./WK.; 1 CR.

42900: Solid State Devices Laboratory

Designed to complement the lectures presented in EE 44100 through device testing and measurement. Observations of semiconductor materials properties through experiments involving the Hall effect, photo generation/recombination, and anisotropic etching. Semiconductor PN junctions, uni- and bipolar device characterization through C-V plotting, DC and AC measurements of devices in packages and on wafers and subsequent development of device model parameters. Optional special project opportunity. Laboratory notebook required. Pre- or coreq.: EE 44100. 3 LAB HR./WK.; 1 CR.

43800: Management Concepts for Engineers

The principles and techniques of team management in a high-technology environment. Concepts in developing leadership and entrepreneurial skills as well as communication skills in a business context. A term paper will be required. Prereq.: at least upper junior status. 3 HR./WK.; 3 CR.

44100: Electronic Devices and Semiconductor Materials

Fundamental properties of semiconductors. Device fabrication, the PN junction, metal-semiconductor junction, the bipolar transistor, the field effect transistor, the MOS transistor. Prereq.: EE 33900. 3 HR./WK.; 3 CR.

44400: Digital Computer Systems

Digital system description. Algorithmic processor design. Organization of a simple digital computer. Control unit design, microprogramming. Elements of programming. General CPU, memory, and input/output organization. Microcomputer organization. Prereq.: EE 21000, pre or coreq.: EE 25900. 3 HR./WK.; 3 CR.

45100: Communication Electronics

Components of end-to-end communications systems. Noise in circuits and systems. Behavior of wideband and tuned amplifiers; limits on small signal operation. Gain controlled amplifiers, limiters, frequency multipliers, oscillators, coupling networks. Nonlinear elements, distortion, amplitude, frequency, and phase modulators, transmitters and low-noise receivers. Prereq.: EE 31200. 3 HR./WK.; 3 CR.

45200: Fiber Optic Communications

This course is intended to provide the basic materials for an introductory senior or first-year graduate course in the theory and application of optical fiber communication technology with emphasis on both digital and analog point-to-point very-high-bit-rate long haul optical transmission systems. Topics covered include: an overview of the fundamental components of advantages of optical fibers relative to other transmission media; basic laws and definitions of optics that are relevant to optical fibers; degradation of light signals arising from attenuation and distortion mechanisms; main devices encountered in a fiber optic system, light sources, light detectors. Analog and digital modulation formats at the transmitter: theory and design of receivers, noise and detection for optical fiber links; performance analysis and design of both digital and analog point-to-point very high bit-rate long-haul optical transmission systems. Prereq.: EE 31200, EE 33300 (or 33200), EE 44100. 3 HR./WK.; 3 CR.

45300: Digital Signal Processing

Introduction to basic digital signal processing concepts; the finite Fourier transform, cyclic convolution, digital filters, Z-transform. Design of algorithms computing the finite Fourier transform and cyclic convolution. Cooley-Tukey and Winograd algorithms. Prereq.: EE 30600. 3 HR./WK.; 3 CR.

45400: Physical Electronics

Statistical distributions in physics. Metals. Band theory. Semiconductors. Phonons. Transport coefficients. Prereq.: EE 33900. 3 HR./WK.; 3 CR.

45500: Elements of Power Systems

Analysis of transmission lines, transformers, and electric machines as the elements of power systems. Prereq.: EE 35700. 3 HR./WK.; 3 CR.

45600: Elements of Control Theory

Design of classical and state space controllers for continuous time and sampled data systems. Lead, lag, and lag-lead compensation. State feedback, separation theorem, reduced order estimators. Lead compensation using w-plane. Discrete equivalent state space models. Deadbeat response. Prereq.: EE 37100. 3 HR./WK.; 3 CR.

45700: Digital Integrated Circuits

Design of logic circuits: CMOS, Pseudo-nMOS, and high-performance circuits, such as dynamic pre-charge circuits and clocked CMOS, etc. Design of flip-flops and memories at the transistor level. Design of arithmetic circuits, I/O circuits, registers and control circuits, as well as analysis of digital circuit characteristics. Prereq.: EE 24100. 3 HR./WK.; 3 CR.

45800: Introduction to Lasers

Resonant optical cavities. Interaction of radiation with matter. Gas, solid-state, and injection lasers. Light modulation (internal and external). Prereq.: EE 33300 (or 33200), EE 33900. 3 HR./WK.; 3 CR.

45900: Microprocessors

Introduction to stored program computers and microcomputers. Reviews of number systems, binary arithmetic, register transfer language, and micro-operations. Digital computer and microcomputer functional elements, input-output devices, system organization and control. Accumulator-based processors, general register processors. Linear pipelining and cache memory. Prereq.: EE 44400. 3 HR./WK.; 3 CR.

46000: Computer Communication Systems

Queuing theory, Markovian networks, packet, message and circuit switching networks, assignment of link capacities and flows, routing algorithms, stability, flow control and error control, packet radio networks, multiple access schemes and network protocols. Prereq.: EE 31200. 3 HR./WK.; 3 CR.

46200: Photonic Engineering

Study of basic optics and computer-aided design for optics. Application of study to solve engineering problems and design photonic devices. Topics will be selected from: ray tracing; lens design; interferometry; analysis of optical systems; spectroscopic techniques; Fourier optics; fibers, waveguides, integrated optics; video disk; optical detectors. Prereq.: EE 33300 (or 33200). 3 HR./WK.; 3 CR.

46300: Wireless Communications

Introduction to wireless/mobile communications systems. Cellular systems concept: frequency reuse, co-channel and adjacent channel interference, capacity improvement. Wireless channel characteristics: long-term fading, short-term fading. Diversity techniques: DPSK, QPSK, 4QPSK, QAM, GMSK. Multiple access techniques for wireless communications: FDMA, TDMA, CDMA. Personal communications services. Current standards of PCS and cellular systems. Prereq.: EE 31200. 3 HR./WK.; 3 CR.

46400: VLSI Design

Introduction to CMOS circuits, CMOS processing technology and physical characterization of gates, clocking strategies, I/O structures, and structured design concepts. The student will design, simulate, and lay out mask description of digital CMOS VLSI circuits. The design will be simulated using SPICE and RSIM. Circuit layout is created using MAGIC software package. The circuit will be fabricated by the foundry service supported by NSF/DARPA and tested. A final report detailing all the work is required. Pre- or coreq: EE 45700. 2 CLASS, 3 LAB HR./WK.; 3 CR.

51000: Independent Study

The student pursues a program of independent study under the direction of a faculty mentor. Open only to students who have shown exceptional ability (minimum GPA 3.5). Students desiring to register in this course should apply by Dec. 1 for the spring term and by May 1 for the fall term. A final report is required. Prereq.: departmental approval. 3 HR./WK.; 3 CR.

59866 & 59867: Capstone Design for Electrical Engineering

This is a two-semester capstone design course. The student is required to design and implement a solution to an engineering project. Topics include introduction to engineering design, identification of a problem, background research, social, environmental, ethical and economic considerations, intellectual property and patents and proposal writing, including methods of engineering analysis and theoretical modeling. A detailed concept and design proposal is completed during the first semester and the implementation phase may also begin. A functional physical prototype or computer model is completed and tested in the second semester. Each student is required to write an in depth engineering report and to make an oral presentation to the faculty. Pre-requisites: EE 32300, Senior students only. Pre-requisite for EE59867: EE59866. 3 CLASS, 3 DESIGN HR./WK.; 3 CR.

FACULTY

Samir Ahmed, Herbert Kayser Professor

B.A., Cambridge Univ., M.A.; Ph.D., Univ. College (UK)

Mohamed A. Ali, Professor

B.S., Azar Univ. (Egypt); M.S., The City College; Ph.D., CUNY

Mark Arend, Assistant Professor

B.S. (Physics), Univ. of Washington, M.S.; M.Phil., Columbia Univ., Ph.D.

Joseph Barba, Professor and Acting Dean, School of Engineering

B.E., The City College, M.E.; Ph.D., CUNY

Mitra Basu, Associate Professor

B.E., Regional Engr. College, Durgapur (India); M.S., Univ. of Pittsburgh; Ph.D., Purdue Univ.

Xinghao Chen, Associate Professor

M.S. (ECE), Rutgers Univ., Ph.D. (ECE)

Michael Conner, Professor

B.E.S., Johns Hopkins Univ.; M.S., Univ. of Maryland, Ph.D.

David Crouse, Assistant Professor

B.S. (Physics), Purdue Univ.; Ph.D., Cornell Univ.

Roger Dorsinville, Professor and Chair

B.S., Moscow State Univ. (Russia), M.S., Ph.D.

Barry M. Gross, Associate Professor

B.A. (Physics/Math), Yeshiva Univ.; M.S., The City College; Ph.D., CUNY

Ibrahim W. Habib, Professor

B.S., Ain Shams Univ. (Egypt); M.S., Polytechnic Univ. of New York; Ph.D., CUNY

Ping-Pei Ho, Professor

B.S., Tsing-Hun Univ. (Taiwan); M.B.A., Kent State Univ.; Ph.D., CUNY

George M. Kranc, Professor

B.Sc., Univ. of St. Andrews (Scotland); M.S., Columbia Univ., D.Sc.Eng.

Myung Jong Lee, Professor

B.S., Seoul National Univ. (Korea), M.S.; Ph.D., Columbia Univ.

Jamal T. Manassah, Professor

B.S., American Univ. of Beirut (Lebanon); M.A., Columbia Univ., Ph.D.

Fred Moshary, Associate Professor

B.S. (Applied Physics), Cornell Univ., M.S.; Ph.D. (Applied Physics), Columbia Univ.

Leonid Roytman, Professor

B.S., Moscow Polytechnical (Russia), M.S.; Ph.D., Novosibirsk Polytechnical Inst. (Russia)

Tarek N. Saadawi, Professor

B.Sc., Cairo Univ. (Egypt), M.Sc.; Ph.D., Univ. of Maryland

Norman Scheinberg, Professor

B.E.E., Cooper Union; M.S., M.I.T.; Ph.D., CUNY

Kenneth Sobel, Professor

B.E., The City College; M.E., Rensselaer Polytechnic Inst., Ph.D.

Gerald E. Subak-Sharpe, Professor

B.Sc. (Eng.), Univ. College (UK); Ph.D., Univ. of London (UK); D. Engr. Sci., Columbia Univ.

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B.S., Shanghai Jiao Tong Univ. (China), M.S.; Ph.D., Univ. of Minnesota

Frederick E. Thau, Professor

B.E.E., New York Univ., M.E.E., D.Eng.Sc.

M. Ümit Uyar, Associate Professor

B.S., Istanbul Teknik Univ. (Turkey); M.S., Cornell Univ., Ph.D.

Ardie D. Walser, Associate Professor and Associate Dean

B.E., The City College, M.E.; Ph.D., CUNY

Jizhong Xiao, Assistant Professor

B.S., East China Inst. of Tech. (China); M.S. (EE), Nanyang Tech. Univ. (China); Ph.D. (ECE), Michigan State Univ.

Mohamed Zahran, Assistant Professor

B.S., Cairo Univ. (Egypt), M.S.; Ph.D., Univ. of Maryland

PROFESSORS EMERITI

Abraham Abramowitz

Egon Brenner

Shee-Ming Chen

George J. Clemens

Vincent Deltoro

Demos Eitzer

Cecile Froehlich

Henry B. Hansteen

William T. Hunt, Jr.

Mansour Javid

Irving Meth

Donald L. Schilling

Robert Stein

Herbert Taub

Richard Tolimieri

Louis Weinberg

Department of Mechanical Engineering

Professor Feridun Delale, Chair • Department Office: Steinman 233 • Tel: 212-650-5224

GENERAL INFORMATION

The City College offers the following undergraduate degree in Mechanical Engineering:

B.E. (M.E.)

PROGRAMS AND OBJECTIVES

Mechanical Engineering is a very broad and versatile profession. Mechanical engineers deal with a wide spectrum of topics ranging from cell mechanics to the design of huge launching pads for space vehicles. Their domain of interest includes energy conversion, space propulsion, transportation vehicles, manufacturing, assembly lines, robotics, computer hardware, pollution control, biomechanics, medical instruments, and heating, ventilating and air conditioning. The diverse and extensive nature of mechanical engineering provides vast opportunities for employment in many challenging and exciting industries.

Our educational program is carefully designed to meet industry's criteria for successful engineers. It stresses fundamentals as well as practice. It focuses on creative thinking and problem-solving skills. It emphasizes written and oral communication, teamwork, design, time management, computer utilization and communication through graphics. Its primary goal is education for career-long learning, giving students the educational tools to enable them to deal with rapidly advancing technologies.

Practice in teamwork is achieved through design projects, computer-aided manufacturing, participation in

regional and national contests, independent study and group learning settings. Skills in oral and written communication are gained through reports and presentations of individual and team projects. Modern laboratories provide opportunities for training in measurements and testing. Computers are extensively used in design, simulation, optimization and learning through graphics.

MISSION

The mission of the Department of Mechanical Engineering at The City College, in conformity with the mission of the School of Engineering, is:

- I.** To educate well-rounded and conscientious mechanical engineers of diverse backgrounds capable of becoming leaders in our society.
- II.** To carry out basic and applied research leading to new scientific and educational ideas, systems, and devices in mechanical engineering and related interdisciplinary areas.
- III.** To offer advice, service, and support to industry, government agencies, schools, community groups and professional societies.

PROGRAM EDUCATIONAL OBJECTIVES

Consistent with the mission, the following Undergraduate Program Educational Objectives are established to provide a quality education in mechanical engineering:

- A.** To educate students for successful careers in mechanical engineering or related areas and for life-long learning;

- B.** To make the students aware of the culture in which they live and in which they are slated to become leaders;
- C.** To prepare students to solve problems in mechanical engineering and related areas by thorough training in methods of engineering analysis, computation, experimentation and testing, including understanding basic mathematical and scientific principles;
- D.** To develop the skills needed for the design process, including the ability to identify and formulate real world engineering problems in a global context, to carry out background research, to think creatively, to work individually and in teams, including interdisciplinary teams, to synthesize information, to evaluate results and to communicate effectively;
- E.** To foster an appreciation for engineering measurements and their uncertainties and to educate students in experimental and data analysis techniques;
- F.** to develop leadership capabilities in our students including understanding of the ethical and professional responsibilities of an engineer.

PROGRAM OUTCOMES

Upon graduation our students are expected to have:

- a.** an ability to apply knowledge of mathematics, science and engineering;
- b.** an ability to design and conduct experiments, as well as to analyze and interpret data;
- c.** an ability to design a system, component, or a process to meet desired needs;

- d. an ability to function on multi-disciplinary teams;
- e. an ability to identify, formulate, and solve real world mechanical engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues: an appreciation for the human factors, social values, environmental impact and other contemporary issues as well as economic consequences of work;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
- l. preparation for pursuing advanced degrees;
- m. knowledge of specialized and emerging areas in mechanical engineering.

ACCREDITATION

The B.E. (M.E.) program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

REQUIREMENTS FOR MAJORS

Mechanical Engineering majors must complete the following:

Math and Science Requirements Required Courses

Mathematics:	
20102: Calculus I*	3
20202: Calculus II*	3
20300: Calculus III*	4
39100: Methods of Differential Equations*	3
39200: Linear Algebra and Vector Analysis for Engineers	3
Physics:	
20700-20800: General Physics*	8

Chemistry:	
31606 (or 10300 or 10301) General Chemistry for Engineers*	3
Science Electives:*	
Two of the following courses:	
Biology:	
32100: Introduction to Human Physiology and Biophysics+ (4 cr.)	
32600: Human Biology (3 cr.)	
32700: Principles of Ecology (3 cr.)	
Chemistry:	
10400: General Chemistry II (3 cr.)	
26100: Organic Chemistry (3 cr.) + 33000: Physical Chemistry (3 cr.) +	
Computer Science:	
10200: Introduction to Computing (3 cr.)	
Earth and Atmospheric Science:	
21300: Engineering Geology (3 cr.)	
21700: ESS: Physical and Chemical Principles (3 cr.)	
Physics:	
31500: Medical Physics (3 cr.)	
32100: Modern Physics for Engineers** + (3 cr.)	
42200: Biophysics (3 cr.)	
45400: Descriptive Astronomy (3 cr.)	

Total Math and Science Credits 33

* Minimum grade of "C" required.

** Can be used as either a Science or a Mechanical Engineering Elective.

+ Second science elective (4th semester) restricted to one of the following four: Bio 32100, Chem 26100, Chem 33000, Phys 32100.

English and Liberal Arts (General Education) Requirements

Refer to the School of Engineering section for details.

Total English and Liberal (General Education) Arts Credits 24

Engineering Requirements Required Courses

10000: New Freshman Seminar	0
Engineering:	
10100: Engineering Design I*	1
20400: Electrical Circuits	3
23000: Thermodynamics	3
Mechanical Engineering:	
14500: Computer-Aided Drafting	2
24600: Engineering Mechanics I	3
24700: Engineering Mechanics II	3
31100: Fundamentals of Mechatronics	3
32200: Computer Methods in Engineering	3

33000: Mechanics of Materials	3
35600: Fluid Mechanics	3
37100: Computer-Aided Design	3
41100: Systems Modeling, Analysis and Control	4
43000: Thermal Systems Analysis and Design	3
43300: Heat Transfer	3
43600: Aero-Thermal-Fluids Laboratory	1
46100: Engineering Materials	4
46200: Manufacturing Processes and Materials	3
46300: Micro/Nanotechnology	3
47200: Mechanical Systems Design	3
47300-47400: Senior Design Project	6

Total Required Engineering Credits 60

Design Electives

Three of the following courses: 9
Mechanical Engineering:

44100: Advanced Stress Analysis (3 cr.)	
46600: Dynamics and Controls of Aerospace Vehicles (3 cr.)	
46800: Aircraft and Rocket Propulsion (3 cr.)	
46900: Spacecraft Systems and Spacecraft Design (3 cr.)	
47100: Energy Systems Design (3 cr.)	
51100: Advanced Mechatronics (3 cr.)	
51400: Rotorcraft Aerodynamics (3 cr.)	
51500: Orbital Mechanics (3 cr.)	
53700: Turbomachinery Design (3 cr.)	
53900: Vehicular Power Systems (3 cr.)	
54200: Introduction to the Theory and Practice of Vibration (3 cr.)	
54600: Robotics and Automation (3 cr.)	
54700: Environmental Control (3 cr.)	
54800: Aerostructures (3 cr.)	
55500: Structural Dynamics and Aeroelasticity (3 cr.)	
55600: Advanced Fluid Mechanics (3 cr.)	
57100: Mechanism Design (3 cr.)	
57200: Aerodynamic Design (3 cr.)	
Biomedical Engineering:	
50100: Cell and Tissue Mechanics (3 cr.)	

50200: Cell and Tissue Transport (3 cr.)
 50300: Cell and Tissue Biomaterial Interactions (3 cr.)

Mechanical Engineering

Electives

3

Additional elective(s) from the following courses or the Design Electives list.
 Mechanical Engineering:

40100: Review of Engineering Fundamentals (1 cr.)
 52600: Introduction to Finite Element Method (3 cr.)
 53600: Energy Conversion (3 cr.)
 56700: Special Topics in Aerospace Engineering (3 cr.)
 56800: Special Projects in Aerospace Engineering (3 cr.)
 59001-59003, 59101-59103: Special Projects** (1-3 cr.)
 59500: Teaching/Research Experiences for Undergraduates (3 cr.)
 59803-59806, 59903-59906: Special Topics in Mechanical Engineering** (3-6 cr.)
 59901: Product Development, Management, and Marketing (3 cr.)

Physics:

32100: Modern Physics for Engineers*** (3 cr.)

Total Elective Credits

12

* *New transfer students who have successfully completed Calculus II (Math 20200 or 20202) should not take Engr 10100. They are required to complete an additional ME elective course of at least one credit.*

** *Departmental approval required.*

*** *Can be used as either a Science or a Mechanical Engineering Elective.*

Total Credits for Major

129

Additional Requirements for Graduation

Refer to the School of Engineering section for details.

RECOMMENDED SEQUENCE OF COURSES

First Semester*

Math 20102: Calculus I (3 cr.)
 Chem 31606 (or 10300 or 10301): General Chemistry for Engineers (3 cr.)

Engr 10100: Engineering Design I (1 cr.)
 Eng 11000: Freshman Composition (3 cr.)
 ME 14500: Computer-Aided Drafting (2 cr.)

Liberal Arts course (3 cr.)

15 Credits

**New freshman students must take NSS 10000: New Freshman Seminar (0 cr.) in their first semester.*

Second Semester

Math 20202: Calculus II (3 cr.)
 Phys 20700: General Physics I (4 cr.)
 First Science Elective Course (3 cr.)
 Eng 21007: Writing for Engineering (3 cr.)

Liberal Arts course (3 cr.)

16 Credits

Third Semester

Math 20300: Calculus III (4 cr.)
 Phys 20800: General Physics II (4 cr.)
 Engr 20400: Electrical Circuits (3 cr.)
 ME 24600: Engineering Mechanics I (3 cr.)

Liberal Arts course (3 cr.)

17 Credits

Fourth Semester

Math 39100: Methods of Differential Equations (3 cr.)

Engr 23000: Thermodynamics (3 cr.)

ME 24700: Engineering Mechanics II (3 cr.)

ME 32200: Computer Methods in Engineering (3 cr.)

ME 33000: Mechanics of Materials (3 cr.)

Second Science Elective Course (3 cr.)

18 Credits

Fifth Semester

Math 39200: Linear Algebra and Vector Analysis for Engineers (3 cr.)

ME 31100: Fundamentals of Mechatronics (3 cr.)

ME 35600: Fluid Mechanics (3 cr.)

ME 46100: Engineering Materials (4 cr.)

Liberal Arts course (3 cr.)

16 Credits

Sixth Semester

ME 43000: Thermal Systems Analysis and Design (3 cr.)

ME 37100: Computer-Aided Design (3 cr.)

ME 41100: Systems Controls (4 cr.)

ME 43300: Heat Transfer (3 cr.)

ME 47200: Mechanical Systems Design (3 cr.)

16 Credits

Seventh Semester

ME 43600: Aero-Thermal-Fluids Laboratory (1 cr.)

ME 46200: Manufacturing Processes and Materials (3 cr.)

ME 46300: Micro/Nanotechnology (3 cr.)

ME 47300: Senior Design Project I (3 cr.)

Design Elective course (3 cr.)

Liberal Arts course (3 cr.)

16 Credits

Eighth Semester

ME 47400: Senior Design Project II (3 cr.)

Two Design Elective courses (6 cr.)

Mechanical Engineering Elective course (3 cr.)

Liberal Arts course (3 cr.)

15 Credits

ADVISEMENT

All full-time faculty serve as undergraduate advisors.

TRANSFER CREDITS

The Mechanical Engineering Department grants transfer credits for legitimate mechanical engineering courses having engineering/science content that matches City College courses. Courses claiming a design component are not accepted except in certain compelling cases that are supported by convincing documentation at the evaluation session. Such documentation must include (a) a complete, legitimate transcript; (b) complete class notes; (c) textbooks used; (d) reports written; (e) homework; (f) professionally executed, detailed engineering drawings, etc. Note that only courses with grades of C or better are accepted for transfer credits.

COURSE DESCRIPTIONS

14500: Computer-Aided Drafting

Basic theory of space geometry, with applications in computerized drafting. Students develop skills of spatial analysis, visualization and interpretation through reading existing drawings and freehand sketching. Conventional drafting practices are introduced, including orthographic projections, auxiliary and sectional views, isometric and orthographic projections and basic dimensioning. Computer-aided drafting software is used to produce engineering drawings. 1 CLASS, 2 LAB HR./WK.; 2 CR.

24600: Engineering Mechanics I (Statics and Particle Kinematics)

Vector concepts in mechanics. Equivalent force systems. Centers of gravity and pressure. Equations of equilibrium for two- and three-dimensional systems. Static determinacy. Analysis of trusses, frames, machines and cables. Frictional forces. Properties of surfaces and rigid bodies. Particle kinematics: path variables, cylindrical coordinates and relative motion. Recitation periods integrated with classroom work. Prereq.: Math 20200 (or 20202) (min. C grade), Physics 20700 (min. C grade); pre- or coreq.: ME 14500 or BME 22000. 3 HR./WK.; 3 CR.

24700: Engineering Mechanics II (Kinematics and Dynamics of Rigid Bodies)

Kinematics of rigid bodies and relative motion. Particle dynamics. Vibrations of single-degree-of-freedom mass-spring systems. Dynamics of systems of particles and rigid bodies. Moment of momentum equations. Kinetics of plane motion for rigid bodies. Energy methods. Computer-assisted mechanism dynamics design project. Design periods integrated with classroom work. Prereq.: ME 24600; pre- or coreq.: Math 39100 (min. C grade). 3 HR./WK.; 3 CR.

31100: Fundamental of Mechatronics

Modern electric/electronic devices with applications in mechanical measurements are used as various sensors, such as strain gages, thermocouples, piezoelectric transducers, LVDT's, optoelectronic proximity sensors, etc. Static and dynamic characteristics of sensors and time-frequency responses of various measurement systems are studied. Concepts of filtering, amplification and signal conditioning are demonstrated through hands-on laboratory experiments. Engineering statistics and regression analysis are also introduced for analyzing measurement errors. Prereq.: Engr 20400, Math 39100 (min. C grade)

ME 24700, ME 32200, ME 3300; pre- or coreq.: Math 39200. 2 CLASS, 3 LAB HR./WK.; 3 CR.

32200: Computer Methods in Engineering

Digital procedures and numerical techniques necessary for the solution of many classes of mechanical engineering problems. Procedures for the analysis and processing of experimental data, for the solution of boundary and initial value problems, sets of linear equations and eigenvalue problems. Difference methods. Use of these techniques as essential to the design process, both in the solution of equations which do not have easily obtained closed form solutions and in the treatment of experimental data. Students will principally use the microcomputer laboratory and ancillary facilities. Pre- or coreq.: Math 39100 (min. C grade). 2 CLASS, 3 LAB HR./WK.; 3 CR.

33000: Mechanics of Materials

Engineering analysis of deformable elastic and inelastic bodies subject to axial, torsional, flexural and shearing loads. Analysis of stress and strain. Stress/strain relations, strain energy and failure theories. Deformations and deflections due to mechanical and thermal loads. Statically determinate and indeterminate systems. Pressure vessels, combined loading, principal stresses, thermal stresses, joints and fittings. Stability, buckling and critical loads. Prereq.: Math 20300 (min. C grade), ME 24600. 3 CLASS, 1 REC. HR./WK.; 3 CR.

35600: Fluid Mechanics

Basic concepts in fluid mechanics. Hydrostatics. Control volume formulation of the basic laws of conservation of mass and momentum. Differential analysis of fluid motion: continuity and Euler's equations. Bernoulli's equations. Dimensional analysis and similitude. Incompressible viscous pipe flow. Introduction to boundary layer theory. Drag and lift. Prereq.: Math 39100 (min. C grade), Phys 20800 (min. C grade); pre- or coreq.: Math 39200. 3 HR./WK.; 3 CR.

37100: Computer-Aided Design

Introduction to the theory and methods of Computer-Aided Design (CAD) from a user's viewpoint. Design methodology. Simulation and modeling. Introduction to analysis programs based on finite element methods and postprocessing. Application of these concepts to specific engineering design projects. The student will have access to professional workstations with color graphics capability. Prereq.: ME 14500, ME 33000; pre- or coreq.: Math 39200. 2 CLASS, 3 DESIGN HR./WK.; 3 CR.

40100: Review of Engineering Fundamentals

Review of science, mathematics and engineering concepts. Topics include engineering mathematics, chemistry, materials science, solid and fluid mechanics, thermodynamics, engineering economics and ethics, computer science and electrical circuits. The course concludes with a practice Fundamentals of Engineering (FE) exam. Prereq: Senior undergraduate or graduate standing. 3 HR./WK.; 1 CR.

41100: Systems Modeling, Analysis and Control

Model development with applications to mechanical engineering systems. First and higher order system responses. Laplace transform, transfer functions and block diagrams. Frequency response and vibration. Routh-Hurwitz stability and graphical methods such as root locus and Bode plot. Introduction to feedback control. Concepts of PID control, tuning and compensation. Hands-on and demonstrative experiments include static and dynamic rotor balancing, shake table testing of various degree-of-freedom systems, feedback controls of pneumatic, servo motor, fluid level and temperature control systems. Prereq.: ME 24700, ME 31100, ME 32200, ME 33000; pre- or coreq.: ME 35600. 3 CLASS, 3 LAB HR./WK.

43000: Thermal Systems Analysis and Design

Engineering application of thermodynamics to steam gas cycles, gas cycles, refrigeration, Maxwell relations and application. Chemical reactions and combustion processes. Phase equilibrium and chemical equilibrium. Flow through nozzles and blade processes. Prereq.: Engr 23000, ME 35600. 2 CLASS, 2 DESIGN HR./WK.; 3 CR.

43300: Heat Transfer

Derivation of the energy equation. One-dimensional conduction and extended surfaces. Introduction to two-dimensional and transient conduction. Fundamentals of convection heat transfer. Solutions to laminar convection problems. Correlation equations for Nusselt number. Free convection. Heat exchanger theory. Introduction to radiation heat transfer. Design projects on heat transfer in thermal systems. Pre- or coreq: ME 35600. 3 HR./WK.; 3 CR.

43600: Aero-Thermal-Fluids Laboratory

Experiments and demonstrations designed to illustrate concepts and verify theories in thermodynamics, fluid flow, and heat transfer. Experiments involve a wind tunnel, a refrigeration unit, a centrifugal pump-turbine unit, a pipe flow unit, a fin

heat transfer device and a heat exchanger. Use of PC-based data acquisition systems. Prereq.: ME 31100, ME 43000, ME 43300. 3 LAB HR./WK.; 1 CR.

44100: Advanced Stress Analysis

Stress and strain. Principal axes. Hooke's Law. Constitutive equations for elastic materials. Formulation of plane stress and plane strain in Cartesian and polar coordinates. Theories of failure. Thick tubes, rotating disks, shrink fits. Thermal stresses in rings, tubes, and disks. Loads, moments, and deflections in statically indeterminate systems. Castigliano's theorems and energy methods. Component design projects involving various failure theories. Prereq.: ME 24700, ME 33000 (min. C grade); pre- or coreq.: 33000. 3 HR./WK.; 3 CR.

46100: Engineering Materials

Utilizing concepts of atomic theory, crystalline structures and a variety of microscopic observations, basic properties of engineering materials are studied. Processing techniques for control of the microstructure of the materials to improve their mechanical behavior are introduced. The materials include metals and alloys, ceramics and glass, as well as plastics and composites. The necessary tradeoffs between design alternatives and available manufacturing and processing methods are also considered. Prereq.: Chem 31600 (or 10300 or 10301) (min. C grade); pre- or coreq.: 33000. 2 CLASS, 3 LAB HR./WK.; 3 CR.

46200: Manufacturing Processes and Materials

Relationship between product design and manufacturing. Influence of material properties. Capabilities and limitations of common methods of processing metallic and nonmetallic materials (casting, hot and cold working, joining, traditional and non-traditional machining). Introduction to computer-aided manufacturing, robotics and computer numerical control. Prereq.: ME 14500, ME 46100. 2 CLASS, 3 LAB HR./WK.; 3 CR.

46300: Micro/Nano Technology: Mechanics, Materials, and Manufacturing

The aim of this course is to introduce students with diverse technical interests to the emerging area of micro and nano phenomena in science and engineering. Micro-Electrical Mechanical Systems (MEMS) and Nanotechnology continue to revolutionize research in the engineering and science communities requiring newcomers to familiarize themselves with these fundamental principles. This course will address

synthesis and manufacturing techniques of micro/nano devices, relevant mechanics concepts (such as fracture and contact mechanics, elasticity), material property determination at small scales (e.g. size-scale strength effects), and engineering difficulties with manipulation and control of materials and phenomena on scales less than 1000 times the width of a human hair. The course will be centered upon a series of investigational exercises including microfluidics experiments, electro-mechanical testing of microdevices, transport and deposition of macromolecules (e.g. DNA, proteins), nanolithography, and manipulation of carbon nanotubes. Course material will also briefly discuss the evolution of select micro/nano innovations and their impact and applications in applied sciences, medicine, space development, policy, and the environment. Prereq: ME 43300 or ChE 34100. 2 CLASS, 2 LAB HR./WK.; 3 CR.

46600: Dynamics and Control of Aerospace Vehicles

Static and dynamic stability criteria. Control considerations. Longitudinal control. Stability derivatives. Longitudinal and lateral stability analysis. Lateral and rolling control. Transient motion in response to control movement. Open loop control. Dynamics of steered bodies. Closed loop control. Automatic control. Design projects related to aircraft control. Prereq.: ME 41100 or EE 37100 (min. C grade); pre- or coreq.: 46200. 3 HR./WK.; 3 CR.

46800: Aircraft and Rocket Propulsion

Aerodynamic and thermodynamic design of airbreathing and rocket engines. Physical parameters used to characterize propulsion systems performance. Subsonic and supersonic gas dynamics and cycle analysis of ramjets, turbojets, turbofans and turboprops. Effect of after-burning and thrust vectoring. Design of inlets, diffusers, fans, compressors, combustors, turbines and nozzles. Liquid and solid propellant rockets. Market and environmental considerations. Design project. Prereq.: ME 43000. 3 HR./WK.; 3 CR.

46900: Spacecraft Systems and Spacecraft Design

Overall description of the basic mission considerations for aircraft design. Space environment, astrodynamics and atmospheric reentry. Attitude description. Configuration and structural design. Spacecraft subsystems are discussed with theoretical background and current engineering practice. Thermal control. Power. Navigation and guidance. Telecommunications. Tools to evaluate the overall impact on the various component

subsystems and the integrated system leading to the final design selection. Design project. Prereq.: ME 43000. 3 HR./WK.; 3 CR.

47100: Energy Systems Design

Design and analysis of cycles, components, and systems used in power generation and related industries. Power plant cycles and flow diagrams. Heat balance calculations. Turbines, steam generators. Economics of energy systems, capacity analysis, load curve analysis, scheduling. Use of computerized steam and gas tables and power plant simulation. Design projects on power plant cycles and associated equipment. Prereq.: ME 43000, pre- or coreq.: ME 43300. 2 CLASS, 1 DESIGN HR./WK.; 3 CR.

47200: Mechanical Systems Design

Introduction to design philosophy. Design of basic mechanical elements: screws, shafts, gears, bearings, springs, brakes, clutches, etc. Open-ended design projects dealing with the integration of these elements into subsystems such as drive trains, indexing devices, conveyors, etc. Emphasis is placed on computer use with commercial and student-generated software, as well as on report writing. Prereq.: ME 24700, ME 33000; pre- or coreq.: ME 46100. 2 CLASS, 2 DESIGN HR./WK.; 3 CR.

47300, 47400: Senior Design Project

In this two-semester capstone course, the student is required to find a professional design solution to an open-ended real life engineering problem. These projects are proposed and supervised, in conjunction with course leaders, by individual faculty members or industry. Special attention is paid to the use of computer-driven machine tools as well as to the observance of economic, safety, reliability, esthetic, and ethical constraints. In the first semester, concept design and analysis are carried out. A functional prototype is fabricated in the second semester. As applicable, a physical or computer model must be tested, in addition to writing an in-depth engineering report. Each student is required to make an oral presentation to the faculty. Prereq. for ME 47300: ME 41100 and ME 47200; pre- or coreq.: ME 37100, ME 43300, ME 46200. Prereq. for ME 47400: ME 43600 and 47300. 2 CLASS, 3 DESIGN HR./WK.; 3 CR. EACH

51100: Advanced Mechatronics

Digital principles are studied and their applications in A/D and D/A converters, microcontrollers and programmable-logic controllers (PLCs) are demonstrated by controlling various electromechanical

devices, such as relays, DC servos, and stepper motors. Principles of electric machines and selection of electric motors are also introduced. Hands-on laboratory experience, including team-design for measurement and control of various electromechanical devices, is particularly emphasized. Prereq.: ME 41100. 2 CLASS, 2 LAB HR./WK.; 3 CR.

51400: Rotorcraft Aerodynamics

Rotor in vertical or hover flight: Momentum theory, wake analysis, blade element theory. Unsteady flow effects. Rotor in forward flight. Rotor mechanisms. Performance. Trim, stability and control. Helicopter configurations. Prereq.: ME 41100. 3 HR./WK.; 3 CR.

51500: Orbital Mechanics

The two-body problem. Lagrangian dynamics. Hamiltonian equations. Perturbations. Satellite orbits and ballistic trajectories. Effects of drag on satellite orbits. The general three-body problem. Coordinate systems and coordinate transformations. Computational methods. Design project. Prereq.: ME 24700. 3 HR./WK.; 3 CR.

52600: Introduction to Finite Element Method

Formulation of element stiffness matrices and their assembly. Assumed displacement fields. Isoparametric elements and Gauss quadrature. Static condensation and equation solvers. Variational calculus and weighted residuals. Application to statics, dynamics, fluid mechanics and heat transfer. Prereq.: ME 32200, ME 37100; pre- or coreq.: ME 43300. 3 HR./WK.; 3 CR.

53600: Energy Conversion

Modern static and dynamic conversion devices. Applications include thermoelectrics, magneto-hydrodynamics, electro-hydrodynamics, fuel cells, reciprocating and rotary energy converters. Current and future energy resources and factors affecting the rate of energy consumption. Comparison of alternative energy conversion systems, including limitations and efficiency of each, and the comparative effects on the environment. Prereq.: ME 43000. 3 HR./WK.; 3 CR.

53700: Turbomachinery Design

Aerodynamic and thermodynamic fundamentals applicable to turbomachinery. Analysis of gas and steam cycles. Advanced cycles. Configurations and types of turbomachinery. Turbine, compressor and ancillary equipment kinematics. Selection and operational problems. Design projects relating to gas turbines. Prereq.: ME 35600, ME 43000. 3 HR./WK.; 3 CR.

53900: Vehicular Power Systems

Classification of cycles and engines. Thermodynamic analysis and design applications of air standard and real gas cycles. Combustion charts. Exhaust and intake processes, residual gas fraction. Combustion thermodynamics, chemical equilibrium, and engine emissions. Carburetion, throttling, and carburetor design. Volumetric efficiency and valve design. Design studies. Engine design. Prereq.: ME 43000, ME 35600, ME 43300. 3 HR./WK.; 3 CR.

54200: Introduction to the Theory and Practice of Vibration

Differential equations and general solutions of damped, free, and forced single-degree-of-freedom systems. Numerical solutions. Multi-degree-of-freedom systems, principal modes. Semi-definite systems. Shock and vibration testing. Design project on vibration isolation of machinery. Prereq.: ME 24700. 3 HR./WK.; 3 CR.

54600: Robotics and Automation

Robotics and relevant fields related to robot design and operation. Kinematic problems peculiar to robotic construction. Control considerations. Power sources. Sensory equipment and intelligence. Specifications used to evaluate robot performance. Economic considerations of robotized operations in various applications. Group technologies and flexible manufacturing systems. Prereq.: ME 24700; pre- or coreq.: ME 46200. 2 CLASS, 3 LAB HR./WK.; 3 CR.

54700: Environmental Control

Design of environmental control systems for domestic, commercial, and industrial spaces. Heating, ventilating, air conditioning. Psychrometric chart processes. Design projects on buildings involving heat transmission in building structures, space heat loads, cooling loads, air conditioning systems, fans, ducts, and building air distribution. Prereq.: ME 43000, ME 35600, ME 43300. 3 HR./WK.; 3 CR.

54800: Aerostructures

Flight-vehicle imposed loads. Analysis and design of typical members of semi-monocoque structures under tension, bending, torsion, and combined loading. Buckling of columns and plates. Analysis and design of joints and fittings. Design projects involving structural members under various loading conditions. Prereq.: ME 32200, ME 35600, ME 46100. 3 HR./WK.; 3 CR.

55500: Structural Dynamics and Aeroelasticity

Basic analytical techniques of fixed and rotating wings interactions with flows. Unsteady aerodynamics and flutter.

Fuselage vibrations. Methods for vibration control. Stability analysis. Mechanical and aeromechanical instabilities. Design project including the aeroelastic behavior of simple systems. Prereq.: ME 41100, ME 46100. 3 HR./WK.; 3 CR.

55600: Advanced Fluid Mechanics

Equations of viscous flow. Exact Navier-Stokes solutions. Low Reynolds number flow, lubrication theory. Design project on film bearings. Boundary layer flows. Reynolds equations. Turbulent flow hypotheses. Potential flow. Pumps and blowers. Design project on piping systems. Prereq.: ME 32200, ME 35600. 3 HR./WK.; 3 CR.

56700: Special Topics in Aerospace Engineering

Topics chosen for their particular or current interest to undergraduate students. Prereq.; Department approval. HOURS VARY; 1-3 CR.

56800: Special Projects in Aerospace Engineering

Students may earn elective credits by undertaking appropriate and sufficient comprehensive research and design projects under the guidance of a faculty member, and writing a Thesis report. Prereq.; Department approval. HOURS VARY; 1-3 CR.

57100: Mechanism Design

Introduction to linkages, cams, and gearing. Design criteria. Displacement, velocity and acceleration analysis of planar linkages: graphical and computer methods. Mechanical advantage by instant centers and virtual work. Static and dynamic mechanism force analyses. Kinematic synthesis of planar linkages: graphical and analytical approaches. CAM design: basic considerations of follower displacement, velocity, acceleration, and pulse. CAM layout and manufacture. Kinematic mechanism design project. Prereq.: ME 24700. 3 HR./WK.; 3 CR.

57200: Aerodynamic Design

Airfoil theories. Finite wings. Swept wings. Compressible flow, normal and oblique shock waves. Wings in compressible flow. Airfoil design. Wind tunnels. Prereq.: Engr 23000, ME 35600. 3 HR./WK.; 3 CR.

59001-59003, 59101-59103: Special Projects

Students may earn elective credits by undertaking appropriate and sufficiently comprehensive research and design projects under the guidance of a faculty member, and writing a thesis report. Prereq.: formal (written) commitment of a faculty member. HOURS VARY; 1-3 CR.

59500: Teaching/ Research Experiences for Undergraduates

This course provides undergraduate students with guided experiences in developing and assisting in the teaching of undergraduate laboratories, and performing laboratory research, in either case under direct faculty supervision. Evaluation is based on written documentation of the work. Prereq: Departmental approval. 3 HR./WK.; 3 CR.

59803-59806, 59903-59906: Special Topics in Mechanical Engineering

Topics chosen for their particular or current interest to undergraduate students. Prereq.: departmental approval. 3-6 HR./WK.; 3-6 CR.

59901: Product Development, Management and Marketing

Product development strategies from concept to marketing. Integration of engineering, design, manufacturing, marketing, management and finance. students work in teams on all aspects of an actual product. The course is taught in partnership with industry. Prereq.: permission of instructor. 3 HR./WK.; 3 CR.

FACULTY**Yiannis Andreopoulos, Professor**

Diploma in Mech. & Elec. Engr., Nat'l Tech. Univ. of Athens; M.Sc. & D.I.C. (Aeronautics), Imperial College, London, Ph.D. (Aero. Engrg.)

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Charles B. Watkins, Professor

B.S. (ME), Howard Univ.; M.S., Univ. of New Mexico, Ph.D.; P.E. (District of Columbia)

Sheldon Weinbaum, Distinguished Professor

B.A.E., Rensselaer Polytechnic Inst.; S.M., Harvard Univ., Ph.D.

Hong Hui Yu, Assistant Professor

B.S. (Applied Math), Tsinghua Univ., M.E. (Solid Mech.); Ph.D., Princeton Univ.

PROFESSORS EMERITI**Eugene A. Avallone****Antonio Baldo****Myron Levitsky****Gerard G. Lowen****Henry T. Updegrave, Jr.**



The Sophie Davis School of Biomedical Education

The Sophie Davis School of Biomedical Education

Stanford A. Roman, Jr., M.D., Dean • Harris 107 • Tel: 212-650-5275

GENERAL INFORMATION

The Sophie Davis School of Biomedical Education is committed to:

- Producing broadly educated, highly skilled physicians prepared to undertake postgraduate training.
- Increasing the number of physicians of African-American, Latino and other ethnic backgrounds who have been historically underrepresented in the medical profession and whose communities have been historically underserved by primary care practitioners.
- Encouraging students to become primary care physicians who will provide superior preventive and therapeutic medical care to underserved urban communities; plan for effective, comprehensive health care services in cooperation with community leaders and residents and providers of health-related services; and serve as health care advocates for individuals and families living in the communities in which they practice.

B.S./M.D. PROGRAM

In recent years health care providers and the public have increasingly acknowledged the shortage of American primary care physicians — family and general practitioners, general internists, pediatricians, and obstetrician/gynecologists. Shortages of African-American and Latino primary care physicians and of primary care physicians in inner city areas have been particularly acute.

It was to address these needs that the Sophie Davis School of Biomedical Education was founded at The City College in 1973. Named in honor of a

major benefactor, the Sophie Davis School was established to educate talented young men and women of diverse ethnic backgrounds to serve as primary care physicians in medically underserved urban communities.

The Biomedical Education program is designed as a seven-year, integrated curriculum leading to the Bachelor of Science and Doctor of Medicine degrees. During the first five years of the program, students fulfill all requirements for the B.S. degree and study the pre-clinical portion of the medical school curriculum. Distinctive academic features include a pre-enrollment summer enrichment program, intensive advising, counseling and educational support, and a strong emphasis on community-oriented primary care—including the social, economic and behavioral aspects of health care. A unique four-year sequence in Community Health and Social Medicine combines classroom instruction with field placements at health care centers throughout New York City.

After successfully completing the five-year sequence and passing Part I of the U.S. Medical Licensure Examination, students transfer to one of six medical schools for their final two years of clinical training. The Bachelor of Science degree is conferred by The City College, while the medical school to which the student transfers awards the Doctor of Medicine degree.

The six medical schools currently participating in the program are:

Albany Medical College
Dartmouth Medical School
New York Medical College
New York University School of Medicine

SUNY Downstate College of Medicine
SUNY Stony Brook School of Medicine

All of the participating medical schools are accredited by the Liaison Committee on Medical Education of the Association of American Medical Colleges and the American Medical Association.

Admission Policies and Procedures

The distinctive goals of the Sophie Davis School of Biomedical Education require special intellectual and personal qualities in students. The Admissions Committee seeks to admit students who are not only academically qualified, but who also demonstrate the maturity, integrity, compassion and motivation necessary to become dedicated and highly skilled physicians. Hence, all applicants are evaluated in terms of their total qualifications for the study and practice of medicine, both academic and nonacademic. One factor that is given careful consideration is the applicant's potential for and interest in pursuing a career as a primary care physician in medically underserved urban areas. The evaluation of each applicant by the Admissions Committee is based upon an overall assessment of the applicant's:

- Academic ability, as demonstrated by grades and Regents Examination scores in Biology, Chemistry, Physics, and eleventh-year Mathematics;
- Personal attributes, such as initiative and responsibility;
- Interest in working with people as evidenced by health care-related experiences and participation in community and extracurricular activities.

After careful screening of the applications, the most highly qualified candidates are invited for personal interviews. Final selections are made by the Admissions Committee from those interviewed. The School admits 60-70 students for the Fall semester each year.

Eligibility Requirements for Admission

To be considered for September admission to the Sophie Davis School of Biomedical Education, an applicant must:

- Be a resident of New York State and a citizen or permanent resident of the United States;
- Be a high school graduate or GED recipient as of September 1;
- Have an 85 average through the first three years of high school;
- Have completed no more than 12 college-level credits as of September 1.

Applicants are also required to take the American College Test (ACT) and the Scholastic Aptitude Test (SAT).

Application Procedures

Each applicant must submit two separate applications:

- An application for admission to the Sophie Davis School of Biomedical Education.
- An application for admission to The City University of New York.

Both applications must be post-marked by January 8.

The special application form for admission to the Sophie Davis School of Biomedical Education may be obtained from:

Office of Admissions
Sophie Davis School of Biomedical Education, Room H-101
138th Street and Convent Avenue
New York, NY 10031
(212) 650-7718

B.S. DEGREE PROGRAM FOR PHYSICIAN ASSISTANTS

The Physician Assistant (P.A.) program is an upper-division baccalaureate program which can be completed in 28.5 months. Students enter the program after completing a minimum of two years of college. Classes begin in August with a three-week orientation followed by the first academic semester of clinical sciences.

For the first 16 months, students study primarily biomedical and behavioral science courses. They also begin to have patient contact, learning such skills as interviewing, performing physical examinations, and preparing medical records.

The two major teaching sites for the program are City College and Harlem Hospital Center, a teaching affiliate of the Columbia University College of Physicians and Surgeons. Administrative offices are located in the Women's Pavilion of Harlem Hospital Center and in Townsend Harris Hall at The City College.

The final 13 months consist of clinical training in internal medicine, pediatrics, emergency care, primary care, surgery, SICU, obstetrics/gynecology, and geriatrics. Clinical clerkships are arranged at various New York City Health and Hospitals Corporation facilities, neighborhood health care centers, voluntary hospitals, and private practices throughout the New York metropolitan area with a few out-of-town locations. Students at each site are assigned to attending physicians, graduate physician assistants, and residents who coordinate their instruction and monitor and evaluate their progress.

The program is approved by the New York State Board of Higher Education and Board of Regents and is accredited by the State Education Department and the Accreditation Review Commission for Education of Physician Assistants (ARC-PA). It is also a member of the Association of Physician Assistant Programs, an affiliation that provides many opportuni-

ties for collaboration with faculty and staff from other programs.

The Mission of the Program

CCNY/Harlem Physician Assistant Program recruits, educates, and mentors a diverse group of students from underserved communities to become physician assistants providing quality health care. The program emphasizes primary health care and preventative medicine, and seeks to interest students in working in medically underserved areas. The program uses didactic and clinical training, fosters an appreciation for research and empowers faculty and students to be advocates for the physician assistant profession and for the delivery of primary health care.

The City College Physician Assistant Program has six major goals:

- to teach students the fundamental principles of the basic and clinical sciences;
- to provide students with an understanding of the relationship between physical illness and psychological and socioeconomic factors;
- to prepare students to take part in an interdisciplinary, team approach to patient care;
- to train students to provide primary care services to patients;
- to increase the number of P.A.s who work in medically underserved communities in New York State;
- and to increase the number of P.A.s from minority and economically disadvantaged groups.

The Role of the Physician Assistant

The physician assistant is a professional member of the health care team who is qualified to assist physicians in a variety of ways to extend and improve health care services. Working under the supervision of licensed physicians, P.A.s take patient histories, perform physical examinations, and conduct diagnostic and therapeutic procedures. They also provide follow-up care, patient education and counseling. Because of their comprehensive training and varied

responsibilities, physician assistants are especially suited to assist primary care physicians.

Physician assistants can help enhance the quality of patient care while at the same time making health care more affordable for disadvantaged and low-income groups. The scope of the physician assistant's duties and responsibilities is governed by state laws, rules and regulations and by institutional policies, as well as by the guidelines set by supervising physicians.

Practicing physician assistants who have graduated from the City College program now work in a variety of New York City health care settings, such as family care centers, prison infirmaries, emergency rooms, and municipal and voluntary hospitals. Starting salaries range between \$60,000 and \$82,100 annually.

Admission Policies and Procedures

Interviews are scheduled with selected applicants to determine qualities such as initiative, responsibility, community participation and involvement, interest in and commitment to the goals of the program, communication skills, and emotional maturity and stability.

Following interviews with selected candidates, final selections are made by the Physician Assistant Program Admissions Committee. Decisions are made based on the applicant's personal and academic qualifications as reflected in the completed application forms, transcripts, recommendations and results of the interview.

Eligibility Requirements for Admission

To be considered for admission to the P.A. Program, applicants must have completed a minimum of 60 college credits with a grade point average of at least 2.5 and a science GPA of at least 2.80. The following college-level courses must have been completed with grades of "C" or higher:

- eight credits of general biology, with a laboratory component;
- eight credits of general chemistry or organic chemistry, with a laboratory component;

- three credits of calculus or pre-calculus;
- six credits of English composition and literature;
- twelve credits of humanities and social science.

Additionally, students must pass the City College proficiency examinations in written and spoken English prior to entering the program. Completion of the above courses does not guarantee admission to the P.A. program, however, since the number of available positions is limited and the program receives a substantial number of applications each year. Admission is highly selective and very competitive.

The Physician Assistant Program faculty and staff are available to provide academic counseling to students interested in the program. Students are encouraged to contact the Program Office at the address and phone number below for further information.

Application Procedures

Applicants to the Physician Assistant Program must:

- submit a completed application form directly to the program office at the address listed below;
- arrange to have copies of official transcripts from all colleges attended forwarded by the colleges to the Program Office (this does not apply to City College students);
- and provide the Program Office with the names and addresses of three individuals (such as employers, teachers, and community leaders) who are familiar with the applicant's abilities and who agree to recommend the applicant for admission.

The Program Office will then mail recommendation forms directly to these individuals.

The completed application form and all supporting documents, including official college transcripts and letters of recommendation, must be post-marked by January 31 for the applicant to be considered for admission. The deadline for students with any foreign transcript is September 30.

Application forms may be obtained from and all completed applications should be returned to:

Physician Assistant Program

The City College of New York/SDBSE
Physician Assistant Program
138th Street and Convent Avenue
Harris Hall – Suite 15
New York, NY 10031
(212) 650-7745



About The City College

About The City College

The City College of New York is a small university within The City University of New York, offering a rich program of undergraduate and graduate study through its various schools and divisions.

The College of Liberal Arts and Science comprises the:

- **Division of Humanities and the Arts**
- **Division of Science**
- **Division of Social Science**

The Professional Schools are the:

- **School of Architecture, Urban Design and Landscape Architecture**
- **School of Education**
- **School of Engineering**
- **Sophie Davis School of Biomedical Education**

In addition, the College offers programs through the:

- **Center for Worker Education**

Founded in 1847 by a referendum of the people of New York City, City College's mandate was to offer the best education possible to the children of the poor and working people, and to open to new immigrants the opportunities of America. The City College (CCNY) is the oldest college among the twenty public institutions that make up The City University of New York (CUNY), which was established in 1961.

The College's resources include the Morris Raphael Cohen Library, the largest library in the University system, with holdings of over one million volumes; more than two hundred teaching and research laboratories; and an Information Technology Center that provides instructional and research-oriented services and student access through numerous student computer labs. The Aaron Davis Hall is the site of rehearsals, performances, exhibits and technical training for students in the performing arts, as well as presentations by professional artists. It is a major cultural asset for CCNY as well as the New York City community.

A \$181 million modernization program is underway on the campus, which includes renovation of the landmark Neo-Gothic buildings. A \$65 million project to expand and modernize the Engineering building, Steinman Hall, was completed several years ago.

ACCREDITATION

All degree programs are registered by the New York State Department of Education. The College is regionally accredited by the Middle States Commission on Higher Education (3624 Market Street, Philadelphia, PA, 19104-2680; 215-662-5606). Additionally, professional curricula are accredited by the appropriate professional educational agency or board including the National Architectural Accrediting Board, the National Council for Accreditation of Teacher Education, and the Accreditation Board for Engineering and Technology.

THE CAMPUS

The City College campus occupies thirty-five acres along tree-lined Convent Avenue from 131st Street to 141st Street in the Borough of Manhattan. Many buildings in the area, known as St. Nicholas Heights, are landmarked, including CCNY's North Campus Quadrangle buildings and the former home of Alexander Hamilton, first Secretary of the Treasury. The larger campus for CCNY's students, of course, is the City of New York with a wealth of cultural and entertainment attractions found in few other cities of the world.

The City College is easily accessible by subway and bus; express trains from mid-Manhattan reach the campus in about fifteen minutes.

Note on Building Designation

Codes: In spring 2005, the City University assigned the buildings on the City College campus new designation codes to be used on campus maps. Because most maps and signage have not yet been changed, this *Bulletin* maintains the previously used codes. The key to building designation codes is as follows:

Steinman Hall = T (old code), ST (new code)

Baskerville Hall = B (old code), BH (new code)

Compton-Goethals Hall = CG (old code), CG (new code)

Shepard Hall = S (old code), SH (new code)

Harris Hall = H (old code), HR (new code)

Administration Building = A (old code), A (new code)

Marshak Building = J (old code), MR (new code)

North Academic Center = NAC (old code), NA (new code)
Wingate Hall – W (old code), WG (new code)

ORIGINAL CAMPUS BUILDINGS

Built in 1904, the original college buildings were designed by the architect George Post in a Collegiate Gothic style. Four halls—Shepard, Baskerville, Townsend Harris and Wingate—were grouped around a green quadrangle and, with Compton and Goethals Halls (added later), now constitute the “North Campus.” These buildings and the college gates are listed in the State and National Register of Historic Places.

STEINMAN HALL-ENGINEERING

Just outside the north campus gate is the modern Steinman Hall-Engineering Building. Steinman, a six-story building equipped with approximately forty research and teaching laboratories, recently underwent a \$65 million improvement program. More information about specific facilities in Steinman Hall can be found in the sections of this bulletin describing the engineering programs.

NORTH ACADEMIC CENTER (NAC)

Dedicated in 1984, the North Academic Center covers three full city blocks and has 2,000 classrooms, labs, lecture halls and a media center. NAC also contains the Cohen Library, the Finley Student Center, student government offices, meeting rooms, a print shop, a small theater, a ballroom and the campus dining areas. It is the largest academic building on the campus and contains the School of Education, the Division of the Humanities and Arts, the Social Science Division, and the Information Technology Center as well as many computer laboratories.

THE ROBERT E. MARSHAK SCIENCE BUILDING

The Marshak Science Building, a modern and fully equipped thirteen-story building, houses the science programs. The facilities include a number of computer laboratories, a networked system of SUN and SGI computers, laser labs, electron microscopes, nuclear magnetic and electron spin resonance systems, a mass spectrometer facility, an NMR facility, biomedical research laboratories, the Science and Engineering Library, a planetarium, a weather station, and more than two hundred teaching and research laboratories. Also found in the Marshak Building are the Nat Holman Gymnasium and the Jeremiah Mahoney Pool. The Holman Gym seats approximately 2,500 spectators and is a large, modern, multi-purpose facility, home to many of the College’s varsity athletic teams. The Mahoney Pool is used for competitions and recreational programs. Six all-weather tennis courts are located on the deck of the building.

AARON DAVIS HALL

Aaron Davis Hall ranks among the best equipped of such complexes on any college campus. The \$7 million building houses a 750-seat proscenium theater, a 175-seat experimental theater and a 75-seat rehearsal studio-workshop.

Davis Hall hosts an ambitious, year-round calendar of both student and professional performances, most of which are open to the public. The Hall is the only cultural facility of its kind north of Lincoln Center and has been used by groups like the Emerson String Quartet, the Dance Theater of Harlem, Opera Ebony and the New York City Opera National Company.

HERMAN GOLDMAN CENTER FOR SPORTS AND RECREATION

Opened in the fall of 1993, the Goldman Center for Sports and Recreation is a \$6 million outdoor sports complex on the South Campus. The complex includes an NCAA regulation 400-meter track, a playing field for baseball, soccer, softball and lacrosse on a state-of-the-art artificial surface, areas for field events, and seating for 1,500 spectators.

RESIDENCE HALL

Construction has begun on the first residence hall to be built on the campus of The City College of New York (CCNY) in its 158-year history. The 180,000 square-foot facility, which is rising on the southeast corner of the campus at St. Nicholas Terrace and West 130th Street, will provide accommodations for approximately 600 students and include a limited number of apartments for faculty. It is scheduled for completion in August 2006, in time for the Fall 2006 semester.

The residence hall will consist of 164 fully furnished, air-conditioned apartments in four configurations: studio, one bedroom, two bedrooms and four bedrooms. All units will have kitchen facilities including a cook-top, microwave, full-size refrigerator, sink, cabinets and countertop space. Many units will include separate living room and dining areas. The building will also include a student lounge, a vending machine area, multipurpose/classroom space, a conference room, a fitness center, a central laundry room and a community kitchen facility. A large protected front lawn and a patio/picnic area will overlook St. Nicholas Park and Harlem.

Information concerning costs and the application procedure will be published both on the College website and in printed material available through the Office of Enrollment Services in the Spring of 2006.

INFORMATION TECHNOLOGY AND COMPUTER SERVICES

The City College is committed to providing all of its students with the opportunity to learn skills in using computers as practical tools, whether in the workplace or in advanced educational endeavors. Toward that end, the College is committed to making appropriate technology accessible to its student body.

The primary goal of Information Technology and Computer Services (recently changed from Academic Computing and Information Systems) is to insure that students, faculty and staff who depend upon the college's information technology services and resources have a robust, dependable and user-friendly operating environment in which to work.

The Information Technology and Computer Center represents academic computing at CCNY, an increasingly complex and heterogeneous mix of technologies across many academic disciplines. As such, we continually evaluate our offerings and our role within the college as we seek beneficial opportunities for facilitating our faculty, departments and programs. There are over 50 computer labs (housing over 1000 computer systems) distributed throughout the campus dedicated to supporting our students' rigorous academic computing needs. Underlying these computer systems is a fast, robust network with campus-wide gigabit connectivity (including targeted wireless access points) and an expandable ATM circuit to the Internet (currently operating at 1 gig/sec).

The primary general use Computer Laboratory, located on the ground floor of the NAC, houses fifty Apple Macintosh and sixty Windows-compatible computers available on a walk-in basis. This lab complements a campus-wide distribution of computer labs designated to support instruction in specific disciplines, including the Economics and Psychology departments; the Humanities; the Robinson

Center for Graphic Arts; the Library facilities; and the Center for Teaching and Learning. There are also many provisions for computing and information technology in the Division of Science and Schools of Architecture, Education and Engineering. These labs host a variety of software applications allowing students to conduct research and produce and present their academic assignments.

Computing skills workshops are under constant development to provide students and instructional staff with the means to learn the fundamentals of using computer applications. These are provided in a variety of topics to give the college body a range of options for accessing and producing files for use on both personal computer systems and on the Internet. Topics of instruction include word-processing, spreadsheets, basic database design, statistical analysis, and multimedia production.

Please visit the college website under Computing for topical information, including a complete listing of computing facilities and other pertinent information and services concerning information technology at CCNY.

Academic Offerings

The College offers the following degrees:

Bachelor of Arts
Bachelor of Science
Bachelor of Engineering
Bachelor of Science in Education
Bachelor of Fine Arts
Bachelor of Architecture
Various master's and combined B.A./M.A. degrees

A number of doctoral programs are based at City College but the Ph.D. degree is awarded through the Graduate School and University Center of The City University.

The Sophie Davis School of Biomedical Education offers a program that enables students to earn a B.S./M.D. degree in seven years.

Special programs of study such as the CUNY Honors College, Honors Program,

Study Abroad, and Cooperative Education plus opportunities for research support in the physical sciences, engineering and other fields are described under the appropriate subject sections of this bulletin.

Student Life

About 12,000 students commute to City College campus and live in the larger metropolitan area; they come from many different states across the U.S. and over one hundred different countries. Over eighty languages can be heard on campus, making CCNY a place both cosmopolitan and international. The ratio of male to female students is about 6 to 5.

Within the Division of Student Affairs, student activities at CCNY fall under the umbrella of the Finley Student Activity Center and the Office of Co-Curricular Life. The Finley Student Center in the North Academic Center and the Office of Co-Curricular Life provide support for more than one hundred student clubs and organizations. Included are the undergraduate and graduate student governments, two student newspapers, a yearbook, and a student-run radio station. Clubs reflect many of the academic, recreational, religious, political, professional and ethnic interests of CCNY's students.

Sports also play an important role in the student life of CCNY. An extensive program of recreational sports and athletics is offered through the intercollegiate and intramural programs. Intramural Athletics is open to students for structural athletic competition including soccer, basketball, tennis, and volleyball. Recreational opportunities include access to the pool and gym as well as a fitness center in Wingate Hall that has cardiovascular and weight training equipment. In addition to clubs, students produce plays, present art exhibits, give film screenings, and give musical concerts, recitals and other performances throughout the year.

The Intercollegiate Athletic Program sponsors a total of fourteen teams for

men and women. City College is one of over three hundred colleges that maintain active membership in Division III of the NCAA. The Herman Goldman Outdoor Center for Sports and Recreation is one of the finest facilities of its kind located in an urban area. It features a full-size artificial surface playing field (home to the men's and women's soccer, men's and women's track and field, and men's lacrosse teams), an eight-lane 400-meter NCAA regulation track and bleachers to seat 1,500 spectators. In addition, a swimming pool, basketball and tennis courts and one gymnasium, equipped with weight and exercise equipment, are open for student use on a scheduled basis.

The College complies fully with the Equity in Athletics Disclosure Act (a part of Improving America's Schools Act of 1994). Students interested in this information may request copies of the annual report from the Director of Athletics.

THE RIGHT TO PRIVACY

The College complies fully with the Family Educational Rights and Privacy Act (FERPA), as described in Appendix B of this publication.

CANCELLATION OF COURSES

The College does not guarantee to give all courses it announces. The announcement is made in good faith, but circumstances beyond the control of the College sometimes necessitate changes. The College may cancel courses if the enrollment does not warrant their being offered or if other contingencies make such a cancellation necessary.

Important Note

The City University of New York reserves the right, because of changing conditions, to make modifications of any nature in the academic programs and requirements of the University and its constituent colleges without advance notice. Tuition and fees set forth in this publication are similarly subject to change by the Board of Trustees of The City University of New York. The University regrets any inconvenience this may cause.

Admissions

The City College Office of Admissions is located in the Administration Building, Convent Avenue and 138th Street, New York, NY 10031.

Procedures for admission to City College as a freshman or as a transfer student from another college with advanced standing often differ from one program to another; students are therefore encouraged to visit or call the Office of Admissions at 212-650-6977 with any questions.

CAMPUS VISITS

Tours of the campus are scheduled by appointment. Please call 212-650-6476. The Office of Admissions hosts an Annual Open House in the fall. Students may also request visits to particular departments or programs.

Admissions

MATRICULATED AND NON-DEGREE (NON-MATRICULATED) STUDENTS

Students are classified into two groups. Matriculated students are those who have been accepted into a specific college program leading to a degree. Credits earned by such students may later be transferred to a degree program. Non-matriculated students may enroll in credit courses but are not officially registered in a degree program. Non-matriculated students must meet all prerequisites for the courses in which they wish to enroll.

FRESHMAN ADMISSIONS

In determining admission to City College, the following factors will be considered: a student's overall high school academic average from 9th through 12th grade, the total number of academic units completed (New York State Regents courses), and the Reasoning Test section results of the new Scholastic Aptitude Test. In addition, the Mathematics Test results must also be submitted with the Freshman Application. These factors will be weighted together to determine eligibility. The College recommends that students preparing to apply to programs at City College complete four years of English, four years of social studies, three years of sequential math (or its equivalent), two years of laboratory science, two years of a foreign language, and one year of performing or visual arts in high school as the academic preparation needed for success and admission to the College.

Admission to all undergraduate colleges in The City University is centralized. Freshman applicants to City College should list one of the programs of the College as their first choice on the CUNY Freshman Application.

High school seniors attending New York City public schools should contact their high school guidance office or their college advisor for a City University application. Other interested applicants may obtain an application from City College Admissions Office or the CUNY Office of Admission Services, 1114 Avenue of the Americas, New York, NY 10036 or call 1-866-CUNY-YES (toll free). Apply online at <http://www.cuny.edu>.

Students applying to the CUNY Honors College need file the CUNY Honors College application only. Honors College applications are available at high school guidance or college offices or through the Office of Admissions.

For early notification of acceptance, students should apply by March 15 for the fall semester and October 1 for the spring semester. There is no official closing deadline for applications except for CUNY Honors College applications, which are due by December 15. The College continuously admits students until one month prior to the start of the fall or spring semester. Students interested in applying for selective or competitive programs are encouraged to apply early. Prospective students should inquire about the various financial aid, scholarship, loan, and work opportunities that may help them pay for their college education.

COLLEGE PREPARATORY INITIATIVE

The City University of New York has instituted a program for entering students called the College Preparatory Initiative. Students will be expected to have sixteen units of high school work in academic courses to enter City College. Minimum distribution of units among the various subject areas can be requested from high school counselors or the City College Office of Admissions.

High school students should consult with guidance counselors to ascertain what courses are considered to be academic within the English, science, mathematics, social science, foreign language, and the fine and performing arts curriculum.

All entrants will be informed of the preparatory units that have been recognized as a result of high school preparation. GED students will receive units in English and mathematics based on their test scores.

Students who have not completed the academic unit expectations prior to enrolling in any college in the City University system, including City College, will be required to demonstrate skills and knowledge in the discipline areas in which they lack preparation. In most cases, this will be accomplished by taking a designated college course. Students will be informed of alternative methods for demonstrating competence.

SKILLS ASSESSMENT POLICIES

Freshman Skills Assessment Policy

As part of the admissions process to City College (in compliance with CUNY guidelines), students are required to demonstrate their competence in reading, writing, and mathematics. Students can do this in three ways:

- National tests: students who score at the appropriate level on the SAT Verbal (480 or above) or the ACT English (20 or above) demonstrate competence in reading and writing. Students who score at the appropriate level on the SAT Math (480 or above) or the ACT Math (20 or above) demonstrate competence in mathematics.
- New York State Regents' Examination in English: students who score 75 or above demonstrate competence in reading and writing. New York State Regents' Examination in mathematics: students who score 75 or above on the Math A, Math B, Sequential II or Sequential III demonstrate competence in mathematics.
- CUNY/ACT Basic Skills Tests in Reading, Writing and Mathematics: Students who do not offer appropriate scores on national tests or the New York State Regents Examination must pass this examination administered by the College prior to registering.

Students are notified by the Office of Evaluation and Testing of their status and of any testing requirements remaining after the admissions process.

Transfer Student Skills Assessment Policy

Transfer Students from other than CUNY colleges

Students with fewer than 45 credits at the time of application must demonstrate skills proficiency to be admitted to a CUNY baccalaureate program.

Students with 45 or more credits are considered skills proficient; they do not have to document proficiency on the basis of SAT I, ACT, Regents or CUNY assessment tests to be admitted to a CUNY bachelor's program. However, ESL students may be asked by their college to take a placement test in reading and writing to assess their English language skills.

Transfer applicants with fewer than 45 credits who are not proficient based on the SAT I, ACT or Regents tests must take the appropriate CUNY assessment tests.

Transfer Students from a CUNY college

All students who wish to transfer from a CUNY associate program to a CUNY bachelor's program must demonstrate skills proficiency to be admitted.

Mathematics Placement Test

All freshmen and non-CUNY transfer students with fewer than 45 credits whether or not they are math proficient as determined by the skills assessment policy are required to take the COMPASS Mathematics Test. Test results will be used to place students in the appropriate mathematics course.

ESL Assessment Policy

All students registered in ESL 30 or 99 will take the reading and writing tests at the end of the semester. Students who do not pass the tests will not be able to begin college composition (English 11000) until they pass. Generally, students must receive at least 20 hours of instruction between

retests. They may not be retested more than two times during a semester. Specific rules apply for workshops and summer and winter immersion.

Exemption Criteria

Three groups of students may be admitted to a bachelor's program without first demonstrating skills proficiency:

- applicants who already hold a bachelor's degree or higher from an accredited program;
- applicants who demonstrate proficiency in mathematics, who meet the University's definition of ESL and who meet all other admissions requirements may be admitted. These students must pass the reading and writing skills tests within two years of initial enrollment;
- applicants who qualify for the SEEK program. SEEK students must achieve skills proficiency within one year of initial enrollment.

THE SEEK PROGRAM

The SEEK program (Search for Education, Elevation and Knowledge) is a New York State program for residents who are in need of both academic and financial assistance in order to obtain a college education. SEEK students receive financial aid for up to five years while earning an undergraduate degree. They also receive intensive counseling, remedial instruction, tutoring and a stipend to help cover the cost of books.

A student wishing to apply to the SEEK program should file the CUNY freshman application and complete the section labeled SEEK and College Discovery. For more information about SEEK, refer to the section in this Bulletin on the Department of SEEK Counseling and Student Support Services.

HONORS PROGRAMS

Entering freshmen may be eligible for several honors-level programs at the College, including the City College Honors Program and the Herman Muehlstein Honors College at The City

College of New York. These programs are academically rigorous. Students admitted to the programs are advised in the Honors Center. For application and deadline information, contact the Office of Admissions. For more information, contact the Honors Center (NAC 6/293; 212-650-6917).

ADVANCED PLACEMENT

High school students who have enrolled in an advanced placement program at their high school and taken the advanced placement examinations may be excused from certain courses or may receive credit in some cases. The College will award up to thirty-two credits toward graduation for advanced placement. Generally, for scores of 4 or 5, the College will award course credit. Students who have taken the advanced placement examinations should have the scores sent to the Office of Admissions.

College Courses Taken in High School

High school students who have taken college level courses must provide the college/university transcript to the Office of Admissions for the credit to be evaluated.

TRANSFER STUDENTS

Transfer students who wish to be considered for matriculated undergraduate status must file a CUNY Transfer Application. These can be obtained from the Office of Admissions, or a student can apply online at www.cuny.edu. Transfer students should apply by October 1st for the spring semester and by March 15 for the fall semester. Criteria for admission vary according to credits completed and the program to which the student is applying.

Most students currently participating in CUNY SEEK or College Discovery programs, or in New York State funded educational opportunity programs (EOP, HEOP), are also eligible to apply as transfer students to City College. Applicants should contact the Department of Special Programs about admissions procedures (NAC 5/226; 212-650-5774).

The Office of Admissions conducts transfer evaluations for credits earned at previous institutions for students with 44 credits or fewer. Evaluations for transfer students with more than 45 credits are conducted by the academic divisional dean's office.

TRANSFER ADMISSION REQUIREMENTS

To transfer from a CUNY community college to a CUNY senior college, students must meet the standards of proficiency in the basic skills areas of mathematics, reading, and writing established by the University at their home college. In addition, students transferring from any CUNY college to City College with more than 45 credits must take and receive a passing score in the CUNY Proficiency Exam (CPE).

As of Fall 2000, students transferring to CUNY from non-CUNY U.S. regionally-accredited colleges, and whose earned credits and credits in progress (when successfully completed) are equal to or greater than 45, are exempt from taking the CUNY/ACT Tests.

Students transferring from non-CUNY colleges with fewer than 45 credits must meet the same standards outlined in the Freshman Skills Assessment Policy above.

International students transferring from non-U.S. colleges or universities are required to take the CUNY placement examination.

The College reserves the right to revise the transfer requirements at any time.

College of Liberal Arts and Science

1. CUNY Community College graduates.
2. All others must meet one of the following criteria:
 - a. 14-18 1/2 credits earned at a 2.50 G.P.A. or higher; or
 - b. 19-23 1/2 credits earned at 2.25 G.P.A.; or
 - c. 24 or more credits earned at a 2.00 G.P.A.; or
 - d. 23 1/2 or fewer credits earned at 2.00 G.P.A. and meet current requirements used for freshman admission; or

- e. Zero credits attempted and meet current requirements used for freshman admission.

Applicants who have a grade point average below 2.0 but have not attended college for at least five years may be admissible to the College of Liberal Arts and Science.

School of Education

1. Admission requirements to enter as a pre-education major are the same as for the College of Liberal Arts and Sciences.
2. To be eligible for upper division status in education programs, transfer and non-transfer students must be formally admitted to the School of Education. Admissions criteria can be obtained from the School of Education, Office of Student Services (NAC 6/204).

School of Architecture, Landscape Architecture and Urban Design

1. Associate Degree candidates from the Pre-Architecture program at the College of Staten Island, subject to a portfolio review of designwork for placement.
2. All others with:
 - a. 14 or more credits at a 2.70 G.P.A.; or
 - b. 14 or fewer credits and a 2.7 G.P.A. and a high school average of 80 or higher; or
 - c. Zero credits attempted and meet current requirements used for freshman admission.

School of Engineering

1. CUNY Community College graduates.
2. Bachelors degree holders with one semester of calculus and a G.P.A. of 2.5.
3. All others with a G.P.A. of at least 2.5 and one semester of calculus.
4. Zero credits attempted and meet current requirements used for freshman admission.

INTERNATIONAL STUDENTS

United States citizens and those applicants on temporary visas whose schooling has been outside the United States should file the appropriate

transfer or freshman application and complete the international student information requested in the application. These applicants must meet the same standards as students educated inside the United States. In addition, students who are on temporary visas and whose native language is not English will be required to submit results of the Test of English as a Foreign Language (TOEFL). Applications are available from the College or University Offices of Admissions. In most cases, international students are not eligible for financial aid.

International students are encouraged to apply at least six months prior to the semester the applicant wishes to enter. Each student's application is individually evaluated. In addition, new regulations imposed by the United States Department of Homeland Security may cause delays in receiving the F-1 student visa. It is possible that it may take longer than six months to be admitted and enrolled at City College.

READMISSION TO CITY COLLEGE

Students who have stopped attending for one or more semesters must file a Re-entry Application with the Office of Admissions and obtain signatures from the appropriate dean's office. Completed applications with a non-refundable fee of \$10 should be returned by January 1 for the spring semester, May 1 for Summer Session and August 1 for the fall semester. Late applications will be processed on a space-available basis.

Re-Admissions (Students with a G.P.A. below 2.0)

All students who failed to meet minimum G.P.A. standards in a prior enrollment in City College must appeal to the Committee on Course and Standing of the specific school of their choice to re-enter. Since the transcripts of all students in this category (below 2.0 G.P.A.) must be evaluated, appeals should be made at least three months prior to the desired date of re-entry.

SPECIAL CATEGORIES FOR ADMISSION

Early Admissions (High School Juniors)

City College admits academically exceptional high school students upon the completion of their high school junior year. Students enter as matriculated students into the College's Honors program. Applicants generally are from the upper 10% of their high school class. Students are accepted on the basis of demonstrated academic achievement and an interview by a member of the Admissions Committee. Admission is based on academic achievement, and each applicant will be judged individually. For applications, contact the Admissions Office (A-101; 212-650-6977).

Second Degree

City College accepts applications for a second undergraduate degree when the second degree represents preparation discrete from the preparation identified in the first bachelor's degree. Applicants must receive approval from the dean or designee from the school from which the second degree is being sought. Applicants should submit a CUNY Transfer Application. Courses taken at other institutions are typically accepted toward City College's general education ("Core") and elective requirements and the student completes upper division and, if necessary, lower division courses in the major area of concentration at City College.

Post Baccalaureate Status

This non-matriculated status is for students who already hold a bachelor's degree and wish to enroll in undergraduate courses for personal or professional enrichment, without pursuing a degree. Students may do so on a space available basis.

Non-Degree Status

Students who do not hold a bachelor's degree must be high school graduates or hold a General Education Diploma with a minimum score of 3250, and should submit transcripts of any prior college training. These courses are pri-

marily intended for personal enrichment. All non-degree students (post-baccalaureate, visiting, non-degree) are limited to a maximum of 24 credits, except in the School of Engineering, which limits students to 12 credits. Departmental approval is needed to register for courses in English, mathematics, science, English as a Second Language or courses in the professional schools.

Non-degree and post-baccalaureate students are not eligible for financial aid and must pay tuition and fees. This special enrollment procedure does not apply to graduate courses. Non-matriculated students must meet all prerequisites for the courses in which they wish to enroll.

SENIOR CITIZENS

New York residents who are 60 years and older may enroll tuition-free in undergraduate courses on a space-available basis, provided they do so on an audit basis. Those who wish to enroll for credit may do so on the same basis as other degree-credit students. Senior citizens who wish to take courses for credit must matriculate by filing a regular application and meet the general admission requirements. A \$70 per semester fee is required of senior citizens who are auditing courses.

For information regarding course offerings or application procedures, contact the Office of Admissions.

VISITORS FROM OTHER COLLEGES OR UNIVERSITIES

From within The City University

Students wishing to take courses at another CUNY college must file an E-Permit with their home college. Check the website of the home college for E-Permit application and procedures.

From Outside The City University

Students who are currently enrolled in schools outside CUNY must provide the Office of Admissions with written permission from their home school, together with a completed application form. There is a non-refundable application fee of \$65.

Visitors from other colleges may be restricted from taking courses in the Schools of Engineering and Architecture and in the English as a Second Language program. The Department of Mathematics may request that students take an examination to verify placement into specific courses.

Note: City College will not issue a permit form to attend another CUNY college to non-matriculated students.

INTEGRITY OF DOCUMENTS

All documents submitted to City University and City College in support of an application for admission become the possession of City University and City College and will not be returned to the applicant.

All information requested on an application must be answered fully and correctly. Omission of colleges, universities and/or proprietary schools attended or falsification of information will constitute grounds for permanently rescinding an offer of admission, disciplinary action and/or dismissal.

After Acceptance to The City College

HEALTH STATEMENT AND IMMUNIZATION REQUIREMENT

New York State Public Health Law 2165 requires proof of immunity to measles, mumps and rubella (MMR) as a condition for attendance. The College reserves the right to prevent the registration of any applicant who fails to provide a record of immunization or who otherwise provides a health risk to the College community. It is University policy that all students who register for six or more credits/equivalent credits and were born after December 31, 1956 must provide proof of their immunity to measles, mumps and rubella. Students may fax their immunization records and the forms to 212-650-8227.

Recently, New York State passed Public Health Law (PHL) 2167, addressing meningococcal meningitis. In compliance with PHL 2167, all New York State students, regardless of how many credits they take in college, must fill out a Meningococcal Meningitis Response form within 30 days of registration or at the same time they send in their MMR compliance document.

Students may download forms at http://origin.admin.ccnycuny.edu/student_affairs/wellness/default.asp. If submitting the forms by fax, be sure to include the name, social security number (or assigned City College identification number) and birth date. Applicants are advised to confirm the receipt of the fax by calling 212-650-8222.

IDENTIFICATION CARDS

All students, faculty and staff are issued an identification card that serves also as a library card and can be used for cashing financial aid checks. ID cards are available from the ID Office in the lobby of the North Academic Center. There is a \$5 fee to replace lost cards.

ID cards must be worn at all times in College Buildings.

RETENTION, GRADUATION AND JOB PLACEMENT

Retention

Students who enter City College's undergraduate programs progress toward the degree at various rates, from four to six or even eight years, depending upon previous academic preparation, as well as other factors such as the necessity to work. Tutoring and advising services are available to help students stay in school and complete their studies.

Of all first-time regular freshmen who entered in Fall 1997, 77.2% were still enrolled after one year, 56.8% after two years, 44.8% after three years, and 42.9% after four years. The graduation rate by the end of six years was 34.3%.

Job Placement

Of our 2001-2002 graduates, 11% went directly to graduate school. Of those who went to graduate school, 11% went to a law school and 3% went to medical school. A vast majority of City College graduates who are not pursuing further study find employment within three to four months after graduation. The Career Center and City College Alumni Association play an active role in helping new graduates find employment.



Tuition and Fees

The Bursar's Office is located in the Administration Building, Room 103, and the telephone number is 650-8700.

Tuition is set by the University Board of Trustees and is subject to change without notice by their actions. Students should arrange to pay their total tuition, fees and charges as the final step of the registration process if they wish to be admitted to classes. Students who may be eligible for financial assistance or grants should consult with the Financial Aid Office as early as possible.

UNDERGRADUATE TUITION PER SEMESTER

	Flat Rate 12-18 credits	Per Credit
New York State Residents		
CUNY students	\$2,000.00	\$170.00
Non-degree students	not applicable	\$250.00
Non-Resident Students		
CUNY students	not applicable	\$360.00
Non-degree students	not applicable	\$530.00
	Full-time	Part-time
Technology Fee	\$75.00	\$37.50
Student Activity Fee	49.35	33.35
Non-degree Student Activity Fee	26.85	17.85
Consolidated Fee	15.00	15.00

ACCELERATED STUDY FEE

There is an accelerated study fee for undergraduate students taking more than eighteen credits per semester. Graduating seniors and certain students in the School of Biomedical Education are exempt.

Credits in Excess of 18	Fee
1-2 excess credits	\$100.00
3-4 excess credits	\$230.00
5-6 excess credits	\$460.00
more than 6 credits	\$690.00

OTHER FEES

Application (freshman)	\$60.00
Application (transfer)	65.00
Re-entry	10.00
Late Registration	25.00
Change of Program	18.00
Check Reprocessing	15.00
Non-payment	15.00
Transcript	7.00
Make-up Examination (to resolve ABS/INC grade)	
First in semester	25.00
Each additional	5.00
Duplicate Receipt	5.00
Duplicate ID Card	5.00

There may be other costs and fees associated with academic work, such as textbooks and studio or lab materials. Notice of additional fees will appear in the course listing in each semester's *Schedule of Classes*.

SENIOR CITIZEN FEES

Individuals who have reached the age of 60 prior to the first day of a semester may enroll for undergraduate courses on an audit basis and pay only the Senior Citizen's fee of \$65.00 plus the \$5.00 consolidated fee. Persons in this category must enroll on a space available basis after degree students have had an opportunity to register. Students must document their eligibility by submitting a copy of one of the following:

- Medicaid card
- Driver's license (or "non-driver's license")
- Birth Certificate

TUITION REFUNDS

When courses are cancelled by the College, a full refund of appropriate tuition and fees will be made. In other cases, tuition refunds will be made or liability reduced only in accordance with Board of Trustees regulations. Further information can be obtained from the Office of the Registrar. On approved applications, proportionate refunds of tuition will be made in accordance with the schedule below. The date on which the application is filed, not the last date of attendance, is considered the official date of the student's withdrawal and serves as the basis for computing any refund.

Withdrawal before the first day of classes (as published in the Academic Calendar) 100%

Withdrawal before completion of the first full scheduled week of classes 75%

Withdrawal before completion of the second full scheduled week of classes 50%

Withdrawal before completion of third full scheduled week of classes 25%

Withdrawal beyond third week None

Consolidated, student activity, materials and technology fees are not refundable.

PAYMENT OF COLLECTION COSTS

Students who do not make full payment of their tuition, fees and other college bills and whose account is sent to a collection agency will be responsible for all collection costs, including agency fees, attorney fees, and court costs, in addition to whatever amounts are owed to the College. In addition, non-payment or a default judgment against a student's account may be reported to a credit bureau and be reflected in credit reports.

NEW YORK STATE RESIDENCY REQUIREMENTS

A student must be a United States citizen, permanent resident, or in a qualifying non-immigrant status to qualify for New York State resident tuition. Please contact the Office of Admissions or the Office of the Registrar if you have any questions regarding eligibility for in-state tuition. Students under the age of 24 whose parents or legal guardians live outside the State of New York may be considered non-residents. Policies regarding New York State residency are stated in the City University of New York Fee Manual. The fee manual was amended in October 2002 revising the policy for "undocumented" and "out-of-status" students to meet New York State guidelines.

Financial Aid

The Financial Aid Office is located in the Administration Building, Room 104 and the phone number is 212-650-5819.

The Financial Aid Office administers federal and state funds, as well as those provided by special programs and the College itself, with the intention of insuring that all qualified students will have an opportunity to pursue higher education. Scholarships, grants, loans, work opportunities and governmental benefits are combined into a package to help meet the difference between the cost of attendance and the contribution from the student and family. Unless otherwise stated, award amounts are based upon need. Federal funds may be disbursed only to those who maintain good academic standing and are not in default of a student loan or owe a refund on a federal grant. Most students who are on probation and who make satisfactory academic progress will continue to maintain their academic standing in the College and their concurrent eligibility for financial aid. For the most recent information on application filing procedures, deadline dates, and eligibility criteria for the various programs, students are urged to contact the Financial Aid Office at 212-650-5819.

MAJOR GRANTS

Tuition Assistance Program (TAP)

TAP is a grant for full-time undergraduate and graduate students who are residents of New York State and who are U.S. citizens or eligible aliens. Undergraduates may be eligible for grants from \$100 to a maximum of \$4,000 for the academic year. TAP awards cannot exceed the cost of

tuition. Participants in this program are expected to comply with the program pursuit and academic progress requirements to remain eligible for subsequent TAP awards. Rules for eligibility are printed in the Schedule of Classes and are available in the Financial Aid Office.

Federal Pell Grant

This grant program is for undergraduate students who are U.S. citizens or eligible aliens carrying one or more actual or equivalent credits. Pell is an entitlement program, which means that the U.S. Government guarantees a grant to all students who show evidence of need. Full-time undergraduate students may receive awards of up to \$4,050 per year.

CAMPUS-BASED AID PROGRAMS

Funds from the three federal programs—Federal Work-Study (FWS), Federal Perkins Loan and Federal Supplemental Educational Opportunity Grant (FSEOG)—are awarded to eligible students who attend on at least a half-time basis. Except for FSEOG, which is for undergraduates only, undergraduate and graduate students who are U.S. citizens or eligible aliens may apply. Unlike Federal Pell and TAP, these are not entitlement programs; the Free Application for Federal Student Aid form (FAFSA), which is used to apply for most financial aid, must be filed before the deadline date set by the Financial Aid Office.

Federal Work-Study Program

Students are offered an opportunity to work on campus or at an approved off-campus public service or non-profit agency in the hope that they will gain

educational and financial benefits through FWS experience. During the academic year students work part-time; during the summer and vacation periods, part-time or full-time.

Federal Perkins Loan

Depending upon the availability of funds, low interest loans are usually awarded up to \$4,000 per year. Repayment begins six months after the borrower ceases to be at least a half-time student. Deferments are available for eligible students.

OTHER FINANCIAL AID

New York State Scholarships and Awards

Scholarships awarded through the New York State Education Department and administered by the Higher Education Services Corporation (NYSHESC) include the following: New York State Scholarship for Academic Excellence; Regents Awards for Children of Deceased or Disabled Veterans; Regents Awards for Children of Deceased Police Officers, Firefighters and Corrections Officers; Regents Professional Opportunity Scholarships; State Aid to Native Americans; New York State World Trade Center Memorial Scholarships; and Veterans Tuition Awards. For further information and application materials, contact NYSHESC (www.hesc.org or 99 Washington Avenue, Albany, New York 12255), or the New York State Education Department (Education Building Annex, Room 374, Albany, New York 12234).

Federal Aid to Native Americans

To be eligible for these awards, applicants should be a member of, or at least one-quarter degree Indian blood

descendent of a member of, an American Indian tribe which is eligible for the special programs and services provided by the United States through the Bureau of Indian Affairs, and be accepted for admission to an accredited college pursuing a four-year degree. Further information may be obtained from the local Bureau of Indian Affairs Office or the U.S. Bureau of Indian Affairs, Office of Education (1849 C Street, NW, Washington D.C. 20240-0001).

William D. Ford Federal Direct Loan (Subsidized and Unsubsidized)

Ford Federal Direct Loans enable needy students who are matriculated and are enrolled at least half-time to meet educational expenses by borrowing from the federal government at a low interest rate. Undergraduate students may borrow up to \$2,625 for the first year, \$3,500 the second year, and \$5,500 for each remaining year of undergraduate study. Unsubsidized Federal Direct Loans are available to students regardless of income. Students are responsible for the interest payments on unsubsidized loans. For details such as repayment and interest rates, consult the Financial Aid Office.

William D. Ford Federal Direct PLUS Loans

These loans are for parents who need additional funds for educational expenses. Parents may borrow up to the student's cost of attendance minus any financial aid. Each child must be at least a half-time dependent undergraduate student. The Financial Aid Office must determine student eligibility for a William D. Ford Federal Direct Loan before a Federal Direct Plus Loan can be received. For details such as repayment and interest rates, consult the Financial Aid Office.

Aid for Part-Time Study and Part-Time TAP

These grant programs are financed by New York State and administered by participating colleges. Both programs provide help to part-time (6-11 cred-

its) undergraduates for their educational expenses. Awards cannot exceed tuition costs. Recipients must be New York State residents who have not used up eligibility for State programs.

Short-Term Emergency Loans

The College operates a small loan program that enables students to meet emergencies. These loans must be repaid during the semester and usually within two weeks of the receipt of such funds. Failure to repay on schedule can lead to debarment from classes and delay in the processing of academic records. For further information contact the Office of Student Affairs.

City University Supplemental Tuition Assistance Program (CUSTA)

Depending on funding from the New York State Legislature, this program provides supplemental assistance of up to \$100 per year to students who would experience an automatic decrease in their TAP award beginning in the fifth semester. Recipients must be full-time undergraduates, New York State residents, and eligible for maximum TAP. Recipients are chosen from among TAP applicants; students need take no special action.

Search for Education, Elevation and Knowledge (SEEK)

SEEK is a comprehensive program which provides financial assistance as well as supportive educational services. New York State residency for at least one year is required for eligibility. The program is designed primarily for full-time students entering college for the first time, but also accepts transfer students from New York State-funded educational opportunity programs at other colleges and College Discovery graduates. Students who have been accepted into this program will be contacted by the SEEK Office.

Student's Aid Association

The Student's Aid Association of City College is an independent organization incorporated under the laws of the State in 1965. Its members are alumni, faculty, staff, and friends of the College. This group gives approximately 150 scholarships per year to stu-

dents who might otherwise have difficulty pursuing their studies. Applicants should have completed twenty-four credits at City College, must be matriculated undergraduates in good standing, and must carry a full-time program (as defined by the College) in each semester for which grants are requested. Applications are available in the Office of the Registrar.

MERIT-BASED SCHOLARSHIPS

The City College Scholars Program

Four-year merit-based scholarships are awarded to entering freshmen, based on academic achievement, potential for advanced work, leadership and service. Applicants are recommended by their high schools; winners are selected by a committee of faculty from the College.

Peter F. Vallone Scholarships (formerly New York City Council Academic Scholarships)

Graduates of New York City high schools who have achieved a "B" average, passed at least twelve college preparatory courses and who enroll as full-time students at a CUNY college can receive \$1,000 per year. Recipients must file the FAFSA and maintain a 3.0 cumulative G.P.A.

The City College Academic Scholarships

The majority of scholarships, renewable for four years, are awarded through the City College Scholars Program and the CUNY Honors College: University Scholars Program. For information, contact the Honors Center (NAC 6/293; 212-650-6917).

Additional Scholarships

Information is also available on centrally administered merit and need-based scholarships. A listing and common application are available on the College's website or through the Office of Admissions.

Academic Services

ACADEMIC ADVISING

New freshmen and transfer students who have not yet declared a major may receive advising in any dean's office. This does not commit the student to any particular major, but simply provides initial advising information. Each student will be assigned an advisor, with whom he or she should meet at least once each semester to review academic progress and to discuss any academic concerns. The advisor will help the student select a suitable program before the registration period and make certain that any pre-requisites have been met. The advisor's approval is required in order to register.

TUTORING SERVICES

Many programs and departments in the College offer tutoring services to students. Information on the major tutoring programs is provided below. Students should ask their instructors or academic advisors about other services.

Biology Resource Center

The Biology Resource Center is located in J-502. It is a drop-in multimedia facility designed to allow students to supplement their classroom and laboratory instruction on their own. Computers offer access to software packages that feature practice problems, self-tests, Faculty lecture tapes, models and slides are available for student use. Hours of operation are posted on the door of the Center.

Chemistry Tutoring Center

The Chemistry Learning Center is located in J-1029. Drop in tutoring services are available for Chemistry

10301, 10401 and 31606 (for engineering students), 24300, 26100, 26300, 26300, 27100 and 27200. For more information on this center, please go to the Chemistry Office, J-1024 or the Division of Science Advising Center on the Plaza level of the Marshak Building.

Math Physics Tutoring Center

The Math Physics Tutoring Center is located in J-418S and is staffed by tutors who are advanced undergraduate and recent graduate students. Drop in tutoring services are available for Physics 20300, 20400, 20700 and 20800 and Math 19000, 19500, 20100, 20200, 20300 and 20500. (for engineering students), 24300, 26100, 26300, 26300, 27100 and 27200. For more information on this center, please go to the Math Office, NAC 8/133 or the Physics Office, J-419 or the Division of Science Advising Center on the Plaza level of the Marshak Building.

City College Academy for Professional Preparation (CCAPP) Tutoring

CCAPP offers tutorial workshops led by experienced tutors in the following courses: Biology 10100 and 10200, Biology 20600, Biology 22900, Chemistry 26100 and 263000 and EAS 10600. Workshops take place in the CCAPP Student Center, J-1005. Workshops for additional courses are offered based on student demand. For more information, please go to the CCAPP Office on the Plaza level of the Marshak Building.

Program in Pre-medical Studies (PPS) Tutoring

The PPS Office is located in J-529. The program offers one-on-one tutoring in all science and math courses. Students must apply. To be eligible, students must be pre-medical students with a minimum G.P.A. of 2.5. Other students may apply and will receive tutoring based on availability.

Engineering

The Office of Student Programs (T-2M7) provides tutorial services for mathematics, computer science and engineering coursework through Program for the Retention of Engineering Students (PRES) and assists in the coordination of tutorial services offered through engineering departments and engineering student honor societies and organizations.

PRES is a comprehensive program offering an array of academic and personal support services and programs to all engineering students, with a particular focus on underrepresented minorities, women, and persons with disabilities. Transfer Recruitment and Achievement at the City College (TRACC) is similar to PRES, providing support to the entering transfer engineering student population through an intensive summer transition program, as well as throughout the academic year.

SEEK Study Center

All SEEK students are eligible to use the resources of the SEEK Study Center which offers individual and small group tutoring in basic skills and academic subjects and access to computers (Harris 08; 212-650-8105).

The Samuel Rudin Academic Resource Center

The Samuel Rudin Academic Resource Center is a resource facility for CCNY students and teachers. The Center has a state-of-the-art electronic classroom and computers equipped with a learning management system that provides students with instructional solutions and assessments and give faculty the ability to monitor and manage student progress. Rudin Center can staff help teachers design customized curricula for students in certain classes and support excellence in academic performance. The Rudin Center also houses the CCNY Writing Center.

Writing Center

The CCNY Writing Center offers one-on-one tutoring for all CCNY students who are working on papers for their classes or who need advice in preparing to take the ACT and CPE exams. Students should make appointments in advance but may drop by to see if tutors are available. Computers are also available for students to use and computer literacy workshops are offered throughout each semester.

Student Support Services Program

The Student Support Services Program offers academic, career, financial and personal counseling to non-SEEK low-income first generation students with a demonstrated need for academic services. The program offers supplemental, individual and group tutoring in all subject areas. Group workshops in career exploration, financial aid options, GRE preparation, computer instruction, stress management, test anxiety, time management and research techniques are offered during the academic year. Cultural activities, field trips, an awards ceremony and a laptop loan program are also part of the program.

Freshmen and sophomores may be able to receive grant aid based on financial need. Upper division and outstanding lower division students may serve as paid tutors and interns within the program. Students in advanced academic standing may qualify for the Zitrin Peer/Tutor Scholarship Program (NAC 6/148, 212-

650-6829).

CCAPP

The City College Academy for Professional Preparation (CCAPP) offers science (including pre-medical) and architecture students a full program of academic support and enrichment throughout their college careers. There are weekly tutorial workshops for introductory and advanced biology, chemistry, and earth and atmospheric science courses, referrals to research and internship experiences, counseling, career and skills development workshops, an MCAT review course, and study space in the CCAPP Study Center (Marshak 1005) and the CCAPP Architecture Studio (Shepard 409).

THE FRESHMAN YEAR PROGRAMS

The Office of Freshman Year Programs (FYP) is designed to improve retention and academic progress for entering students and students with less than 30 credits. This is achieved by strengthening their skills in math, reading, and writing, providing test preparation for the CUNY/ACT Basic Skills Exams, bridge workshops to college courses, and orientation to college life through the New Student Seminar. FYP comprises the Academic Year Program, the January Intersession and the University Skills Immersion Program.

The Academic Year Program includes the New Student Seminar (NSS), a ten-week long course mandatory for all freshmen. Freshmen gain proficiency in such areas as online registration, Blackboard, time management, critical thinking, self-evaluation, interpersonal skills, academic planning, reading/note-taking skills, learning styles, scholarly writing, career development and computer/library research skills, as well as negotiating the City College community. Within NSS, all students are offered workshops on sexual harassment.

During the academic year, workshops are offered for the ACT Basic Skills Exams and Bridge to College Mathematics (Math 80 workshops). The Math 80 workshops are designed to prepare students who are not placed in college level math courses

by providing a 60-hour workshop designed to prepare students for Math 17300, 18000, and 19000. The ultimate goal is to enable students to begin college level math courses.

The January Intersession Program incorporates Bridge to Chemistry, Organic Chemistry, Physics and Math courses along with ACT workshops to prepare students for the ACT Basic Skills Exams. The Division of Science found that there was a high failure rate among its first year courses in chemistry and physics. To enable students to succeed in those gateway course, FYP in conjunction with the Departments of Physics and Chemistry, developed bridge workshops designed to familiarize students with the curriculum, concepts, language and skill set needed to be successful in the actual courses. The same was designed for gateway Mathematics courses. As in the summer we offer ACT workshops primarily for incoming students attempting to gain entrance to the college.

The University Skills Immersion Program is a summer program designed to help students gain enrollment to the College and also to allow continuing freshmen to advance in their college careers. This is achieved through test preparation workshops for the ACT Basic Skills Exams and bridge courses in English, chemistry, physics and math. In addition, Freshman Composition, Intermediate Algebra and Trigonometry, and Pre-Calculus are offered. There are four sessions during the summer and are open to all eligible students. Credit-bearing core courses take place in session two.

HONORS PROGRAMS

The City College offers two honors programs for undergraduates, which are administered by the Honors Center (NAC Room 4/150; 212-650-6917; cityhonors@ccny.cuny.edu).

The City College Honors Program

The City College Honors Program offers selected, high-achieving students in all disciplines a particularly challeng-

ing academic program in small classes. The curricular center of the program is the Honors Liberal Arts Core, an enhanced and enriched version of the required core that includes interdisciplinary courses in the humanities, sciences and social sciences. It provides an excellent academic base regardless of a student's eventual specialization. Classes are taught by outstanding faculty, who encourage student participation and rigorous study.

All students in the City College Honors Program take five prescribed core courses. Additional required courses vary depending on the student's degree objective. Retention in the program requires a cumulative 3.0 G.P.A. Upon successful completion of the honors program, the designation "Liberal Arts Honors" is entered on the student's transcript.

To be eligible for the program as an entering first-year student, he or she must have a high school average of at least 85% and appropriate performance on standardized tests, SAT or ACT. Continuing and transfer students are also eligible at the discretion of the director, and must present similar academic records.

Honors students take a special section of new student orientation. The Honors staff, which approves honors programs, is available in the Honors Center to advise and assist.

The CUNY Honors College: University Scholars Program

City College is a participating college in the university-wide CUNY Honors College: University Scholars Program, which accepts new first-year students with outstanding academic records. The program, which has students at seven colleges, encourages the highest level of academic accomplishment, cross-campus community, career exploration and service.

At City College the program is called the Herman Muehlstein Honors College at The City College.

The required liberal arts core for University Scholars includes four special interdisciplinary seminars focusing on NYC and other honors courses offered through the City College

Honors Program. Students are expected to achieve an overall 3.3 G.P.A. by the end of their first year and a 3.5 G.P.A. by the end of their second year, which must be maintained until graduation in four years. Upon successful completion of the program, the designation "CUNY Honors College: University Scholar" is entered on the student's record.

The CUNY Honors College: University Scholars Program admits only new first-year students, who must apply by special application, available from 1-800-CUNY-YES or aonline@mail.cuny.edu. The application deadline is November 1 for early admission and December 15 for regular admission. For the class admitted fall 2005 (Class of 2009), the average high school G.P.A. was 93.9 (on a scale of 100) and the average SAT was 1376.

University Scholars take a special section of new student orientation. The Honors staff, which approves honors programs, is available in the Honors Center to advise and assist.

Detailed information about additional benefits, including full-tuition scholarships and study grants, and requirements of the CUNY Honors College can be accessed at <http://cuny.edu/honorscollege>.

Research Honors

The City College is a research institution strongly committed to scholarship and research on the part of students as well as faculty. Almost every school, division and department has developed a structure within which qualified undergraduate students can pursue independent scholarly, creative or research projects under faculty guidance or can elect to assist a faculty member in a project. Students should have completed all basic requirements and be nearing completion of their specialization before they apply for independent study. In general, they should begin the departmental honors sequence three or four semesters before they graduate. Faculty will assist eligible students in devising and arranging for cross-disciplinary projects.

Departmental honors courses are numbered 30100-30300 or 30400. Consult the departmental chair or academic advisor for details. Application for Research Honors must be made to the department by December 10 for the spring term and by May 1 for the fall term.

COLLEGEWIDE (FRESHMAN) HONORS PROGRAM CORE REQUIREMENTS

B.A. and B.F.A.	B.S. in Science	B.S. (Non-science majors)	Architecture	Engineering
<p>Total: 9 liberal arts core courses Humanities 10201 (4 cr.) US Society 10101 (3cr) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Social Sciences choose two: Anthro. 10101 (4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p> <p>Sciences Science 10001 (4 cr.) Science 10101 (4 cr.)</p>	<p>Total: 6 liberal arts core courses + science core Humanities 10201 US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Social Sciences choose one: Anthro. 10101 (4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p> <p>Science core</p>	<p>Total: 7 liberal arts core courses + science core Humanities 10201 US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Social Sciences choose two: Anthro. 10101 (4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p> <p>Science core</p>	<p>Total: 7 liberal arts core courses Humanities 10201 US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Social Sciences choose one: Anthro. 10101 (4 cr.) Economics 10101 (4 cr.) Pol. Science 10101(4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p> <p>Sciences Science 10001 (4 cr.)</p>	<p>Total: 5 or 6 liberal arts Honors core courses, depending on major Philosophy 30001 (3 cr.)</p> <p>Choose 4 or 5, depending on major, that meet School of Engineering general objectives: Humanities 10201 (4 cr.) US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.)</p> <p>Anthro. 10101(4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p>

HERMAN MUEHLSTEIN HONORS COLLEGE AT THE CITY COLLEGE: CORE REQUIREMENTS

(REQUIREMENTS FOR CUNY HONORS COLLEGE: UNIVERSITY SCHOLARS PROGRAM STUDENTS)

B.A. and B.F.A.	B.S. in Science	B.S. (Non-science majors)	Architecture	Engineering
<p>Total: 9 liberal arts core courses CHC 10101 (4 cr.) CHC 10201 (3cr) CHC 20301 (3 cr.) CHC 20401 (3 cr.)</p> <p>Choose three: US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Social Sciences choose one: Anthropology 10101(4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p> <p>Sciences choose one: Science 10001 (4 cr.) Science 10101 (4 cr.)</p>	<p>Total: 6 liberal arts core courses + science core CHC 10101 (4 cr.) CHC 10201 (3 cr.) CHC 20301 (3 cr.) CHC 20401 (3 cr.)</p> <p>Choose two: US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Science core</p>	<p>Total: 7 liberal arts core courses + science core CHC 10101 (4 cr.) CHC 10201 (3 cr.) CHC 20301 (3 cr.) CHC 20401 (3 cr.)</p> <p>Choose three: US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Science core</p>	<p>Total: 7 liberal arts core courses CHC 10101 (4 cr.) CHC 10201 (3 cr.) CHC 20301 (3 cr.) CHC 20401 (3 cr.)</p> <p>Philosophy 30001</p> <p>Choose two: World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Science 10001 (4 cr.)</p>	<p>Total: 5 or 6 liberal arts Honors core courses CHC 10101 (4 cr.) CHC 10201 (3 cr.) CHC 20301 (3 cr.) CHC 20401 (3 cr.)</p> <p>Choose 1 or 2, depending on major, that meet School of Engineering general education objectives: US Society 10101 (3cr.) World Civ. 10101 (4 cr.) World Hum. 10101 (4 cr.) Philosophy 30001 (3 cr.)</p> <p>Anthropology 10101(4 cr.) Economics 10101 (4 cr.) Pol. Science 10101 (4 cr.) Psychology 10101 (4 cr.) Sociology 10501 (3 cr.)</p>

Student Affairs and Student Services

DIVISION OF STUDENT AFFAIRS

The Division of Student Affairs is located in the Administration Building, Room 204, and the telephone number is 212-650-5426.

The primary mission of the Division of Student Affairs is to support the academic mission of the College in ways that enable students to complete their course of study most effectively. One of the most important factors in promoting student success is the quality of campus life. The division seeks to enhance the experience of students on the City College campus through rich student life programs and vibrant student activities that help students achieve their academic goals and develop as a whole person. Each student affairs department plays a vital role in the overall development of students. Through these services and programs students are afforded opportunities to strengthen academic skills, develop leadership skills, access support services, increase their social skills, and enhance their career development as they make progress towards their personal and academic goals.

The Vice President for Student Affairs has overall responsibility for the division. Additional information on services and programs may be obtained from the office.

Office of Student Services

The Office of Student Services (OSS) provides programmatic and informational supports to help students further their academic and personal growth goals. This office serves as a clearinghouse for the Division of Student Affairs where students are given help or guidance on different types of problems, i.e., how to navi-

gate the College bureaucracy to resolve an academic or personal dispute, where to get counseling within and without the institution; how to locate the College's programs and resources that deal with a broad range of student financial and social concerns; and similar issues that students may encounter. Hence the goal is to provide clear and accessible information to allow students to feel empowered in their interactions with the institution.

To provide information electronically to current and prospective students, the Student Email Helpline, under the supervision of OSS and staffed solely by students, is available to receive queries at any time, seven days a week. The student staff responds (Monday through Friday) to inquiries in the order they are received. They may answer questions regarding academic and admissions procedures, college regulations, general program and course requirements, class schedules, curricula, etc. Those inquiries requiring responses from College officials are forwarded to appropriate faculty, staff or administrators.

The Student Email Helpline address is support@ccny.cuny.edu. Access is also available through the College's website, www.ccny.cuny.edu.

The Campus Ministry is housed in OSS. Students in need of spiritual guidance and counseling, or who wish to engage in discussions related to spiritual development, may come to the Campus Ministry, located in Baskerville Hall, Room 204 (212-650-5866) for referrals.

The Office of Student Services is located in Wingate Hall, Room 107. The telephone number is 212-650-5370 and the fax number is 212-650-7369. The email address is studentser-vices@ccny.cuny.edu.

Office of Student Disability Services

The Office of Student Disability Services (SDS) is dedicated to providing students with disabilities equal access to the College curriculum. The Office ensures that, upon request, qualified students with disabilities are provided reasonable and effective accommodations as mandated by law. SDS facilitates a range of academic adjustments, reasonable accommodations, and support services for students with disabilities.

Students who contact SDS and indicate that they have a disability or believe that they might qualify for services will be asked to make an appointment for an intake interview with SDS staff. During the intake interview, the staff member will discuss what services are available from SDS and other College offices. In order to qualify for services, students must register with SDS by providing appropriate documentation from a qualified professional of the nature of their disability and functional limitations. However, though academic adjustments are mandated by law, the College is not required to alter demonstrably essential academic requirements of a course of study nor is the College mandated to lower or effect substantial modifications of reasonable academic standards.

Early planning is essential for many of the resources, adjustments and accommodations, so students are asked to contact SDS at the earliest possible date. (B-26; 212-650-5913 or 212-650-6910 for TTY/TTD).

Office of International Student and Scholar Services

The Office of International Student and Scholar Services facilitates the

transition, adjustment, and ongoing counseling needs of non-immigrant international students, research scholars and visiting faculty members. Services include assisting students and scholars in complying with immigration mandates of the Federal government, providing documentation necessary for foreign currency exchange applications and overseas travel and re-entry to the United States. Additionally, the Office provides an orientation program for new international students every semester, monitors students academic progress and assists in coordinating the services of the other departments. The Office is located in the NAC building, Room 1/107, 212-650-8106.

Wellness and Counseling Center

The Wellness and Counseling Center (WCC) is an ambulatory care center for students enrolled at City College. Student fees support the operations of the WCC. Services at the WCC are therefore free of charge. The WCC employs health care practitioners who provide students with quality medical and psychiatric care.

The WCC provides condoms and certain over-the-counter medications as well as Tuberculosis testing at no cost to students. Physical health services include providing immunization clinics for Measles, Mumps, Rubella, Flu and Hepatitis vaccines. The Center also provides medical clearance for CCNY's physical fitness center, initial physical examinations, pregnancy testing, and diagnosis and treatment for sexually transmitted diseases at no cost to students. The WCC has on-site back up practitioners available including and L.P.N., and an R.N. (5 days per week), and an M.D. and P.A. (2 days per week) with a late clinic on Tuesday evenings until 6:00 p.m.

The WCC also provides Psychological Counseling Services including Crisis Intervention and short term counseling at no cost. Workshops in Controlling, Managing and Overcoming Test-Taking Panic, Memory Retention and Learning Techniques, as well as Seven Habits Of Highly Effective Students are provided to students in order to enhance their performance and provide a rich learning environment.

When necessary, students are referred out to community-based health care clinics for more comprehensive treatment and services. These community clinics provide quality health care services for a nominal fee. In an effort to expand services not available for students at the WCC, an affiliation with New York City Technical College (NYCTC) in Brooklyn was established early in 2001 for free and low-cost ophthalmic services. Local community referrals are provided through arranged affiliations for ongoing medical care and for conditions not treated at the WCC site. There is a minimal fee for these services, including laboratory work and X-rays, provided outside the WCC. The fee is collected at the referral site.

Students clear their New York State Immunization Requirements, in accordance with Public Law 2165, at the WCC. Measles, mumps and rubella vaccination are provided free of charge on clinic days for those students, including international students, who need to meet this requirement. Students with their immunization records intact can fax their records to the WCC at 212-650-8227. The appropriate forms must be returned to the WCC prior to registration.

Recently, New York State passed Public Health Law (PHL) 2167 addressing Meningococcal Meningitis. In compliance with PHL 2167 all New York State students, regardless of how many credits they take in college, must fill out a Meningococcal Meningitis response from within 30 days of registration or at the same time they send in their MMR compliance document.

Students may download both forms from the WCC website at: <http://origin.admin.ccnycuny.edu/student-affairs/wellness/default.asp>. Students can also fax these forms to 212-650-8227. The fax must include name, social security number (or assigned City College identification number) and birth date. Applicants are advised to confirm the receipt of the fax by calling 212-650-8222.

Information on providers of Student Health Insurance as well as additional information concerning health, medical and counseling services may be obtained by calling the WCC (J-15; 212-650-8222).

PSYCHOLOGICAL CENTER

In association with the Psychology Department's doctoral program in clinical psychology, the Psychological Center offers counseling by supervised graduate students. Access to the service is limited and is fee based (NAC 8/109; 212-650-5672).

The Finley Student Activity Center, located on the first floor of the North Academic Center (NAC 1/210; 212-650-5002), is a multi-purpose facility which can be used for student activities. It houses the offices of the Student Governments, the student-run newspapers, a radio station, a video studio, and the Student Ombudsperson's office. It contains a game room, student lounge, ballroom, and several conference rooms for use by students and faculty.

This office assists the more than 100 student organizations on campus with chartering clubs, planning activities and leadership training.

For example, there is the Caribbean Student's Association, Concrete Canoe Club, Salsa Mambo Club, Chinese Christian Fellowship, Urban Legal Studies Students Association, American Medical Student Association, American Institute of Chemical Engineers, Latin American Engineering Student Association and the Frederick Douglas Debate Society.

All students pay a student activity fee each semester. This fee is used for athletics and activities, and for supporting a myriad of organizations and programs related to students. Students also pay a technology fee, which is used to improve technology and access to technology. Elected undergraduate and graduate officers are chosen by their respective government to serve in a Student Association (known as the Student Services Corporation at CCNY), which plans and implements budgets and expenditures, with the advice and counsel of members of the faculty and the Division of Student Affairs. In addition, students have a role in decisions through representation on various college committees.

INTERCOLLEGIATE ATHLETICS

The College offers an extensive fourteen-team program of varsity competitive sports for men and women. The

College fully subscribes to the Division III philosophy which emphasizes the participants rather than the spectators. The program is supported by an athletic fee, which is part of the mandatory student activity fee. No athletic scholarships are offered by Division III colleges. Membership on a team is open to all qualified undergraduate students in good academic standing who meet NCAA eligibility standards. Teams compete in various local, regional, national events, and leagues, with the primary affiliation being the City University of New York Athletic Conference. For more information, contact the Athletics office (J-20; 212-650-8228).

INTRAMURAL ATHLETICS AND RECREATIONAL SPORTS

The Intramural Athletics and Recreation program provides the campus community with structured competitive athletic events, tournaments, and leagues as well as access to a wide variety of athletic and fitness facilities. The structured activities of the Intramural Athletics program generally take place during club hours on Thursdays. Some of the events that take place during a given semester include basketball, volleyball, badminton, soccer, and tennis.

The recreation program offers the campus community opportunities to work out with cardiovascular equipment and weight train in the Wingate Fitness Center, which opened in 1999. Individuals can also swim, play tennis, basketball, volleyball, badminton, soccer, frisbee, touch football, or merely jog. The programs emphasize enjoyment health and wellness, social interaction, camaraderie, physical activity, and the challenge of competition with one's peers.

Information on the Athletics or Intramural and Recreation program can be obtained from Baskerville Hall 05 or Wingate Hall 3rd floor.

WHCR-FM

The College's radio station, WHCR (90.3 FM), is a professionally managed community station. Through hands-on training at the station, students and community volunteers can learn many aspects of news gathering, reporting, programming and on-air broadcasting (NAC 1/108; 212-650-8171).

CAREER CENTER

The Career Center is dedicated to providing an extensive array of quality programs and services for the professional development and career advancement of its students. Programs and services are designed to help students prepare for the professional world of work through self-assessment, workshops and seminars and cooperative education and internship placements.

To assist students with career education and planning the Center offers workshops on resumé writing, letters of inquiry, job search techniques, networking for success, and interviewing skills. Individual counseling is available by appointment only to students seeking assistance in defining and planning career goals. An eight-part series of workshops is offered each semester to help students explore work values, interests, skills and abilities. In addition, the Career Library offers an extensive collection of reference materials, directories, career-related literature, graduate and professional information, company/organization annual reports, and recruitment literature as well as four terminals where students may search for jobs or internships, type a letter of inquiry or resumé, as well as explore internet job sites. Other services include videos on career and job search topics as well as the availability of sample resúmes, cover letters, salary data market trends and GRE exam brochures.

The Career Center also oversees experiential programs, such as internships, cooperative education placements, and community/service learning opportunities designed to provide students with opportunities to apply classroom learning in a structured work environment.

Career placement programs include on-campus recruitment, career fairs, resumé referral services, resumé critiques and employment advising, and special events organized at the request of our participating employers.

The Center's services, unless otherwise stated, are available to all CCNY students and alumni (NAC 1/116; 212-650-5326).

CHILD DEVELOPMENT AND FAMILY SERVICE CENTER

The Child Development and Family Service Center provides on-campus, quality child care/educational services to students of City College, for children between 2 years and 10 months and 6 years of age. The Center operates day and evening programs during the fall and spring semesters. The day program operates from 7:45 a.m.–5:30 p.m. and the evening program operates from 4:00 p.m.–9 p.m. Summer care is available Monday–Thursday for the same population. Breakfast, lunch and dinner are served during the fall and spring semesters. The current fee is \$45.00 per week. To apply for enrollment, students should visit the Center in Schiff House. Additionally, the Center is a site for field placement students in Education, Psychology, Sociology, and Sophie Davis School of Biological Education programs (Schiff House, 133rd Street & Convent Avenue; 212-650-8615).

VETERAN'S AFFAIRS

Students who have completed active military duty within the last ten years or who qualify for a reserve educational contract may be eligible for a monthly stipend from the Veteran's Administration. The Office of the Registrar is responsible for processing Veteran's Benefits.

CAFETERIA

A cafeteria serving a variety of hot and cold entrees, salads, and grilled foods is located on the second floor of the North Academic Center. Vending machines carrying a variety of snacks and drinks are located throughout the campus. (NAC, 2nd floor; 212-650-6771).

THE CITY COLLEGE BOOKSTORE

The CCNY Bookstore stocks new and used textbooks, reference and general books, school supplies, computer software, sportswear, CCNY memorabilia, magazines, greeting cards and electronics. Major credit cards are accepted. The bookstore buys books back from students throughout the year. The bookstore is accessible to people with disabilities (NAC 1/103; 212-650-7109).

Academic Regulations

Students are graded in courses according to the system described here.

RESIGNATION FROM COURSES

After the registration period a student may drop a course by following a procedure that begins with the student obtaining an Add/Drop Form in the Advisor's Office or the Registrar's Office.

During the Change of Program period each semester, students may make program changes during the first three weeks of classes. A student may add a class until the last published day of late registration. A student may drop a course without penalty (the course will not appear on the transcript) until approximately the end of the third week of classes. The academic calendar is printed every semester in the *Schedule of Classes* and is also posted on the College's website: www.cuny.cuny.edu and should be referred to for the non-penalty drop date. The Add/Drop form must be signed by an academic advisor and returned to the Registrar.

After the Change of Program period, through the end of the tenth week of classes, students may drop courses using a withdrawal form that must be signed by the instructor and their divisional dean. Students must return the form to the divisional dean. A grade of "W" (withdrawal without penalty) may be assigned, but is not automatic. The assigned grade will depend on the student's performance in class until the time of withdrawal.

Grading System

Grade	Explanation	Quality Points
A+		4.00
A		4.00
A-		3.66
B+		3.33
B		3.00
B-		2.66
C+		2.33
C		2.00
C-		1.66
D		1.00
F		0.00
P	Pass	—
W	Withdrew without penalty (student initiated)	—
WA	Administrative withdrawal (college initiated)	—
FIN/FAB	F due to incomplete or absence from a final exam	0.00
WU/WF	Withdrew without approval	0.00
INC	Incomplete	
ABS	Absent from Final	
PEN	Grade Pending Resolution	
AUD	Auditing-no credit	
Y	Year or longer course of study must continue to completion-restricted to clinical/practicum courses in certain Health/Science programs and independent Honors courses	

After the tenth week of the term, students who withdraw will automatically be assigned a grade of "WF." A grade of "W" can only be assigned for documented, compelling reasons such as serious illness. Such exceptions will be considered by the Committee on Course and Standing.

Students who are withdrawn by their instructors will be assigned the grade of "WU" unless the student completes the normal drop procedure; instructors cannot assign the grade of "W."

Note: A student who withdraws from 12 credits or more within two academic years will be placed on academic warning; a student who drops 18 or more credits will be subject to dismissal. Dropping courses may cause a student to become ineligible for financial aid.

ABS AND INC GRADES

The grades of ABS and INC are given only when the student has been doing passing work and the instructor believes that the student has given an acceptable and documented reason for not finishing the course on time. The instructor may insist that the student obtain the permission of the Committee on Course and Standing (of the School offering the course) to complete the course.

The Registrar will change the temporary grades of INC and ABS to failures by the tenth week of the following semester unless the instructor has submitted a passing grade. Students must pay the make-up exam fee to the Bursar before taking the make-up exam. Extensions may be granted only by the Committee on Course and Standing of the School offering the course.

PASS/FAIL OPTION

Students in the professional schools, except for the School of Education, may not take courses on a pass/fail basis, even if the courses are being taken as free electives. Students in the College of Liberal Arts and Science and in the School of Education may take certain courses on a pass/fail basis, subject to the following restrictions:

1. The student must have completed at least 28 credits.
2. A student may take only one course per semester on a pass/fail basis.
3. No core courses may be taken pass/fail.
4. No courses required for the major may be taken pass/fail.
5. Students must choose this option during registration. (Students are not permitted to change to or from pass/fail after the end of late registration.)
6. No more than 18 credits may be taken pass/fail.

AUDITING

Students wishing to audit a course must select audit status at the time of registration. Auditors must register in the normal manner and pay required tuition and fees. No credit or grade will be given for audited classes. Auditor status cannot be changed to credit status after the closing date for late registration. Likewise, credit status cannot be changed to auditor status after late registration.

GRADE POINT AVERAGE (GPA)

A student's overall academic performance is measured by calculating the grade point average (G.P.A.). This average is found by using grades from each course on the student's record except those that have one of the following grades assigned: P, R, INC/ABS, W, PEN.

Each grade received is assigned a numerical value called Quality Points, as seen in the Grading System chart. The number of Quality Points multiplied by the number of credits the course carries is the total for the course. The G.P.A. is found by adding these totals and dividing this amount by the total number of credits attempted.

THE MAJOR

Every student must complete an approved major. Each department or program sets specific course requirements for its majors. These requirements are outlined in the departmen-

tal listings in this *Bulletin*; students should consult with an appropriate advisor before declaring a major. Students must declare a major prior to completing 61 credits. Forms may be obtained in the Office of the Registrar or the "i" desk.

DUAL MAJORS

Students who wish to major in two fields should file two major cards, each signed by the appropriate department advisor and by the divisional dean. They must complete the requirements of both the declared majors. At the time of graduation a student may request from the chair of the second major department a letter stating that he or she has completed the requirements. The transcript and letter can then be offered to a potential employer or graduate school. Students wishing to complete two majors should discuss it at an early stage of their college career with an advisor in each of the two departments. No more than three courses may be credited to both majors.

THE MINOR

A number of departments offer a minor, a program of study of 15 credits which can be taken in conjunction with the major. It should be noted that all degree candidates must have a major. The minor however is optional.

DEAN'S LIST

Students are eligible for the Dean's List four times during their career at City College: the semester in which they become sophomores, the semester in which they become juniors, the semester in which they become seniors, and the semester in which they have completed twenty-four or more credits as seniors. Students are placed on the Dean's List for a particular year if for that year they have:

1. A 3.2 grade point average.
2. Completed at least 24 credits at City College.
3. No grades other than A, B, C, D, W or P.

GRADUATION HONORS

At graduation, there are three categories of honors for baccalaureate candidates.

A degree *summa cum laude* is granted to students whose average in all subjects is at least 3.8.

A degree *magna cum laude* is granted to students whose average in all subjects is at least 3.5.

A degree *cum laude* is granted to students whose average in all subjects is at least 3.2.

Graduation honors are computed on the basis of all college level work taken by students including work taken at institutions other than City College.

Second degree students are not eligible for graduation honors.

APPLICATION FOR GRADUATION

Candidates for graduation must file an application for a degree with the Office of the Registrar by a specified date in the semester in which they expect to complete degree requirements. Candidates who do not comply with deadlines will not graduate on time. There are no exceptions. Please consult the College calendar published each semester in the *Schedule of Classes* and the website (www.cuny.cuny.edu) for the filing deadline.

RESIDENCY REQUIREMENT

To be eligible for a degree a student must complete a minimum of 84 credits or the last 32 credits at City College. In addition, at least 60% of the major must be completed at City College.

REQUIREMENTS FOR GRADUATION

Students who entered City College as first-time freshmen before September 1996 may be required to complete 128 credits.

Students who enrolled thereafter will be required to complete a total of 120 credits, to include major and core requirements. Exceptions are the degree programs in Architecture, Engineering and the Sophie Davis School of Biomedical Education, which require more than 120 credits.

Students are expected to be familiar with the requirements of their degree programs. All requirements for the degree must be met before the date of graduation. The temporary grades of INC and ABS (including those assigned in the final semester of attendance) must be resolved prior to the date of graduation.

In addition, all "stops" must be cleared by the date of graduation. Failure to clear "stops" will result in the delay of the distribution of diplomas and the processing of requests for transcripts.

Upper-division students should have a preliminary graduation check conducted two semesters before the anticipated date of graduation by an advisor in their department or division. The final graduation check and certification is conducted in the deans' offices.

POLICY ON LATENESS AND ABSENCE

Students are expected to attend every class session of each course in which they are enrolled and to be on time. An instructor has the right to drop a student from a course for excessive absence. Students are advised to determine the instructor's policy at the first class session. They should note that an instructor may treat lateness as equivalent to absence. (No distinction is made between excused and unexcused absences.) Each instructor retains the right to establish his or her own policy, but students should be guided by the following general College policy:

In courses designated as clinical, performance, laboratory or field work courses, the limit on absences is established by the individual instructor. For all other courses, the number of hours absent may not exceed twice the number of contact hours the course meets per week.

When a student is dropped for excessive absence, the Registrar will enter the grade of WU.

GRADE OF INCOMPLETE

A grade of Incomplete (INC) may be given by an instructor to a student who, through unavoidable circumstances, has been unable to complete the assignments. Course work must be completed no later than the published date in the second semester following the award of the INC grade (e.g., a student who receives an INC for a course ending in May must complete the work by mid-March of the following year). A grade of INC not resolved in a timely manner will become an FIN. Extensions of time for resolving INC grades may be considered only by written appeal to the appropriate Committee on Course and Standing of the particular school.

ACADEMIC APPEALS

The faculty of each of the schools defines the degree requirements, academic standards, and rules, and in general has jurisdiction over all of the courses offered by that school. Each of the schools has a Committee on Course and Standing charged with overseeing enforcement of these matters and dealing with special cases and appeals. Students have the right to appeal to the appropriate Committee on Course and Standing any decision made by individual faculty members or administrators about these academic matters. Students must consult with their academic advisor for the appropriate appeals procedure. The Committees on Course and Standing are the final authority on enforcement of curriculum, degree requirements, academic standards, grades and academic rules.

It should be noted that most academic rules are enforced without exception.

GRIEVANCES

Students with grievances concerning classroom matters other than grades should first attempt to resolve the grievance at the department level through discussion with the faculty member(s) or department chair. If the matter is not resolved, the student or department may refer the problem to the appropriate academic dean, the Ombudsman, or the Vice President for Student Affairs, who shall, if neces-

sary, refer it to the Office of the Provost for further consideration and possible action.

COURSE LOADS FOR FULL-TIME STUDENTS: AVERAGE, MAXIMUM, AND MINIMUM

An average student program consists of twelve to fifteen credits. Students who are not on academic probation may take as many as eighteen credits. Students who want to take more than eighteen credits must request permission from the dean of the school or Division, who generally grants permission for such programs only to students with outstanding records who have compelling reasons for requesting such a program. A student who is granted permission for more than eighteen credits is expected to complete all courses on time and is generally not permitted to drop any courses.

Students on probation must limit their programs to approximately twelve credits. Students in the School of Engineering who are on academic probation may not take more than twelve credits per semester.

The College does not require that a student enroll for a minimum program. However, many forms of financial aid are contingent on full-time student attendance. Ordinarily, a student must register for at least twelve credits to be full-time. Students receiving financial aid should verify their full-time status with the Financial Aid Office, particularly when changing programs.

ACADEMIC STANDARDS

Students are expected to maintain minimum G.P.A. requirements both overall and in major courses; not to withdraw from twelve credits during any two consecutive academic years; pass all required courses in sequence; and pass the ACT tests at the time of admission or, for non-CUNY transfer students, by the end of the first semester. The CUNY Proficiency Examination (CPE) must also be passed prior to completing sixty-one credits. ESL and SEEK students should consult with their advisors regarding compliance with this requirement.

Warning, Probation and Dismissal

Students who fail to meet the College's academic standards listed below are placed on probation, or on warning that unless academic performance improves the student will be subject to dismissal. A student will be placed on probation when he or she fails to achieve the required standards whether or not notification has been received from the College. Students must make satisfactory progress toward the degree. They should be aware that poor academic performance threatens their financial aid eligibility. During this probationary period, students who make satisfactory academic progress will continue to maintain their academic standing in the College but may lose their eligibility for financial aid.

Academic standards are enforced by each school's Committee on Course and Standing, which acts through a dean or director. The Committee may restrict the number of courses for which a student can register, require that a student take certain courses, or prohibit a student from taking certain courses.

Students who have been placed on probation will not be permitted to participate in intercollegiate athletics; serve as officers of student government; serve as editor of a student paper; serve as manager, producer or editor of a student radio or TV facility; or take part (in a principal role) in a College-sponsored theater, dance, music or film production unless doing so as part of a specific College course.

The professional schools may have additional or modified academic standards; students enrolled in the professional schools are advised to consult their advisors and appropriate sections of this *Bulletin*.

Total Credits Earned	Minimum Cumulative G.P.A.
0-12	1.5
13-24	1.75
25 and over	2.0

Dismissal

Students who fail to achieve the above academic averages while on probation will be dismissed from the College.

Appeals

Students may appeal warning, probation or dismissal decisions by writing to the Committee on Course and Standing of the school in which they are enrolled.

Dismissed students must expect to wait out a minimum of one semester before they re-apply for re-entry. Students are advised to employ this time seeking opportunities to improve their academic skills.

ESL DISMISSAL

CUNY policy states that all Senior College students may not repeat an ESL course more than once after September 1996. If after the second attempt, a student has not passed or completed the course, the student will be subject to Academic Dismissal from the College. The dean of the division in which the student is enrolled will notify the student of this action along with the directions for appeal and other possible educational alternatives.

REPEATING COURSES

Students may not repeat a course they have already passed unless that course has been designated as repeatable in this *Bulletin*. If allowed to do so, the repetition does not confer additional credit. This limitation applies to courses taken at City College, courses taken at other colleges, and to courses for which credit is granted by exemption examination or advanced placement examination. Students are ultimately responsible to determine if the coursework they select is a repeat of prior coursework.

"F" REPEAT POLICY

The "F" repeat policy only applies to courses taken after 1990. In all colleges of City University, a student may repeat up to sixteen credits of failed courses; if the second grade is C or higher (C- does not qualify) the original grade will not be used in the calculation of the G.P.A. (although the course and grade remain on the record). The revised G.P.A. will be used for admissions, progress and graduation minimum standards. The F grades will, however, apply to graduation honors and can affect other requirements for progress in the major. Consult with the Office of the Registrar for specific applications of this policy.

UNDERGRADUATE COURSE NUMBERING

As a general rule, course numbers reflect the level of difficulty of the course content. For a variety of reasons, some course numbers may not adhere to the description below. If in doubt about the level of a particular course, consult a departmental advisor.

10000-19900	introductory courses for lower division students
20000-29900	beginning major courses intended for sophomores and juniors
30000-39900	first level upper division courses; intermediate major courses
40000-49900	advanced undergraduate courses intended for juniors and seniors
50000-59900	advanced undergraduate courses which may carry graduate credit

Degree Requirements at The City College

Degree requirements at The City College comprise the following:

1. Proficiencies
2. Core requirements
3. Language requirements
4. Writing-across-the-curriculum
5. Major-field courses
6. Free-elective courses

Students may also be subject to other conditions described below under Other Degree Requirements and Academic Standards, depending on the field of study.

PROFICIENCY REQUIREMENTS

CUNY Proficiency Examination (CPE)

All students must pass the CUNY Proficiency Examination to advance from the lower to the upper division of the College. The exam must be taken for the first time during the semester in which the student is taking the 45th credit. Students who have 60 or more credits must take the exam before enrolling in any additional upper division course work.

Students have three opportunities to pass the CPE. Those who do not pass after three attempts are subject to dismissal. Some students may be eligible to appeal to the designated liaison in the English Department.

Proficiency in Spoken English

All students are required to demonstrate an ability to communicate effectively in spoken English. Students may satisfy this requirement either by passing a Speech Proficiency Test or by passing Speech 11100 or 00308. The test, given by appointment, should be taken in the fresh-

man or sophomore year, or upon transfer to the College, so that any necessary improvement can be accomplished before graduation. Students in the School of Education meet this requirement by taking Speech 11100. Students in the School of Engineering meet this requirement by passing English 21007, which has an oral presentation component.

Foreign Language Requirement

For B.A. Students

One of the following:

- A. Four years of a foreign language in high school;
- B. Fourth-semester college-level course of any foreign language.

For B.S. (including Computer Science), B.E. and B.F.A. Students

One of the following:

- A. Two years of a foreign language in high school;
- B. Second-semester college-level course of any foreign language.

A student may qualify to take a competency test to fulfill this requirement. Information on this option can be obtained from the Department of Foreign Languages and Literatures.

For B.S. in Education Students

Candidates for the B.S. in Education must demonstrate competence in Spanish in one of the following ways:

- A. Students with less than two years of Spanish in high school take Spanish 12100 and 12200.
- B. Students who have had two years of Spanish in high school take Spanish 22300.
- C. Students who have a satisfactory speaking knowledge of Spanish may be exempted from these courses by

passing an oral Spanish competency test given each semester by the Department of Foreign Languages and Literatures. Students may apply for the test in NAC 6/204.

In lieu of Spanish a waiver may be obtained from a School of Education advisor to substitute another language spoken by the multilingual populations in New York City schools.

Restrictions on foreign language courses

Students who have taken a foreign language in high school will not be permitted to take the equivalent course for credit unless they are placed there by the department and they continue the study of the language to a level beyond that completed in high school. Native speakers of a foreign language will not be permitted to take introductory courses in that language for credit, except for those courses specifically designed for native speakers.

WRITING-ACROSS-THE-CURRICULUM REQUIREMENT

The City College considers the mastery of writing skills of the utmost importance. Writing-across-the-curriculum is aimed at ensuring that all City College graduates can write formally correct, persuasively argued prose.

Students in the College of Liberal Arts and Science must pass two introductory writing courses: English 11000 and 21000. For the 21000 writing course, students have several options. They may choose among the following:

- **English 21001: Writing for the Humanities and the Arts**

- **English 21002: Writing for the Social Sciences**
- **English 21003: Writing for the Sciences**
- **English 21007: Writing for Engineering**
- **Anthropology 21002: Writing in Anthropology**
- **Music 21000: Writing about Music**
- **Political Science 21000: Writing in Political Science: Politics and Leadership**
- **Other 21000 courses that may be offered by individual departments**

Students are required to enroll in a 21000 course before they have completed 60 credits. Ordinarily, students will select a 21000 writing course most in line with their intended major, although students are free to choose any 21000 course. Students should check the prerequisites for the course before registering.

The College also encourages a good deal of writing in the regular elective course offerings. Students also are required to pass three elective-level courses that are identified as requiring at least 3,500 words of writing. These electives are designated with a (W) in the course descriptions of each department.

THE CORE REQUIREMENT

The Core Curriculum is a broad introduction to the liberal arts and sciences and is the basis of every student's education at City College. The courses that comprise the Core are multidisciplinary and multicultural in approach. They are designed to impart an understanding of the diversity of human inquiry and achievement, as well as a critical awareness of the variety and richness of human cultures. Students should complete the Core before going on to more specialized work, such as fulfilling the major requirements.

Since all students take a number of the same Core courses, all possess a common body of knowledge and skills on which their instructors in more advanced courses can build. However, each degree program has slightly different requirements which are

described below. For more information, students should consult their academic advisor.

THE MAJOR

Undergraduate majors are offered throughout the College in approximately fifty fields that prepare students for professional and graduate schools and for a variety of careers. Advisors in the departments of the various schools assist students in making their initial choices of majors and in reconsidering chosen fields of study.

Every student must complete an approved major (specialization). Each department or program sets specific course requirements for its majors. These requirements are outlined in the departmental listings in this Bulletin. Students should consult their advisor periodically for updates on major requirements. While some courses in the major may be completed at other accredited colleges, at least 60% of the major must be taken at City College.

FREE ELECTIVES

Free electives are those courses taken in addition to required courses to bring the total to the minimum number of credits required for graduation.

Students use free electives to take additional work in the major, concentrate in a second field, or explore particular interests. No more than five core courses may be taken for credit as free electives.

Students may take almost any course for which they have the prerequisites in the College of Liberal Arts and Science as a free elective, and they are encouraged to take advantage of the wide range of offerings in the professional schools and special programs at the College. However, CLAS students should remember that not all courses offered by the schools of Architecture, Education, and Engineering carry credit in CLAS. CLAS students should consult the Office of Academic Standards (NAC 5/216) before taking courses in the profes-

sional schools. In many cases the focused training of both professional and technical personnel will be too highly specialized for inclusion in a broad liberal arts curriculum. No more than six credits of this coursework will be granted toward the Liberal Arts and Science degree requirement.

Core Curricula and Courses for Freshmen and Transfers

City College freshmen, CUNY and non-CUNY transfers, as well as CUNY A.A.S. degree holders must meet one of the core curricula. Transcripts of transfer students will be evaluated on a course-by-course basis by an adviser who will determine the outstanding Core and proficiency requirements to be met, including language and speech proficiencies. Students should note that there is a planned sequence to courses. Therefore, some courses must be taken before others. Prerequisites are given in the individual course descriptions to be found under Core course descriptions.

The only exception to the fulfillment of these requirements is granted to those students who have transferred from CUNY schools with either an A.A. or an A.S. degree. These students are exempt from any further Core requirements. However, it should be remembered that if any such student does not possess the prerequisite work necessary to undertake the required upper-level coursework in their intended area of study, that student may be liable for additional coursework. No student will be allowed to take a course for which he or she is not academically prepared.

School of Architecture, Urban Design and Landscape Architecture

Students with previous college course work may be exempted from some or all of the required and elective general education courses. An evaluation of a student's transfer credits is made by the divisional director of admissions and academic advisement. Additional information regarding transfer students is to be found in the section of

this Bulletin devoted to the School of Architecture, Landscape Architecture and Urban Design.

School of Engineering

Major courses taken under a program accredited by ABET (Accreditation Board for Engineering and Technology) and passed with a grade of C or better will receive transfer credit at City College. Subject to the C-minimum requirement, transfer credit for engineering courses may also be awarded as follows:

1. Courses taken at an institution that has a formal articulation agreement with City College will receive transfer credit. Courses taken at an institution that has a formal articulation agreement with an ABET-accredited program at another institution may also receive transfer credit at City College, if such courses are covered by the articulation agreement.
2. Foreign students may receive credit by examination. Before being allowed to take such an examination, the student must provide evidence of completion of similar courses. At the discretion of the evaluator, foreign students may also receive transfer credit by submitting sufficiently detailed curricular materials.

The above notwithstanding, the School of Engineering reserves the right to withhold transfer credit for any academic reason it considers justifiable.

School of Education

Students seeking to transfer into the School of Education must consult with the advisor in the program into which they wish to transfer. Appointments with the program advisor may be made through the School's Office of Student Services.

CLAS Core Curriculum

	Bachelor of Arts/ Fine Arts (B.A.)/(B.F.A.)	Bachelor of Science Non-Science Majors (Psychology) (B.S.)	Bachelor of Science For Science Majors (B.S.)
Philosophy 30000 (3)	X	X	X
U.S. Society 10100 (3)	X	X	X
World Civilizations 10100 or 10200 (3)	X	X	X
World Humanities 10100 or 10200 (3)	X	X	X
Human Behavior/Social Science			
Political Science 10100 (3)	X choose two	X choose one	X choose one
Economics 10000 (3)			
Anthropology 10100 (3)		X choose one	
Psychology 10200 (3)			
Sociology 10500 (3)			
Science-Interdisciplinary			
Science 10300 & 10400 (6)	X		
Science 20000 (3) or EAS 32000 (3)			X
Other Lab Science			
Earth & Atmospheric Science 10600 (4)		X choose four laboratory sciences	X
Biology 10100 (& 10200*) (4/8)			X
Chemistry 10301 & 10401 (8)			X
Physics 20300 & 20400 (8)			X choose one sequence
Physics 20700 & 20800 (8)			
Mathematics			
Mathematics 15000 (3)	X		
Mathematics 20100, 20200 & 20300 (10)		X choose one sequence	X choose one sequence
Mathematics 20500 & 20900 (8)			
World Arts			
Art 10000 or Music 10000 (3)	X	X	X
Total Credits	30	37-39	57-59

* Biology and Biochemistry majors must take Bio 10200 in addition to 10100 to complete this requirement.

B.S., B.E., B.S.Ed. Requirements

Consult the introductory section of each professional school for applicable core requirements.

Foreign Language Requirement

The Foreign Language Requirement for the Bachelor of Science, the Bachelor of Architecture and the Bachelor of Engineering Degrees is two years of the same language in high school or two semesters for the same language at the college level. The foreign language requirement for the Bachelor of Arts/Bachelor of Fine Arts Degree is four semesters of the same language at the college level. Students may be exempted from all or part of the requirement by passing a proficiency test administered by the Foreign Language and Literatures Department (NAC 5/223); or by equivalent coursework in high school. Check with your advisor in the Division or Professional School of your major.

Writing Requirement

In addition to English 11000 and English 21000 (or equivalent), students are required to complete three courses with a (W) designation.

Core Course Descriptions

Anthropology 10100: General Anthropology

Humankind from its beginnings in Africa to the present. Course focuses on human biological and cultural evolution through prehistoric times, identification of cultural bias in attempts to understand the human past and present, and exploration of the fallacies of racial and cultural superiority. Topics include the development of social stratification, cultural definitions of reality, language and thought, alternative ways of generating cooperation and handling conflict, culture change and "modernization." 3 HR./WK.; 3 CR.

Anthropology 10101: General Anthropology—Honors

For students in the Honors Program. An alternative version of the introductory course designed to provide greater student participation, more writing, and student-instructor interaction. 4 HR./WK.; 4 CR.

Art 10000: Introduction to the Visual Arts of the World

Concepts underlying content, formal structure and historical development of the visual arts; art as a global phenomenon from prehistory to the present; relationship of art to the natural world, the built environment, political and other human institutions, and the realm of spirituality. 3 HR./WK.; 3 CR.

Astronomy 10000: Ideas of Astronomy

Explores the entire realm of the universe, its origins and history, and establishes our time and place and role in it. Our solar system, our galaxy, the expanding universe of many galaxies will be discussed along with more recent discoveries such as quasars, pulsars and black holes. 3 LECT., 1 REC. HR./WK., SLIDES, FILMS, PLANETARIUM SHOWS; 3 CR.

Biology 10000: Biology: The Strategy of Life

The basic properties of living systems with emphasis on human beings as functioning biological entities. 3 LECT., 1 REC. HR./WK.; 3 CR.

Biology 10500: Introductory Biology

The molecular basis of life, structure, and function in living organisms, reproduction

and patterns of inheritance, and human ecology. Intended primarily for chemistry, earth systems science, and physics majors as well as non-science B.S. majors, also for potential premedical students and biology majors who have not taken a high school biology course. 2 LECT., 4 LAB HR./WK.; 4 CR.

Biology 10800: Organismic Biology: Lecture

A comparative study of the functional unity and common requirements of all organisms is used to examine the strategies and mechanisms displayed by organisms in adapting to a variety of habitats. Prereq.: 1 year of high school biology. Required for Biology Majors. 3 LECT. HR./WK.; 3 CR.

Biology 10900: Biological Processes of Organisms: Laboratory for Organismic Biology

Digestion, gas exchange, circulation, excretion, neural control of behavior, and basic plant functions. Emphasis is placed on use of the scientific method and scientific writing skills. Prereq.: Bio 10800; coreq.: Math 19500. Required for biology majors. 4 LAB HR./WK.; 2 CR.

CHC Seminar 10101: The Arts in New York City

For students in the CUNY Honors College. A broad exposure to the arts in New York City. Attendance at performances, exhibitions and other cultural events is central to the course. Students examine these events from the multiple perspectives of scholarship, creativity and production and enhance their appreciation by investigating the social, historical and aesthetic context of the cultural works. Prereq.: admission to the CUNY Honors College at City College. 4 HR./WK.; 4 CR.

CHC Seminar 10201: The Peopling of New York

For students in the CUNY Honors College. Investigation of the role immigration and migration have played and will play in shaping New York City's identity. Prereq.: CHC 10101. 3 HR./WK.; 3 CR.

CHC Seminar 20301: Science and Technology in New York City

For students in the CUNY Honors College. Study of scientific and technological topics

that have had an impact on contemporary New York. Prereq.: CHC 10201. 3 HR./WK.; 3 CR.

CHC Seminar 20401: Shaping the Future of New York City

For students in the CUNY Honors College. For students in the CUNY Honors College: University Scholars Program at The City College of New York. Study of the ongoing interplay of social, economic, and political forces that shape the physical form and social dynamics of New York City. Prerequisite: CHC 20301. 3 HR./WK.; 3 CR.

Chemistry 10000: Chemistry and Society

The fundamental principles of chemistry and their application to social issues. (Open to Science majors only with permission of instructor.) 3 HR./WK.; 3 CR.

Chemistry 10301-10401 General Chemistry

(For students majoring in science or engineering.) Alternate course sequence for Chem. 10300-10400. Coreq.: Math 19500. 3 LECT., 2 WRKSHP., 2-4 LAB. HR./WK.; 4 CR./SEM.

Chemistry 10800: Basic Laboratory Techniques

Prereq.: Chem 10300; Coreq.: Chem 10400. 5 LAB HR./WK.; 3 CR.

Earth and Atmospheric Science 10000: The Dynamic Earth

Basic concepts of geology. The materials, structures, and surface features of the earth, and the processes which have produced them. 3 LECT. HR./WK.; 3 CR.

Earth and Atmospheric Science 10100: The Atmosphere

An introduction to the processes and phenomena of our atmosphere. Topics include clouds, sky color, greenhouse effect, storms, climates and Ice Ages. 3 LECT. HR./WK.; 3 CR.

Earth and Atmospheric Science 10600: Earth Systems Science

A systematic global view of the features, processes, and underlying scientific concepts of the earth, atmosphere, and oceans, emphasizing environmental applications. 3 LECT., 3 LAB. HR./WK.; 4 CR.

Economics 10000: Modern United States Economy

Analysis of fundamental microeconomic and macroeconomic principles, issues and policies in the contemporary economy of the United States; examination of goals of full employment, stable price level, economic growth, and balanced international economic relationships; role of government fiscal policies and national monetary policies in macroeconomy of the United States. 3 HR./WK.; 3 CR.

Economics 10101: Introduction to Economics

For students in the Honors Program. An alternative version of the introductory course designed to provide more student participation and writing. 4 HR./WK.; 4 CR.

Humanities 10201

For students in the Honors Program. An introduction to music and art. 4 HR./WK.; 4 CR.

Mathematics 20100: Calculus I

Limits, derivatives, rules of differentiation, trigonometric functions and their derivatives, Newton's Method, differentials, graph sketching, maximum and minimum problem, related rates, introduction to integration, areas. Interpretation and use of methods of calculus with graphing calculators. Prereq.: grade of C or higher in Math 19500 or placement by the Department. Credit will not be given for both Math 20100 and either Math 20101 or 20500. (Part of sequence Math 20100 (20102), 20200 (20202), 20300). 4 HR. LECT./WK., 2 HR. LAB./WK.; 4 CR.

Mathematics 20200: Calculus II

Areas between curves; volumes of solids of revolution; integration of trigonometric, exponential and logarithmic functions; analytical and numerical methods of integration; improper and infinite integrals; conic sections; polar coordinates; parametric representation of curves; vectors in the plane. Interpretation and use of methods of calculus with graphing calculators. Prereq.: grade of C or higher in Math 20100 or 20102 or placement by the Department. After completion of Math 20900, only 3 credits will be given for Math 20200. Credit will not be given for both Math 20200 and 20202. (Part of sequence Math 20100 (or 20102), 20200 (or 20202), 20300.) 4 HR. LECT./WK., 2 HR. LAB./WK.; 4 CR.

Mathematics 20300: Calculus III

Vectors, infinite series, Taylor's theorem, solid analytic geometry, partial derivatives, multiple integrals with applications. Prereq: Math 20200 or Math 20202. (Part of sequence Math 20100 (20102), 20200, (20202) 20300.) 4 HR./WK.; 4 CR.

Mathematics 20500: Elements of Calculus

Limits, derivatives, rules of differentiation, differentials, graph sketching, maximum and minimum problems, related rates, exponential and logarithmic functions, differential equations, antiderivatives, area, volume, applications to economics. Prereq.: grade of C or higher in Math 10000 or placement by the Department. Credit will not be given for both Math 10100 and Math 10500. 4 HR./WK.; 4 CR.

Mathematics 20900: Elements of Calculus and Statistics

Exponential and logarithmic functions, equations of growth and decay, integration techniques, improper integrals, differential equations, counting techniques, probability on finite sample spaces, binomial distributions; continuous distributions, normal distribution, statistical measures, statistical inference, biological applications. Prereq.: Math 10500 or placement by the Department. (Part of sequence 20500, 20900 for Biology majors.) 4 HR./WK.; 4 CR.

Music 10100: Introduction to Music

Concepts underlying the understanding and enjoyment of music. Examples from around the world highlight matters of form and content. Attendance at concerts, both on and off campus, as well as guided classroom listening aid in the development of perceptual and conceptual skills. Pre- or coreq: English 11000. 3 HR./WK.; 3 CR.

Philosophy 30000: The Rational

Animal: Dimensions of Understanding
A critical analysis of the nature of and relationships between a variety of intellectual disciplines (such as the natural and social sciences, humanities and education) and of a number of contemporary, philosophical problems relating to mind, self and consciousness, and authority, rights and responsibilities. Prereq.: 15 credits of core courses and Eng 11000. (W) 3 HR./WK.; 3 CR.

Philosophy 30001: The Rational

Animal: Dimensions of Understanding
For students in the Honors Program. An alternative version of the introductory course designed to provide more student participation and writing. Prereq: 15 credits of core courses and Eng 11000. 3 HR./WK.; 3 CR.

Physics 10000: Ideas of Physics

A course with two themes: 1. How nature works the interplay of space, time, matter and energy; 2. Structures are born, live out their life cycles, and die. These include us, the stars, and perhaps the universe. This theme may be called the scientific story of genesis. 3 LECT., 1 REC. HR./WK., DEMONSTRATIONS, SLIDES, FILMS; 3 CR.

Physics 20300-20400: General Physics

For majors in the life sciences (biology, medicine, dentistry, psychology, physical therapy) and for liberal arts students. Fundamental ideas and laws of physics from mechanics to modern physics. Included are Newton's laws of motion, electricity and magnetism, heat, optics, relativity, quantum mechanics and nuclear physics. Emphasis is on basic principles and general laws. Use of mathematics is restricted to elementary algebra and some trigonometry. Physics 20300 is prereq. for Physics 20400. (Required for Premed., Pre dent., Bio-Med., and all Life Science students). 3 LECT., 1 REC. HR./WK., 3 LAB. HR. ALT. WKS.; 4 CR./SEM.

Physics 20305-20405: Laboratory Sections for 20300 and 20400

Department permission required for registration, which is limited to students having passed lecture part via exemption exam or via equivalent course elsewhere. Not open to students who have previously taken or are planning to register for Math 20300 or 20400. 3 LAB. HR. ALT. WKS.; 1 CR./SEM.

Physics 20700-20800: General Physics

Vectors, equilibrium, rectilinear motion. Newton's laws, gravitation, motion in a plane, work and energy, impulse and momentum, rotation and angular momentum, simple harmonic motion, fluids, heat and thermodynamics, waves and acoustics, electrostatics, magnetism and electromagnetism, direct and alternating current, geometrical and physical optics. Pre- or coreq.: Math 20200 for Phys 20700. Phys 20700 is prereq. for Phys 20800. Math 20300 is pre- or coreq. for Phys 20800. (Required for all students in the Physical Sciences, Engineering and Computer Science.) 3 LECT., 2 REC. HR./WK., 2 LAB./WRKSHP. HRS. (20700); 2 LAB. HRS. ALT. WKS. (20800); 4 CR.

Physics 21900: Physics for Architecture Students

A one-semester course for students of Architecture. Translational and rotational equilibrium. Newton's laws of motion and vibrations. Work, energy and power. Fluids and temperature. Heat and energy transfer. Prereq.: completion of all remedial mathematics requirements through trigonometry, or eligibility for Math 20500. 3 LECT., 2 REC. HR./WK.; 4 CR.

Political Science 10100: American Government and Politics

An analysis of processes, values and problems of American government and democracy. Special emphasis is given to national political institutions and issues. 3 HR./WK.; 3 CR.

Political Science 10101: American Government and Politics

For students enrolled in the Honors Program. This course covers more intensively and more comprehensively the subject matter of Political Science 10100. The student is expected to read several additional books, prepare papers, and participate actively in class discussions. 4 HR./WK.; 4 CR.

Political Science 10200: Politics and Leadership

The dynamics and dilemmas of leadership and power. Various definitions of politics and systems of government will be related to current political controversies. Use of case studies, novels, films, essays, and other materials to illustrate political processes and concepts. 3 HR./WK.; 3 CR.

Psychology 10101: Psychology for Honors Students

For students in the Honors Program. Designed to provide for greater student participation. In addition to attendance at Psychology 10101 lectures, students will participate in a 2-hour seminar. (W) 2 LECT., 2 SEMINAR HR./WK.; 4 CR.

Psychology 10200: Applications of Psychology in the Modern World

An introduction to the study of human development and learning, personality and motivation, sex differences, attitudes, aggressions, interpersonal attraction, behavior in groups and work settings, abnormal behavior and its treatment. Emphasis on the ways in which psychological theory and research can be applied to individual and social problems. May not be taken for credit by students who have already passed Psy 10101 or 10292 or 10299. (W) 3 HR./WK.; 3 CR.

Psychology 10299: Applications of Psychology in the Modern World

For SEEK students. 6 HR./WK.; 3 CR.

Science 10001: Man and Nature: Life

For students in the Honors Program. An exploration of the biological basis of life on earth and the impact of man's activities on its quality and continued survival. Those enrolled will participate in a seminar designed to permit in-depth examination of important issues related to the course content. 3 LECT., 2 REC./LAB HR./WK.; 4 CR.

Science 10101: The Physical Universe

For students in the Honors Program. A broad exposure to the physical sciences with heavy stress on the scientific method of inquiry and investigation. The basic principles of physics and chemistry; application to some phenomena of astronomy, geosciences, chemistry and physics. 3 LECT., 2 REC./LAB HR./WK.; 4 CR.

Science 10300: Science I

Explores the basic scientific principles that

underlie major modern discoveries with an emphasis on the common themes among the sciences and their applications to everyday life. Presents important principles of physics and chemistry through lectures, demonstrations, and hands-on experiments with simple materials. This is the first semester of a two semester sequence that integrates all the major branches of the natural sciences. Coreq.: Eng 11000. 3 LECT., 2 REC./LAB HR./WK.; 3 CR.

Science 10400: Science II

Continues the exploration of the basic scientific principles that underlie major modern discoveries with an emphasis on the common themes among the sciences and their applications to everyday life. Presents principles of the structure and genesis of the universe and solar system, our planet's features and history, and the basic properties of life, including its molecular basis, evolution and ecology. This is the second semester of a two semester sequence that integrates all the major branches of the natural sciences. 3 LECT., 2 REC./LAB HR./WK.; 3 CR.

Science 20000: Measurements, Modeling, and Computing

Techniques common to the sciences in the analysis of measurements; mathematical models descriptive of scientific phenomena and introduction of scientific computer programming. (Not open to engineering students.) Prereq.: Math 20100 or 20500. Pre- or coreq.: one Science laboratory course (Same as CSc 10100). 3 HR./WK.; 3 CR.

Sociology 10500: Individual, Group and Society: An Introduction to Sociology

The language of sociology, the sociological perspective, and basic areas of sociological inquiry. Topics include: culture, socialization, self and society, social stratification and social class, the family, religion, politics, community organization, collective behavior, mass culture, social order and social change. 3 HR./WK.; 3 CR.

Sociology 10501: Introductory Sociology

For students in the Honors Program. Provides a basic framework for sociological investigation and some knowledge of the institutions which constitute the fabric of society. The emphasis will be on concepts, hypotheses and theories which explain social behavior. Although social problems of contemporary relevance are often discussed, the focus of most of the material is on sociological problems and on analytical issues in the study of society. 3 HR./WK.; 3 CR.

U.S. Society 10100: Development of the U.S. and its People

Analysis of how a powerful nation-state evolved from a tiny offshoot of European colonial expansion. Elucidates major forces that have shaped the modern world: reli-

gion, land policies, technology, industrial capitalism, democracy, nationalism, socialism, racism, sexism, and imperialism. Prereq: Eng 11000, World Civilizations 10100 and 10200. 3 HR./WK.; 3 CR.

U.S. Society 10101: Development of the U.S. and its People

For students in the Honors Program. An alternative version of the introductory course designed to provide more student participation and writing. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

World Civilizations 10100: Prehistory to 1500 A.D.

An examination of the civilizations of Asia, Africa, Europe and the Americas through a comparative study of selected places and themes. The dynamics of hunter/gatherer, pastoral and agrarian societies, urbanization, trade, imperialism, slavery, feudalism, the centralization of the state, religion and secular thought are among the topics discussed. Pre or coreq.: Eng 11000. 3 HR./WK.; 3 CR.

World Civilizations 10101: World Civilizations

For students in the Honors Program. A transcultural, geographically and regionally balanced study of specific themes found in both World Civilizations 10100 and 10200 courses. Emphasis on a theoretical perspective of the topics and their significance today. Pre or coreq.: Eng 11000. 4 HR./WK.; 4 CR.

World Civilizations 10200: 1500 A.D. to the Present.

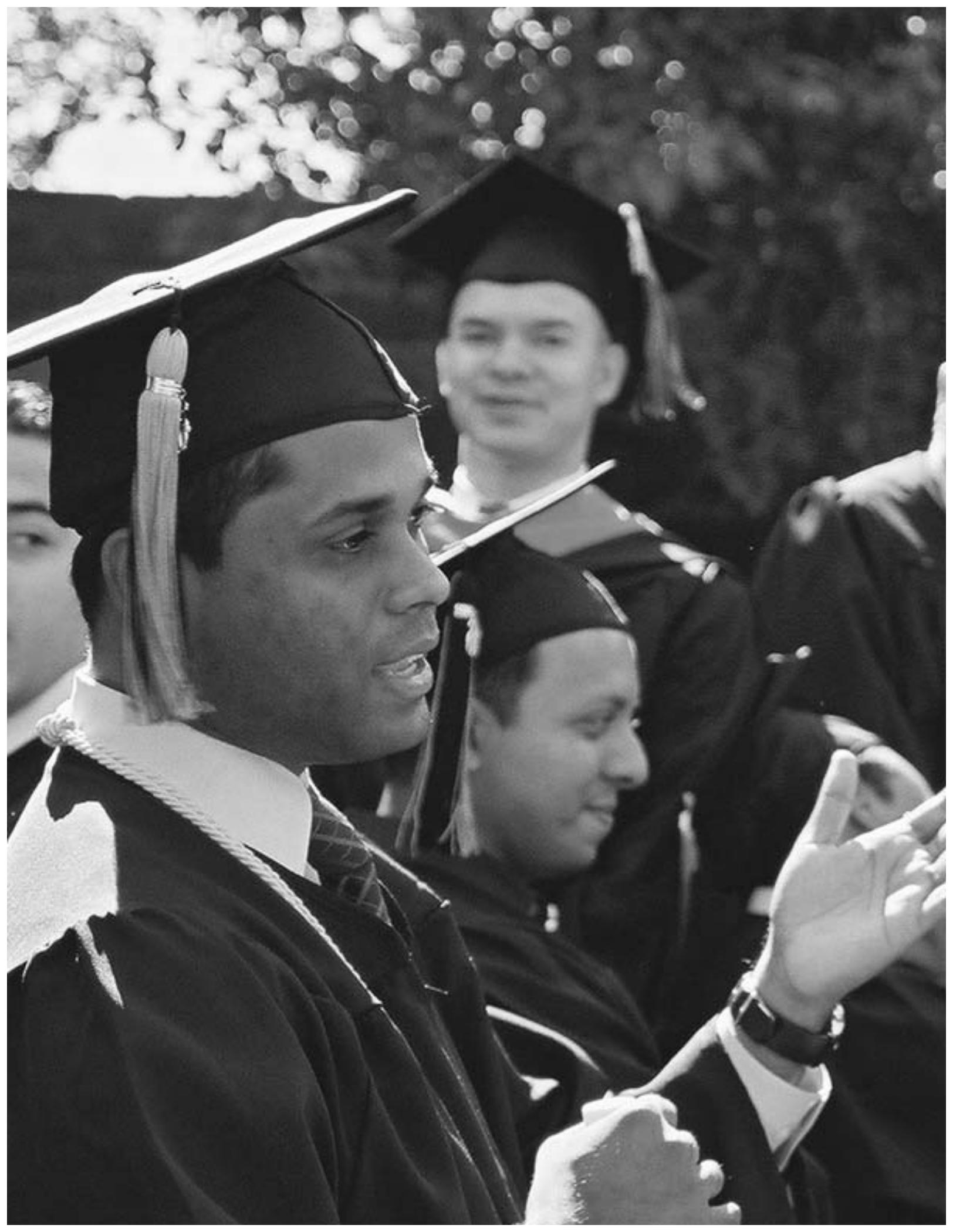
A study of the major forces that have shaped the modern world of Asia, Africa, Europe and the Americas. Selected themes include the interaction of the Western and non-Western world, the scientific revolution, capitalism, imperialism, industrialization, economic growth and stagnation, revolutions, counter-revolutions, modern political ideologies, the global crisis of the 20th century and emerging global interdependence. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

World Humanities 10100

An introduction to world literature and its relationship to the traditions and societies from which it springs. Study of major works from antiquity to the seventeenth century. Prereq.: Eng 11000. 3 HR./WK.; 3 CR.

World Humanities 10101: Literature in the Human Experience

For students in the Honors Program. Defines what literature is and determines its relationship to human existence. The various types of literature and the role of form and structure in the meaning of the whole. Literature as a mirror of the variety and continuity of human experience. Extensive reading and individualized writing assignments. 4 HR./WK.; 4 CR.



Appendices

Appendix A

GOVERNANCE

The Governance of The City College is the concern of all its members. All its constituencies—students, faculty, and administration—contribute to the maintenance and development of the College; each of the constituencies has its particular area of concern.

Because each constituency has the right to govern itself in areas that are its exclusive concern and responsibility, the Governance Charter sets forth the powers and organization of the various bodies within the College, and guarantees their autonomy on matters exclusively within their jurisdiction. But because the constituencies are interrelated, and because all must participate in the well being of the College as a whole, the Governance Charter also provides for communication between constituencies and advisory roles and joint participation on matters of mutual or general concern.

The following governance bodies carry out these duties.

The Undergraduate Student Senate and the Graduate Student Council, elected annually from and by their appropriate constituencies, represent the interests of the students. It is from among these bodies that student representation on college-wide bodies is drawn for consultative purposes.

The Faculty of each school (organized into a representative, elected council when there are more than 100 faculty members) approve courses, curricula, degree requirements, and criteria for student progress and retention. The College of Liberal Arts and Science has a general Faculty Council, plus one each for its divisions—Education, Humanities and the Arts, Science and Social Science. Each of the College's professional schools—the CUNY Medical School, Engineering, and Architecture—also has its own Faculty.

The Faculty Senate draws its elected representatives from the constituent academic units of the College and deals with such college-wide matters as academic freedom, educational policy, the role of administrators, and the allocation of the College's resources. Senators are elected by the faculty for three-year terms. In addition to the faculty, the following are members ex officio, without vote: the President, all deans and vice presidents, and representatives of the student senates.

The Policy Advisory Council serves as a consultative body to the President on all major policy matters affecting the College and its members. It draws its members from all groups at the College, including the part-time instructional staff and the non-teaching staff.

ALUMNI ASSOCIATION OF THE COLLEGE

The first graduating class of 1853 of the New York Free Academy (as The City College of New York was originally known) organized the Alumni Association to form a community of friends with a shared experience and common goals. In 1913, the Association was incorporated, and is governed by a Board of Directors. At the Annual Meeting held in the Spring, dues paying members elect the officers of the corporation who guide its affairs. Officers who are elected annually include the President, three Vice Presidents, Secretary, Treasurer and Historian. In addition, thirty-six Directors from the membership-at-large are selected for staggered three-year terms. Two to three Directors from each of the special interest groups (affiliate groups and constituent societies), including their respective Presidents, are elected annually for one-year terms.

Completing the Board of Directors are Honorary Directors selected by the President of the Corporation, and Life Directors, who are former Presidents. The Board of Directors meets a minimum of five times a year.

The purpose and objectives of the Alumni Association are to advance the interests and welfare of the College, foster a spirit of fraternity/sorority and goodwill among graduate, service alumni and to offer financial, technical and networking support for today's students.

Representing special concerns, interests and educational specialties, the Association serves as the umbrella or parent to eleven affiliate groups and two constituent societies including Alumni Varsity, Architecture Alumni, Art Alumni, Asian Alumni, Black Alumni, Center for Worker Education Alumni, Communications Alumni, Education Alumni, Latino Alumni, Nursing Alumni, Science Alumni and the Business and Economics Alumni Society and Engineering School Alumni. The groups are each governed by a voluntary Board of Directors with officers and conduct activities to benefit alumni and today's students.

In recognition of the growing geographical diversity of alumni, the chartering of Alumni Chapters began after World War II. Twenty-five dues paying members living in a city outside the New York metropolitan area can secure a charter from the Alumni Association as an official chapter. There are currently twelve active chapters across the country including Washington Chapter, Florida Chapters (Palm Beach and South Florida), North and South California Chapters, Northern Nevada Chapter, New Jersey Chapter and Cincinnati Chapter.

Appendix B

STUDENT RIGHTS, RULES AND REGULATIONS

APPENDIX B.1

Rules and Regulations for the Maintenance of Public Order Pursuant to Article 129-A of the Education Law

The tradition of the University as a sanctuary of academic freedom and center of informed discussions is an honored one, to be guarded vigilantly. The basic significance of that sanctuary lies in the protection of intellectual freedom: the rights of professors to teach, of scholars to engage in the advancement of knowledge, of students to learn and express their views, free from external pressures or interference. These freedoms can flourish only in an atmosphere of mutual respect, civility, and trust among teachers and students, only when members of the University community are willing to accept self-restraint and reciprocity as the condition upon which they share in its intellectual autonomy.

Academic freedom and the sanctuary of the University campus extend to all who share these aims and responsibilities. They cannot be invoked by those who would subordinate intellectual freedom to political ends, or who violate the norms of conduct established to protect that freedom. Against such offenders the University has the right, and indeed the obligation, to defend itself. We accordingly announce the following rules and regulations to be in effect at each of our colleges which are to be administered in accordance with the requirements of due process as provided in the Bylaws of the Board of Trustees.

With respect to enforcement of these rules and regulations we note that the Bylaws of the Board provide that:

“THE PRESIDENT. The president, with respect to his education unit, shall:

Have the affirmative responsibility of conserving and enhancing the educational standards of the college and schools under his jurisdiction;

Be the advisor and the executive agent of the Board and of his respective College Committee and as such shall have the immediate supervision with full discretionary power in carrying into effect the Bylaws, resolutions, and policies of the Board, the lawful resolutions of the several faculties;

Exercise general superintendence over the concerns, officers, employees, and students of his educational unit”

A. Rules

1. A member of the academic community shall not intentionally obstruct and/or forcibly prevent others from the exercise of their rights. Nor shall he intervene with the institution’s educational processes or facilities, or the rights of those who wish to avail themselves of any of the institution’s instructional, personal, administrative, recreational, and community services.

2. Individuals are liable for failure to comply with lawful directions issued by representatives of the University/College when they are acting in their official capacities. Members of the academic community are required to show their identification cards when requested to do so by an official of the college.

3. Unauthorized occupancy of University/College facilities or blocking access to or from such areas is prohibited. Permission from appropriate college authorities must be obtained for removal, relocation, and use of University/College equipment and/or supplies.

4. Theft from, or damage to University/College premises of property, or theft of or damage to property of any person on University/College premises is prohibited.

5. Each member of the academic community or an invited guest has the right to advocate his position without having to fear abuse, physical, verbal, or otherwise, from others supporting conflicting points of view. Members of the academic community and other persons on the college grounds shall not use language or take actions reasonably likely to provoke or encourage physical violence by demonstrators, those demonstrated against, or spectators.

6. Action may be taken against any and all persons who have no legitimate reason for their presence on any campus within the University/College, or whose presence on any such campus obstructs and/or forcibly prevents others from the exercise of the rights or interferes with the institution’s educational processes or facilities, or the rights of those who wish to avail themselves of any of the institution’s instructional, personal, administrative, recreational, and community services.

7. Disorderly or indecent conduct on University/College-owned or controlled property is prohibited.

8. No individual shall have in his or her possession a rifle, shotgun, or firearm or knowingly have in his possession any other dangerous instruments or material that can be used to inflict bodily harm on an individual or damage upon a building or the grounds of the University/College without the written authorization of such educational institution. Nor shall any individual have in his possession any other instrument or material which can be used and is intended to inflict bodily harm on any indi-

vidual or damage upon a building or the grounds of the University/College.

9. Any action or situation which recklessly or intentionally endangers mental or physical health or involves the forced consumption of liquor or drugs for the purpose of initiation into or affiliation with any organization is prohibited.

10. The unlawful manufacture, distribution, dispensation, possession, or use of illegal drugs or other controlled substances by University students or employees on University/College premises, or as part of any University/College activities is prohibited. Employees of the University must also notify the College Personnel Director of any criminal drug statute conviction for a violation occurring in the workplace not later than (5) days after such conviction.

11. The unlawful possession, use, or distribution of alcohol by students or employees on University /College premises or as part of any University/College activities is prohibited.

B. Penalties

1. Any student engaging in any manner in conduct prohibited under substantive Rules 1-11 shall be subject to the following range of sanctions as hereafter defined in the attached Appendix: admonition, warning, censure, disciplinary probation, restitution, suspension, expulsions, ejection, and/or arrest by the civil authorities.

2. Any tenured or non-tenured faculty member, or other member of the instructional staff, or member of the classified staff engaging in any manner in conduct prohibited under substantive Rules 1-11 shall be subject to the following range of penalties: warning, censure, restitution, fine not exceeding those permitted by law or by the Bylaws of The City University of New York or suspension with/without pay pending a hearing before an appropriate college authority, dismissal after a hearing, ejection, and/or arrest by the civil authorities, and, for engaging in any manner in conduct prohibited under substantive rule 10, may, in the alternative, be

required to participate satisfactorily in an appropriately licensed drug treatment or rehabilitation program. A tenured or non-tenured faculty member, or other member of the instructional staff, or member of the classified staff charged with engaging in any manner in conduct prohibited under substantive Rules 1-11 shall be entitled to be treated in accordance with applicable provisions of the Education Law, or the Civil Service Law, or the applicable collective bargaining agreement, or the Bylaws or written policies of The City University of New York.

3. Any visitor, licensee, or invitee, engaging in any manner in conduct prohibited under substantive Rule 1-11 shall be subject to ejection, and/or arrest by the civil authorities.

4. Any organization which authorized the conduct prohibited under substantive rules 1-11 shall have its permission to operate on campus rescinded.

Penalties 1-4 shall be in addition to any other penalty provided by law or The City University Trustees.

Sanctions Defined:

A. Admonition.

An oral statement to the offender that he/she has violated university rules.

B. Warning.

Notice to the offender, orally or in writing, that continuation or repetition of the wrongful conduct, within a period of time stated in the warning, may cause far more severe disciplinary action.

C. Censure.

Written reprimand for violation of specified regulation, including the possibility of more severe disciplinary sanction in the event of conviction for the violation of any University regulation within a period stated in the letter of reprimand.

D. Disciplinary Probation.

Exclusion from participation in privileges or extracurricular University activities as set forth in the notice of disciplinary probation for a specified period of time.

E. Restitution.

Reimbursement for damage to or misappropriation of property.

Reimbursement may take the form of appropriate service repair or otherwise compensate for damages.

F. Suspension.

Exclusion from classes and other privileges or activities as set forth in the notice of suspension for a definite period of time.

G. Expulsion.

Termination of student status for an indefinite period. The conditions of readmission, if any is permitted, shall be stated in the order of expulsion.

H. Complaint to Civil Authorities.

I. Ejection.

APPENDIX B.2

ARTICLE XV – STUDENTS*

Section 15.0. PREAMBLE.

Academic institutions exist for the transmission of knowledge, the pursuit of truth, the development of students, and the general well-being of society. Student participation, responsibility, academic freedom, and due process are essential to the operation of the academic enterprise. As members of the academic community, students should be encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth.

Freedom to learn and to explore major social, political, and economic issues are necessary adjuncts to student academic freedom, as is freedom from discrimination based on racial, ethnic, religious, sex, political, and economic differentiations.

Freedom to learn and freedom to teach are inseparable facets of academic freedom. The concomitant of this freedom is responsibility. If members of the academic community are to develop positively in their freedom; if these rights are to be secure, then students should exercise their freedom with responsibility.

Section 15.1. CONDUCT STANDARD DEFINED.

Each student enrolled or in attendance in any college, school or unit under the control of the board and every student organization, association, publication, club or chapter shall obey the laws of the city, state and

nation, and the bylaws and resolutions of the board, and the policies, regulations, and orders of the college.

The faculty and the student body at each college shall share equally the responsibility and the power to establish, subject to the approval of the board, more detailed rules of conduct and regulations in conformity with the general requirement of this article.

This regulatory power is limited to the right of students to the freedoms of speech, press, assembly and petition as applied to others in the academic community and to citizens generally.

Section 15.2. STUDENT ORGANIZATIONS

A. Any group of students may form an organization, association, club or chapter by filing with the duly elected student government organization of the college or school at which they are enrolled or in attendance and with an officer to be designated by the faculty of the college or school at which they are enrolled or in attendance (1) the name and the purposes of the organization, association, club or chapter, (2) the names and the addresses of its president and secretary or other officers corresponding in function to president and secretary.

However, no group, organization or student publication with a program against the religion, race, ethnic origin or identification or sex of a particular group or which makes systematic attacks against the religion, race, ethnic origin or sex of a particular group shall receive support from any fees collected by the college or be permitted to organize or continue at any college or school. No organizations, military or semi-military in character, not connected with established college or school courses, shall be permitted without the authorization of the faculty and the duly elected student government and the board.

B. Extra-curricular activities at each college or school shall be regulated by the duly elected student government organization to insure the effective conduct of such college or school as an institution of higher learning and for the prevention of activities which are hereafter proscribed or which vio-

late the standards of conduct of the character set forth in bylaw 15.1. Such powers shall include:

1. The power to charter or otherwise authorize teams (excluding intercollegiate athletics), publications, organizations, associations, clubs or chapters, and, when appropriate in the exercise of such regulatory power, the power to refuse, suspend or revoke any charter or other authorization for cause after hearing on notice.

2. The power to delegate responsibility for the effective implementation of its regulatory functions hereunder to any officer or committee which it may appoint. Any aggrieved student or group whose charter or other authorization has been refused, suspended or revoked may appeal such adverse action by such officer or committee of student government to the duly elected student government. On appeal an aggrieved student or group shall be entitled to a hearing following the due process procedures as set forth in section 15.3. Following such hearing the duly elected student government shall have the authority to set aside, decrease or confirm the adverse action.

C. Any person or organization affiliated with the college may file charges with an office of the dean of students** alleging that a student publication has systematically attacked the religion, race, ethnic origin, or sex of a particular group, or has otherwise contravened the laws of the city, state or nation, or any bylaw or resolution of the board, or any policy, regulation or order of the college, within a reasonable period of time after such occurrence. If the dean of students determines, after making such inquiries as he/she may deem appropriate, that the charges are substantial, he/she shall attempt to resolve the dispute, failing which he/she shall promptly submit the charges to the faculty-student disciplinary committee for disposition in accordance with the due process procedures of section 15.3. thereof.

If the committee sustains the charges or any part thereof against the student publication, the committee shall be empowered to (1) reprimand the publication, or (2) recommend to the appropriate funding bodies the withdrawal of budget funds. The funding body shall have the authority to implement fully, modify or overrule the recommendations.

D. Each college shall establish a student elections review committee in consultation with the various student governments. The student elections review committee shall approve the election procedures and certify the results of elections for student governments, and student body referenda.

E. Student government elections shall be scheduled and conducted, and newly elected student governments shall take office, in accordance with policies of the board, and implementing regulations.

Section 15.3. STUDENT DISCIPLINARY PROCEDURES.

Complaint Procedures:

A. Any charge, accusation, or allegation which is to be presented against a student, and, which if proved, may subject a student to disciplinary action, must be submitted in writing in complete detail to the office of the dean of students promptly by the individual, organization or department making the charge.

B. The chief student affairs officer of the college or his or her designee will conduct a preliminary investigation in order to determine whether disciplinary charges should be preferred. The chief student affairs officer or his or her designee will advise the student of the charge(s) against him or her, consult with other parties who may be involved or who have information regarding the incident, and review other relevant evidence. Following this preliminary investigation, which shall be concluded within thirty (30) calendar days of the filing of the complaint, the chief student affairs officer or designee shall take one of the following actions:

1. Dismiss the matter if there is no basis for the allegation(s) or the allegation(s) does not warrant dis-

ciplinary actions. The individuals involved shall be notified that the complaint has been dismissed;

2. Refer the matter to conciliation. If a matter is referred to conciliation the accused student shall receive a copy of the notice required pursuant to section 15.3.e. of this bylaw; or prefer formal disciplinary charges.
3. Prefer formal disciplinary charges.

Conciliation Conference:

C. The conciliation conference shall be conducted by the counselor in the office of the dean of students or a qualified staff or faculty member designated by the chief student affairs officer. The following procedures shall be in effect at this conference:

1. An effort will be made to resolve the matter by mutual agreement.
2. If an agreement is reached, the counselor shall report his/her recommendation to the chief student affairs officer for approval and, if approved, the complainant shall be notified.
3. If no agreement is reached, or if the student fails to appear, the counselor shall refer the matter back to the chief student affairs officer who will prefer disciplinary charges.
4. The counselor is precluded from testifying in a college hearing regarding information received during the conciliation conference.

Notice of Hearing and Charges:

D. Notice of the charge(s) and of the time and place of the hearing shall be personally delivered or sent by the chief student affairs officer of the college to the student at the address appearing on the records of the college, by registered or certified mail and by regular mail. The hearing shall be scheduled within a reasonable time following the filing of the charges or the conciliation conference. Notice of at least five business days shall be given to the student in advance of the hearing unless the student consents to an earlier hearing.

E. The notice shall contain the following:

1. A complete and itemized statement of the charge(s) being brought against the student including the rule, bylaw or regulation he/she is charged with violating, and the possible penalties for such violation.
 2. A statement that the student has the following rights:
 - to present his/her side of the story;
 - to present witnesses and evidence on his/her behalf;
 - to cross-examine witnesses presenting evidence against the student;
 - to remain silent without assumption of guilt; and
 - to be represented by legal counsel or an advisor at the student's expense.
- A warning that anything the student says may be used against him/her at a non-college hearing.

Faculty-Student Disciplinary Committee Procedures:

F. The following procedures shall apply at the hearing before the faculty-student disciplinary committee:

1. The chairperson shall preside at the hearing. The chairperson shall inform the student of the charges, the hearing procedures and his or her rights.
2. After informing the student of the charges, the hearing procedures, and his or her rights, the chairperson shall ask the student charged to plead guilty or not guilty. If the student pleads guilty, the student shall be given an opportunity to explain his/her actions before the committee. If the student pleads not guilty, the college shall present its case. At the conclusion of the college's case, the student may move to dismiss the charges. If the motion is denied by the committee the student shall be given an opportunity to present his or her defense.
3. Prior to accepting testimony at the hearing, the chairperson shall rule on any motions questioning the impartiality of any committee member or the adequacy of the notice of the charge(s). Subsequent thereto, the chairperson may only rule on the sufficiency of the evidence and

may exclude irrelevant, immaterial or unduly repetitive evidence.

However, if either party wishes to question the impartiality of a committee member on the basis of evidence which was not previously available at the inception of the hearing, the chairperson may rule on such a motion. The chairperson shall exclude all persons who are to appear as witnesses, except the accused student.

4. The college shall make a record of each fact-finding hearing by some means such as a stenographic transcript, a tape recording or the equivalent. A disciplined student is entitled upon request to a copy of such a transcript, tape or the equivalent without cost.

5. The student is entitled to a closed hearing but has the right to request an open public hearing. However, the chairperson has the right to hold a closed hearing when an open public hearing would adversely affect and be disruptive of the committee's normal operations.

6. The college bears the burden of proving the charge(s) by a preponderance of the evidence.

7. The role of the faculty-student disciplinary committee is to listen to the testimony, ask questions of the witnesses, review the testimony and evidence presented at the hearing and the papers filed by the parties and render a determination as to guilt or innocence. In the event the student is found guilty, the committee shall then determine the penalty to be imposed.

8. At the end of the fact-finding phase of the hearing, the student may introduce additional records, such as character references. The college may introduce a copy of the student's previous disciplinary record, where applicable, provided the student was shown a copy of the record prior to the commencement of the hearing. The disciplinary record shall be submitted to the committee in a sealed envelope and shall not be opened until after the committee has made its findings of fact. In the event the student has been determined to be

guilty of the charge or charges the records and documents introduced by the student and the college shall be opened and used by the committee for dispositional purposes, i.e., to determine an appropriate penalty if the charges are sustained.

9. The committee shall deliberate in closed session. The committee's decision shall be based solely on the testimony and evidence presented at the hearing and the papers filed by the parties.

10. The student shall be sent a copy of the faculty-student disciplinary committee's decision within five days of the conclusion of the hearing. The decision shall be final subject to the student's right of appeal.

11. Where a student is represented by legal counsel the president of the college may request that a lawyer from the general counsel's office appear at the hearing to present the college's case.

Section 15.4. APPEALS.

A. An appeal from the decision of the faculty-student disciplinary committee may be made to the president who may confirm or decrease the penalty but not increase it. His/her decision shall be final except in the case of dismissals or suspension for more than one term. An appeal from a decision of dismissal or suspension for more than one term may be made to the appropriate committee of the board. Any appeal under this section shall be made in writing within fifteen days after the delivery of the decision appealed from. This requirement may be waived in a particular case for good cause by the president or board committees as the case may be. If the president is a party to the dispute, his/her functions with respect to an appeal shall be discharged by an official of the university to be appointed by the chancellor.

Section 15.5. COMMITTEE STRUCTURE.

A. Each faculty-student disciplinary committee shall consist of two faculty members and two student members and a chairperson. A quorum shall

consist of the chair and any two members. Hearings shall be scheduled at a convenient time and efforts shall be made to insure full students and faculty representation.

B. The president shall select in consultation with the head of the appropriate campus governance body or where the president is the head of the governance body, its executive committee, three (3) members of the instructional staff of that college to receive training and to serve in rotation as chair of the disciplinary committee. If none of the chairpersons appointed from the campus can serve, the president, at his/her discretion, may request that a chairperson be selected by lottery from the entire group of chairpersons appointed by other colleges. The chairperson shall preside at all meetings of the faculty-student disciplinary meetings and decide and make all rulings for the committee. He/she shall not be a voting member of the committee but shall vote in the event of a tie.

C. The faculty members shall be selected by lot from a panel of six elected annually by the appropriate faculty body from among the persons having faculty rank or faculty status. The student members shall be selected by lot from a panel of six elected annually in an election in which all students registered at the college shall be eligible to vote. In the event that the student or faculty panel or both are not elected, or if more panel members are needed, the president shall have the duty to select the panel or panels which have not been elected. No individuals on the panel shall serve on the panel for more than two consecutive years.

D. In the event that the chairperson cannot continue, the president shall appoint another chairperson. In the event that a student or faculty seat becomes vacant and it is necessary to fill the seat to continue the hearing, the seat shall be filled from the faculty or student panel by lottery.

E. Persons who are to be participants in the hearings as witnesses or have been involved in preferring the charges or who may participate in the appeals procedures or any other hav-

ing a direct interest in the outcome of the hearing shall be disqualified from serving on the committee.

Section 15.6. SUSPENSION OR DISMISSAL.

The board reserves full power to dismiss or suspend a student, or suspend a student organization for conduct which impedes, obstructs, or interferes with the orderly and continuous administration and operation of any college, school, or unit of the university in the use of its facilities or in the achievement of its purposes as an educational institution.

The chancellor or chancellor's designee, a president or any dean may in an emergency or extraordinary circumstances, temporarily suspend a student, or temporarily suspend the privileges of a student organization or group for cause, pending an early hearing as provided in bylaw section 15.3. to take place within not more than seven (7) school days. Prior to the commencement of a temporary suspension of a student, the college shall give such student an informal oral explanation of the evidence supporting the charges and the student may present informally his/her explanation or theory of the matter. When a student's presence poses a continuing danger to person or property or an ongoing threat of disrupting the academic process, notice and opportunity for denial and explanation may follow suspension, but shall be given as soon as feasible thereafter.

Section 15.7. THE UNIVERSITY STUDENT SENATE.

There shall be a university student senate responsible, subject to the board, for formulation of university-wide student policy relating to the academic status, role, rights and freedoms of the students. The authority and duties of the university student senate shall not extend to areas of interest which fall exclusively within the domain of the student governments of the constituent units of the university. Consistent with the authority of the board of trustees in accordance with the education law and the bylaws of the board of

trustees, the university student senate shall make its own bylaws providing for the election of its own officers, the establishment of its own rules and procedures, for its internal administration and for such other matters as is necessary for its existence. The university student senate shall have the full rights and responsibilities accorded student organizations as provided in these bylaws. The delegates and alternate delegates to the university student senate shall be elected by their respective constituencies, or by their student governments from the elected members of the respective student governments.

Section 15.8. COLLEGE GOVERNANCE PLANS.

The provisions in a duly adopted college governance plan shall not be inconsistent with the provisions contained in this article.

APPENDIX B.3

CUNY Policy on Academic Integrity

Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, and expulsion, as provided herein.

Definitions and Examples of Academic Dishonesty

Cheating is the unauthorized use or attempted use of material, information, notes, study aids, devices or communication during academic exercise.

The following are some examples of cheating, but by no means is it an exhaustive list:

Copying from another student during an examination or allowing another to copy your work.

Unauthorized collaboration on a take home assignment or examination.

Using notes during a closed book examination.

Taking an examination for another student, or asking or allowing another student to take an examination for you.

Changing a graded exam and returning it for more credit.

Submitting substantial portions of the same paper to more than one course without consulting with each instructor.

Preparing answers or writing notes in a blue book (exam booklet) before an examination.

Allowing others to research and write assigned papers or do assigned projects, including use of commercial term paper services.

Giving assistance to acts of academic misconduct/dishonesty.

Fabricating data (all or in part).

Submitting someone else's work as your own.

Unauthorized use during an examination of any electronic devices such as cell phones, palm pilots, computers or other technologies to retrieve or send information.

Plagiarism is the act of presenting another person's ideas, research or writings as your own. The following are some examples of plagiarism, but by no means is it an exhaustive list:

Copying another person's actual words without the use of quotation marks and footnotes attributing the words to their source.

Presenting another person's ideas or theories in your own words without acknowledging the source.

Using information that is not common knowledge without acknowledging the source.

Failing to acknowledge collaborators on homework and laboratory assignments.

Internet Plagiarism includes submitting downloaded term papers or parts of term papers, paraphrasing or copying information from the internet without citing the source, and "cutting and pasting" from various sources without proper attribution.

Obtaining Unfair Advantage is any activity that intentionally or unintentionally gives the student an unfair advantage in his/her academic work over another student.

The following are some samples of obtaining an unfair advantage but by no means is it an exhaustive list:

Stealing, reproducing, circulating, or otherwise gaining advance access to examination materials.

Depriving other students of access to library materials by stealing, destroying, defacing, or concealing them.

Retaining, using or circulating examination materials which clearly indicate that they should be returned at the end of the exam.

Intentionally obstructing or interfering with another students' work.

Falsification of Records and Official Documents

The following are some examples of falsification, but by no means is it an exhaustive list:

Forging signatures of authorization.

Falsifying information on an official academic record.

Falsifying information on an official document such as a grade report, letter of permission, drop/add form, ID card, or other college documents.

FACULTY SENATE OF THE CITY COLLEGE PROCEDURES TO ADDRESS VIOLATIONS OF THE CUNY POLICY ON ACADEMIC INTEGRITY

WHEREAS the College must develop a range of procedures to implement the University's Academic Integrity Policy, and

WHEREAS the College's Office of Academic Standards and the Faculty Senate's Education Policy Committee have collaborated to develop faculty procedures to address violations of the CUNY Policy on Academic Integrity, therefore

BE IT RESOLVED THAT the Faculty Senate endorses the procedures specified below.

Faculty Procedures to Address Violations of the CUNY Policy on Academic Integrity

A. Informal Resolution Procedure

When a faculty member suspects there has been a violation of academic policy. He/she should meet with the students to discuss the matter.

If the student does not deny the charge and agrees to an informal penalty, the instructor may impose an academic sanction.

It is strongly recommended that the faculty member file a faculty report form with the office of the Academic Integrity Official (AIO) in NAC 5/216 within 15 business days of the incident. The office of the AIO will provide the student with a copy and maintain a record of the incident.

B. Formal Resolution Procedure

When a faculty member suspects there has been a violation of academic policy, he/she should meet with the student to discuss the matter.

If the student denies the charge, and the faculty member seeks an academic and/or disciplinary sanction, the faculty member must file a faculty report form within fifteen days to the AIO in NAC 5/216. The office of the AIO will provide the student with a copy.

While the case is under review by the AIO, the faculty member shall not assign a permanent grade, whether for the particular assignment(s) in question or for the course as a whole.

For the purpose of reporting grades to the Registrar, the faculty member shall use the grade of PEN until the case is resolved by the AIO.

The AIO will promptly inform the faculty member and the student when the case is resolved.

C. The Academic Integrity Office

In cases requiring a formal resolution, the AIO will review all original and relevant documentation submitted by the faculty member and will contact the student regarding the charges and request a written appeal from the student. The AIO will make every attempt to resolve the case prior to further referral. If there is no mutually acceptable resolution, the responsibility of the review will be forwarded to the Academic Integrity Committee or, if disciplinary sanctions are sought, to the Faculty Student Disciplinary Committee.

*RESOLUTION PASSED:
DECEMBER 16, 2004*

APPENDIX B.4

Computer User Responsibilities

The computer resources* of the City University of New York must be used in a manner that is consistent with the University's educational purposes and environment. All users of computer resources are expected to act in a spirit of mutual respect and cooperation, and to adhere to the regulations for their use set forth in this document. As a user of CUNY computer resources:

You must have a valid authorized account to use computer resources that require one and may use only those computer resources that are specifically authorized. You may use your account only in accordance with its authorized purposes and may not use an unauthorized account for any purposes.

You are responsible for the safeguarding of your computer account. For a mainframe computer account, you should change your password frequently and should not disclose it to anyone. You should take all necessary precautions in protecting the account, no matter what type of computer resources you are using.

You may not circumvent system protection facilities.

You may not knowingly use any system to produce system failure or degraded performance.

You may not engage in unauthorized duplication, alteration or destruction of data, programs or software. You may not transmit or disclose data, programs or software belonging to others and may not duplicate copyrighted material.

You may not engage in abusive or improper use of computer hardware. This includes, but is not limited to, tampering with equipment, unauthorized attempts at repairing equipment and unauthorized removal of equipment components.

You may not use computer resources for private purposes, including, but not limited to, the use of computer

resources for profit making or illegal purposes.

You may not use computer resources to engage in abuse of computer personnel or other users. Such abuse includes the sending of abusive, anonymous, or unsolicited messages within CUNY or beyond via network facilities.

The use of college computer resources may be subject to college regulations, and you are expected to be familiar with those regulations.

These regulations and college regulations are subject to revision. You are expected to be familiar with any revisions in regulations.

The University reserves the right to monitor, under appropriate conditions, all data contained in the system to protect the integrity of the system and to insure compliance with regulations.

Any user who is found to be in violation of these rules shall be subject to the following:

- Suspension and/or termination of computer privileges;
- Disciplinary action by appropriate college and/or University officials;
- Referral to law enforcement authorities for criminal prosecution;
- Other legal action, including action to recover civil damages and penalties.

* "Computer Resources" is an inclusive term referring to any and all computing/information technology: hardware, software and access. Hardware includes, but is not limited to, terminals, personal computers, workstations, printers, mice, monitors, and cabling, peripheral devices. Software includes, but is not limited to, mainframe shared software, networked software, and stand-alone software residing on personal computers. Access includes, but is not limited to, accounts on timesharing systems as well as access to stand-alone personal computing systems and other relevant technology.

APPENDIX B.5

Workplace Violence Policy and Procedures

The City University of New York has a long-standing commitment to promoting a safe and secure academic and work environment that promotes the achievement of its mission of teaching, research, scholarship and service. All members of the University community—students, faculty and staff—are expected to maintain a working and learning environment free from violence, threats of harassment, violence, intimidation or coercion. While these behaviors are not prevalent at the University, no organization is immune.

The purpose of this policy is to address the issue of potential workplace violence in our community, prevent workplace violence from occurring to the fullest extent possible, and set forth procedures to be followed when such violence has occurred.

Policy

The City University of New York prohibits workplace violence. Violence, threats of violence, intimidation, harassment, coercion, or other threatening behavior towards people or property will not be tolerated. Complaints involving workplace violence will not be ignored and will be given the serious attention they deserve. Individuals who violate this policy may be removed from University property and are subject to disciplinary and/or personnel action up to and including termination, consistent with University policies, rules and collective bargaining agreements, and/or referral to law enforcement authorities for criminal prosecution. Complaints of sexual harassment are covered under the University's Policy Against Sexual Harassment.

The University, at the request of an employee or student, or at its own discretion, may prohibit members of the public, including family members, from seeing an employee or student on University property unless necessary to transact University-related business. This policy particularly applies in cases where the employee

or student suspects that an act of violence will result from an encounter with said individual(s).

Scope

All faculty, staff, students, vendors, contractors, consultants, and others who do business with the University, whether in a University facility or off-campus location where University business is conducted, are covered by this policy. This policy also applies to other persons not affiliated with the University, such as former employees, former students, and visitors. When students have complaints about other students, they should contact the Office of Student Affairs at their campus.

Definitions

Workplace violence is any behavior that is violent, threatens violence, coerces, harasses or intimidates others, interferes with an individual's legal rights of movement or expression, or disrupts the workplace, the academic environment, or the University's ability to provide services to the public.

Examples of workplace violence include, but are not limited to:

1. Disruptive behavior intended to disturb, interfere with or prevent normal work activities (such as yelling, using profanity, verbally abusing others, or waving arms and fists).
2. Intentional physical contact for the purpose of causing harm (such as slapping, stabbing, punching, striking, shoving, or other physical attack).
3. Menacing or threatening behavior (such as throwing objects, pounding on a desk or door, damaging property, stalking, or otherwise acting aggressively; or making oral or written statements specifically intended to frighten, coerce, or threaten) where a reasonable person would interpret such behavior as constituting evidence of intent to cause harm to individuals or property.
4. Possessing firearms, imitation firearms, knives or other dangerous weapons, instruments or materials. No one within the University community, shall have in their possession a firearm or other dangerous weapon, instrument or material that can be used to inflict bodily harm on an indi-

vidual or damage to University property without specific written authorization from the Chancellor or the college President regardless of whether the individual possesses a valid permit to carry the firearm or weapon.

Reporting of Incidents

1. General Reporting Responsibilities

Incidents of workplace violence, threats of workplace violence, or observation of workplace violence are no to be ignored by any member of the University community. Workplace violence should promptly be reported to the appropriate University official (see below). Additionally, faculty, staff, and students are encouraged to report behavior that they reasonably believe poses a potential for workplace violence as defined above. It is important that all members of the University community take this responsibility seriously to effectively maintain a safe working and learning environment.

2. Imminent or Actual Violence

Any person experiencing or witnessing imminent danger or actual violence involving weapons or personal injury should call the Campus Public Safety Office immediately, or call 911.

3. Acts of Violence Not Involving Weapons or Injuries to Persons

Any person who is the subject of a suspected violation of this policy involving violence without weapons or personal injury, or is a witness to such suspected violation, should report the incident to his/her supervisor, or in lieu thereof, to their respective Campus Public Safety Office. Students should report such incidents to the Office of Student Affairs at their campus or in lieu thereof, their campus Public Safety Office. The Campus Public Safety Office will work with the Office of Human Resources and the supervisor or the Office of Student Affairs on an appropriate response.

4. Commission of a Crime

All individuals who believe a crime has been committed against them have the right, and are encouraged, to report the incident to the appropriate law enforcement agency.

5. False Reports

Members of the University community who make false and malicious complaints of workplace violence, as opposed to complaints which, even if erroneous, are made in good faith, will be subject to disciplinary action and/or referral to civil authorities as appropriate.

6. Incident Reports

The University will report incidents of workplace violence consistent with the College Policies for Incident Reporting Under the Campus Security Policy and Statistical Act (Clery Act).

Confidentiality

The University shall maintain the confidentiality of investigations of workplace violence to the extent possible. The University will act on the basis of anonymous complaints where it has a reasonable basis to believe that there has been a violation of this policy and that the safety and well being of members of the University community would be served by such action.

Retaliation

Retaliation against anyone acting in good faith who has made a complaint of workplace violence, who has reported witnessing workplace violence, or who has been involved in reporting, investigating, or responding to workplace violence is a violation of this policy. Those found responsible for retaliatory action will be subject to discipline up to and including termination.

APPENDIX B.6

Notice of Access to Campus Crime Statistics, the Campus Security Report, and Information on Registered Sex Offenders

The College Advisory Committee on Campus Safety will provide upon request all campus crime statistics as reported to the U.S. Department of Education, as well as the annual campus security report. The campus security report includes: (1) the campus crime statistics for the most recent calendar year and the two preceding calendar years; (2) campus policies regarding procedures and facilities to

report criminal actions or other emergencies on campus; (3) policies concerning the security of and access to campus facilities; (4) policies on campus law enforcement; (5) a description of campus programs to inform students and employees to be responsible for their own security and the security of others; (6) campus crime prevention programs; (7) policy concerning the monitoring through the police of criminal activity at off-campus locations of students organizations officially recognized by the college; (8) policies on illegal drugs, alcohol, and underage drinking; (9) where information provided by the State on registered sex offenders may be obtained (also see below); and (10) policies on campus sexual assault programs aimed at the prevention of sex offenders and procedures to be followed when a sex offense occurs. This information is maintained pursuant to the federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act.

The campus crime statistics and the annual campus security report are available at the reference desk of the library and the college website at www.cuny.cuny.edu/public_safety/crime_stats.html. If you wish to be mailed copies of the campus crime statistics and the annual campus security report, you should contact Paul F. Occhiogrosso, Esq., Dean of Faculty & Staff Relations and Counsel to the President; Records Access Officer at (212) 650-8276 and copies will be mailed to you within 10 days. The U.S. Department of Education's website address for campus crime statistics is www.ed.gov/security/InstDetail.asp (then input City College of New York of The City University of New York).

In accordance with the federal Campus Sex Crimes Prevention Act, registered sex offenders now are required to register the name and address of any college at which he/she is a student or employee. The New York State Division of Criminal Justice maintains a registry of convicted sex offenders and informs the college's chief security (public safety) officer of the presence on campus of a registered sex

offender as a student or employee. You may contact the college's chief security officer Edward D. Diaz CPP-Director of Public Safety and Security, located in the NAC building, in the 4th floor, room 201, or you may contact him at (212) 650-6911 to obtain information about Level 2 or Level 3 registered sex offenders on campus. To obtain information about Level 3 offenders, you may contact the Division's registry website at www.criminaljustice.state.ny.us/nsor/sor_about.htm and then click on "Search for Level 3 Sex Offenders" or access the directory at the college's public safety department or police precinct. To obtain information about Level 2 offenders, you need to contact the public safety department, local police precinct in which the offender resides or attends college, or the Division's sex offender registry at 800-262-3257.

APPENDIX B.7

Article XVI – Student Activity Fees and Auxiliary Enterprises

Section 16.1. STUDENT ACTIVITY FEE

The student activity fee is the total of the fees for student government and other student activities. Student activity fees, including student government fees collected by a college of the university shall be deposited in a college central depository and, except where earmarked by the board, allocated by a college association budget committee subject to review by the college association as required in these bylaws.

Section 16.2. STUDENT ACTIVITY FEES USE – EXPENDITURE CATEGORIES

Student activity fee funds shall be allocated and expended only for the following purposes:

- Extracurricular educational programs;
- Cultural and social activities;
- Recreational and athletics programs;
- Student government;
- Publications and other media;

Assistance to registered student organizations;
 Community service programs;
 Enhancement of the college and university environment;
 Transportation, administration and insurance related to the implementation of these activities;
 Student services to supplement or add to those provided by the university;
 Stipends to student leaders.

Section 16.3 STUDENT GOVERNMENT FEE

The student government fee is that portion of the student activity fee levied by resolution of the board, which has been established for the support of the student government activities. The existing student government fees now in effect shall continue until changed. Student government fees shall be allocated by the duly elected student government, or each student government where more than one duly elected student government exists, for its own use and for the use of student organizations, as specified in section 15.2 of these bylaws, provided, however, that the allocation is based on a budget approved by the duly elected student government after notice and hearing, subject to review of the college association. Where more than one duly elected student government exists, the college association shall apportion the student government fees to each student government in direct proportion to the amount collected from members of each student government.

Section 16.4. STUDENT GOVERNMENT ACTIVITY DEFINED

A student government activity is any activity operated by and for the students enrolled at any unit for the university provided, (1) such activity is for the direct benefit of the students enrolled at the college, (2) that participation in the activity and the benefit thereof is available to all students enrolled in the unit or student government thereof, and (3) that the activity does not contravene the laws of the city, state or nation, or the published rules, regulations, and orders of the university or the duly established college authorities.

Section 16.5. COLLEGE ASSOCIATION

A. The college association shall have responsibility for the supervision and review over college student activity fee supported budgets. All budgets of college student activity fees, except where earmarked by the board to be allocated by another body, should be developed by a college association budget committee and recommended to the college association for review by the college association prior to expenditure. The college association shall review all college students activity fee, including student government fee allocations and expenditure for conformance with the expenditure categories defined in Section 16.2 of this article and the college association shall disapprove any allocation or expenditure it finds does not so conform, or is inappropriate, improper, or inequitable.

B. A college association shall be considered approved for purposes of this article if it consists of thirteen (13) members, its governing documents are approved by the college president and the following requirements are met:

1. The governing board of the college association is composed of:
 The college president or his/her designee as chair.
 Three administrative members appointed by the college president.
 Three faculty members appointed by the college president from a panel whose size is twice the number of seats to be filled and the panel is elected by the appropriate college faculty governance body.
 Six student members comprised of the student government president(s) and other elected students with the student seats allocated on a basis which will provide representation to each government, where more than one exists, as nearly as practicable in proportion to the student activity fees provided by the students from the respective constituencies.

2. The college association structure provides a budget committee composed of members of the governing board, at least a majority of whom

are students selected in accordance with section 16.5.(b) (1)(iv) of these bylaws. The budget committee shall be empowered to receive and review student activity fee budget requests and to develop a budget subject to the review of the college association. The college association may choose to not approve the budget or portions of the budget if in their opinion such items are inappropriate, improper, or inequitable. The budget shall be returned to the budget committee with the specific concerns of the college association noted for further deliberation by the budget committee and subsequent resubmittal to the college association. If the budget is not approved within thirty (30) days those portions of the budget voted upon and approved by the college association board will be allocated. The remainder shall be held until the college association and the budget committee agree.

3. The governing documents of the college association have been reviewed by the board's general counsel and approved by the board.

Section 16.6. MANAGEMENT AND DISBURSEMENT OF FUNDS

The college and all student activity fee allocating bodies shall employ generally accepted accounting and investment procedures in the management of all funds. All funds for the support of student activities are to be disbursed only in accordance with approved budgets and be based on written documentation. A requisition for disbursements of funds must contain two signatures; one, the signature of a person with responsibility for the program; the other the signature of an approved representative of the allocating body.

Section 16.7. REVENUES

All revenues generated by student activities funded through student activity fees shall be placed in a college central depository subject to the control of the allocating body. The application of such revenues to the account of the income generating organization shall require the specific authorization of the allocating body.

Section 16.8. FISCAL ACCOUNTABILITY HANDBOOK

The chancellor or his/her designee shall promulgate regulations in a fiscal accountability handbook, to regulate all aspects of the collection, deposit, financial disclosure, accounting procedures, financial payments, documentation, contracts, travel vouchers, investments and surpluses of student activity fees and all other procedural and documentary aspects necessary, as determined by the chancellor or his/her designee to protect the integrity and accountability of all student activity fee funds.

Section 16.9. COLLEGE PURPOSES FUND

A. A college purposes fund may be established at each college and shall be allocated by the college president. This fund may have up to twenty-five(25) percent of the unearmarked portion of the student activity fee earmarked to it by resolution of the board, upon the presentation to the board of a list of activities that may be properly funded by student activity fees that are deemed essential by the college president.

B. Expenditures from the college purposes fund shall be subject to full disclosure under section 16.13. of these bylaws.

C. Referenda of the student body with respect to the use and amount of the college purposes fund shall be permitted under the procedures and requirements of section 16.12. of these bylaws.

Section 16.10. AUXILIARY ENTERPRISE BOARD

A. The auxiliary enterprise board shall have responsibility for the oversight, supervision and review over college auxiliary enterprises. All budgets of auxiliary enterprise funds and all contracts for auxiliary enterprises shall be developed by the auxiliary enterprise budget and contract committee and reviewed by the auxiliary enterprise board prior to expenditure or execution.

B. The auxiliary enterprise board shall be considered approved for the purposes of this article if it consists of at

least eleven(11) members, its governing documents are approved by the college president and the following requirements are met:

1. The governing board is composed of the college president or his/her designee as chair, plus an equal number of students and the combined total of faculty and administrative members.

2. The administrative members are appointed by the college president.

3. The faculty members are appointed by the college president from a panel whose size is twice the number of seats to be filled and the panel is elected by the appropriate college faculty governance body.

4. The student members are the student government president(s) and other elected students and the student seats are allocated on a basis which will provide representation to each government, where more than one exists, as nearly as practicable, in proportion to the student enrollment by headcount from the respective constituencies.

5. The auxiliary enterprise board structure provides for a budgets and contract committee composed of a combined total of faculty and administrative members that is one more than the number of student members. The budget and contract committee shall be empowered to develop all contract and budget allocation proposals subject to the review and approval of the auxiliary enterprise board.

6. The governing documents of the auxiliary enterprise board have been reviewed by the board's general counsel and approved by the board.

Section 16.11. THE REVIEW AUTHORITY OF COLLEGE PRESIDENTS OVER STUDENT ACTIVITY FEE ALLOCATING BODIES AND AUXILIARY ENTERPRISE BOARDS

A. The president of the college shall have the authority to disapprove any student activity fee, including student government fee, or auxiliary enterprise allocation or expenditure, which in his or her opinion contravenes the laws of the city, state, or nation or any bylaw or policy of the university or any poli-

cy, regulation, or order of the college. If the college president chooses to disapprove an allocation or expenditure, he or she shall consult with the general counsel and vice chancellor for legal affairs and thereafter communicate his or her decision to the allocating body or auxiliary enterprise board.

B. The president of the college shall have the authority to suspend and send back for further review any student activity fee, including student government fee, allocation or expenditure which in his/her opinion is not within the expenditure categories defined in section 16.2. of this article. The college association shall, within ten (10) days of receiving a proposed allocation or expenditure for further review, study it and make a recommendation to the president with respect to it. The college president shall thereafter consider the recommendation, shall consult with the general counsel and vice chancellor for legal affairs, and thereafter communicate his/her final decision to the allocating body as to whether the allocation or expenditure is disapproved.

C. The chancellor or his/her designee shall have the same review authority with respect to university student activity fees that the college president has with respect to college student activity fees.

D. All disapprovals exercised under this section shall be filed with the general counsel and vice chancellor for legal affairs.

E. Recipients of extramural student activity fees shall represent an annual report to the chancellor for the appropriate board committee detailing the activities, benefits and finances of the extramural body as they pertain to the colleges where students are paying an extramural fee.

Section 16.12. REFERENDA

A referendum proposing changes in the student activity fee shall be initiated by a petition of at least ten (10) percent of the appropriate student body and voted upon in conjunction with student government elections.

A. Where a referendum seeks to earmark student activity fees for a specific purpose or organization without changing the total student activity fee, the results of the referendum shall be sent to the college association for implementation.

B. Where a referendum seeks to earmark student activity fees for a specific purpose or organization by changing the total student activity fee, the results of such a referendum shall be sent to the board by the president of the college together with his/her recommendation.

C. At the initiation of a petition of at least ten(10) percent of the appropriate student body, the college president may schedule a student referendum at a convenient time other than in conjunction with student government elections.

D. Where the referendum seeks to affect the use or amount of student activity fees in the college purposes fund, the results of the referendum shall be sent to the board by the college president together with his/her recommendation.

Section 16.13. DISCLOSURE

A. The college president shall be responsible for the full disclosure to each of the student governments of the college of all financial information with respect to student activity fees.

B. The student governments shall be responsible for the full disclosure to their constituents of all financial information with respect to student government fees.

C. The student activity fee allocating bodies shall be responsible for the full disclosure of all financial information to its membership, to the college and to the student governments with respect to all of its activities.

D. The auxiliary enterprise board shall be responsible for the full disclosure of all financial information to its membership, to the college and to the student governments with respect to auxiliary enterprises.

E. For purposes of the foregoing paragraphs, full disclosure shall mean the presentation each semester of written financial statements which shall include, but need not be limited to,

the source of all fee income by constituency, income from other sources creditable to student activity fee accounts, disbursements, transfers, past reserves, surplus accounts, contingency and stabilization funds. Certified independent audits performed by a public auditing firm shall be conducted at least once each year.

Section 16.14. STIPENDS

The payment of stipends to student leaders is permitted only within those time limits and amounts authorized by the board.

APPENDIX B.8

New York State Education Law, Article 5: S 224-a. Students unable because of religious beliefs to Register or attend classes on certain days.

1. No person shall be expelled from or be refused admission as a student to an institution of higher education for the reason that he or she is unable, because of his or her religious beliefs, to register or attend classes or to participate in any examination, study or work requirements on a particular day or days.

2. Any student in an institution of higher education who is unable, because of his or her religious beliefs, to attend classes on a particular day or days shall, because of such absence on the particular day or days, be excused from any examination or any study or work requirements.

3. It shall be the responsibility of the faculty and of the administrative officials of each institution of higher education to make available to each student who is absent from school, because of his or her religious beliefs, an equivalent opportunity to register for classes or make up any examination, study or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to the said student such equivalent opportunity.

4. If registration, classes, examinations, study or work requirements are held on Friday after four o'clock post meridian or on Saturday, similar or makeup classes, examinations, study or work requirements or opportunity

to register shall be made available on other days, where it is possible and practicable to do so. No special fees shall be charged to the student for these classes, examinations, study or work requirements or registration held on other days.

5. In effectuating the provisions of this section, it shall be the duty of the faculty and of the administrative officials of each institution of higher education to exercise the fullest measure of good faith. No adverse or prejudicial effects shall result to any student because of his or her availing himself or herself of the provisions of this section.

6. Any student, who is aggrieved by the alleged failure of any faculty or administrative officials to comply in good faith with the provisions of this section, shall be entitled to maintain an action or proceeding in the supreme court of the county in which such institution of higher education is located for the enforcement of his or her rights under this section.

6-a. It shall be the responsibility of the administrative officials of each institution of higher education to give written notice to students of their rights under this section, informing them that each student who is absent from school, because of his or her religious beliefs, must be given an equivalent opportunity to register for classes or make up any examination, study or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to such student such equivalent opportunity.

7. As used in this section, the term "institution of higher education" shall mean any institution of higher education, recognized and approved by the regents of the University of the State of New York, which provides a course of study leading to the granting of a post-secondary degree or diploma. Such term shall not include any institution which is operated, supervised or controlled by a church or by a religious or denominational organization whose educational programs are principally designed for the purpose of training ministers or other religious functionaries or for the purpose of propagating religious doctrines. As

used in this section, the term “religious belief” shall mean beliefs associated with any corporation organized and operated exclusively for religious purposes, which is not disqualified for tax exemption under section 501 of the United States Code.

APPENDIX B.9

Notification Under FERPA of Student Rights Concerning Education Records and Directory Information

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. The FERPA rights of students are:

The right to inspect and review your education records.

Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the record(s) they wish to inspect. If the records are not maintained by the college official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

All requests shall be granted or denied in writing within 45 days of receipt. If the request is granted, you will be notified of the time and place where the records may be inspected. If the request is denied or not responded to within the 45 days, you may appeal to the college’s FERPA appeals officer. Additional information regarding the appeal procedures will be provided to you if a request is denied.

The right to request the amendment of the student’s education records that the student believes are inaccurate or misleading.

You may ask the college to amend a record that you believe is inaccurate or misleading. You should write to the college official responsible for the record, clearly identify the part of the record you want changed, and specify why it is inaccurate or misleading.

If the college decides not to amend the record as requested by you, the college will notify you of the decision and advise you of your right to

a hearing before the college’s FERPA appeals officer regarding the request for amendment. Additional information regarding the hearing procedures will be provided to you when notified of your right to a hearing. The right to consent to disclosure of personally identifiable information contained in your education records, except to the extent that FERPA authorizes disclosure without consent.

One exception which permits disclosure without consent is disclosure to college officials with legitimate educational interests. A college official is a person employed by the university in an administrative, supervisory, academic or research, or support staff position; a person or company with whom the university has contracted; a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another college official in performing his or her tasks.

A college official has a legitimate educational interest if access is reasonably necessary in order to perform his or her instructional, research, administrative or other duties and responsibilities.

Upon request, the college discloses education records without consent to officials of another college or school in which the student seeks or intends to enroll.

You may appeal the alleged denial of FERPA rights to the:

General Counsel and Vice Chancellor for Legal Affairs

The City University of New York
535 East 80th Street
New York, NY 10021

The right to file a complaint with the U.S. Department of Education concerning alleged failures by the college to comply with the requirements of FERPA. The name and address of the Office that administers FERPA are:

Family Policy Compliance Office

U.S. Department of Education
600 Independence Avenue, SW
Washington, D.C. 20202-4605

The college will make the following “directory information” concerning current and former students available to those parties having a legitimate interest in the information: name, attendance dates (periods of enrollment), address, telephone number, date and place of birth, photograph, e-mail address, full or part-time status, enrollment status (undergraduate, graduate, etc.), level of education (credits) completed, major field of study, degree enrolled for, participation in officially recognized activities and sports, height and weight of athletic team members, previous school attended, and degrees, honors and awards received. By filing a form with the Registrar’s Office, you may request that any or all of this directory information not be released without your prior written consent. This form is available in the Registrar’s Office and may be filed, withdrawn, or modified at any time.

APPENDIX B.10

No. 8. A. AMENDMENT TO THE POLICY ON WITHHOLDING STUDENT RECORDS

RESOLVED, That the existing Board of Trustees policy with respect to the withholding of student records as last amended on February 22, 1993, Cal. No. 7.c., be amended as follows:

Students who are delinquent and/or in default in any of their financial accounts with the college, the university or an appropriate state or federal agency for which the university acts as either a disbursing or certifying agent, and students who have not completed exit interviews as required by the Federal Perkins Loan Program, the federal Family Education Loan Programs, the William D. Ford Federal Direct Loan Program, and the Nursing Student Loan Program, are not to be permitted to complete registration, or issued a copy of their grades, a transcript of academic record, certificate, or degree, nor are they to receive funds under the federal campus-based student assistance programs or the federal Pell Grant Program unless the designated officer, in exceptional hard-

ship cases and consistent with federal and state regulations, waives in writing the application of this regulation.

APPENDIX B.11

Freedom of Information Law Notice

Requests to inspect public records at the college should be made to the Registrar Customer Manager, Lucian Pinckney (160 Convent Avenue, Administration Building, Room 102 (212) 650-7850). Public records are available for inspection and copying by appointment only at a location to be designated. You have the right to appeal a denial of a request for access to records to the CUNY General Counsel and Vice Chancellor for Legal Affairs. Copies of the CUNY procedures for Public Access to Public Records Pursuant to Article 6 of the Public Officers Law and the appeal form are available at the reference desk of the library and the college website.

APPENDIX B.12

Special Provisions for Students in the Military

The following policies apply to students who leave CUNY to fulfill military obligations.

I. Students called up to the reserves or drafted before the end of the semester.

Grades. In order to obtain a grade, a student must attend 13 weeks (five weeks for summer session).

Refunds. A student called up to the reserves or drafted who does not attend for sufficient time to qualify for a grade is entitled to a 100% refund of tuition and all other fees except application fees.

II. Students who volunteer (enlist) for the military.

Grades. Same provision as for students called up to the reserves. In order to obtain a grade, a student must attend 13 weeks (five weeks for summer session).

Refunds. The amount of the refund depends upon whether the withdrawal is before the 5th week of classes.

Withdrawal before the beginning of the 5th calendar week (3rd calendar week for summer session): 100% refund of tuition and all other fees except application fees.

Withdrawal thereafter: 50% refund.

III. Other Provisions for Military Service:

Resident Tuition Rates. These lower rates are applicable to all members of the armed services, their spouses and their dependent children, on full-time active duty and stationed in the State of New York.

Re-enrollment of Veterans. Veterans who are returning students are given preferred treatment in the following ways:

Veterans who were former students with unsatisfactory scholastic records, may be readmitted with a probation program.

Veterans, upon their return, may register even after normal registration periods, without late fees.

Granting of college credit for military service and armed forces instructional courses.

Veterans returning too late to register may audit classes without charge.

Late Admissions. Veterans with no previous college experience are permitted to file applications up to the date of registration, and are allowed to begin classes pending completion of their application and provision of supporting documents.

Readmission Fee. Upon return from military service, a student will not be charged a Readmission Fee to register at the same college.

Veterans Tuition Deferrals. Veterans are entitled to defer the payment of tuition pending receipt of veterans' benefits.

New York National Guard Tuition Waivers. Active members of the New York National Guard, who are legal residents of New York State and who do not have a baccalaureate degree, are eligible for a tuition waiver for undergraduate study.

APPENDIX B.13

Notification of Student Immunization Requirements

Students who do not submit proof of measles, mumps and rubella (MMR) immunization or who fail to return the meningococcal meningitis response form within a statutory grace period shall be prohibited from attending the institution. For additional information, you should contact the Wellness and Counseling Center located in the Science Building (MR), Room 15, at the following number (212) 650-8222.

Public Health Law 2165 requires that post-secondary students be immunized against measles, mumps, and rubella (MMR).

All registered full-time students and part-time students born on or after January 1, 1957 who are enrolled for at least six, but fewer than twelve semester hours (or equivalent) per semester in an approved degree program or registered certificate program must submit proof of MMR immunization. Students may be exempt from the required MMR immunizations for religious or medical reasons. To qualify for a religious exception, students must submit a signed statement, or in the event the student is a minor (under 18), a signed statement from their parent or guardian, that they hold sincere and genuine religious beliefs that prohibit immunization. To qualify for medical exception, students must submit a written statement from a licensed physician or nurse practitioner indicating that such immunization may be detrimental to their health.

Public Health Law 2167 requires that post-secondary institutions provide written information about meningococcal meningitis to its students and that students complete, sign, and return a meningococcal meningitis response form. Public Health Law 2167 does not require that students be immunized against meningitis.

Public Health Law 2167 requires colleges to distribute written information about meningococcal meningitis disease and vaccination and students to

complete, sign and return to the college, a meningococcal meningitis response form that: (a) confirms that the college has provided the information about meningococcal meningitis; and (b) indicates that either: (1) the student has received immunization against meningococcal meningitis within the 10 years preceding the date of the response form; or (2) the student has decided against receiving the vaccination. This law applies to students, who are enrolled in at least six semester hours (or the equivalent) per semester. No student may be exempt from receiving information or returning the response form.

APPENDIX B.14

Policy for City College Pages on the World Wide Web

WWW PAGES Published by Faculty, Staff and Students

Faculty, staff, and students may create WWW pages for use in their various academic and administrative duties and activities and may install them on City College web servers. The contents of individuals' WWW pages published on the City College web servers must comply with the General Rules on Information Content stated in this policy.

Individuals' WWW pages are not College publications and the contents of these pages do not necessarily represent the views of the College.

Individual departments and administrative units may define additional conditions for the creation and installation of WWW pages by faculty, staff, and students under their supervision. Any such additional conditions must be consistent with this overall policy but may include more detailed guidelines and, where necessary and appropriate, additional restrictions.

Recognized student organizations may create WWW pages and may install them on a City College web server. After verification by a designated member of the Office of the Dean of Students that the student organization is active and officially recognized by the College, a link may

be created from an official City College home page to the student organization's home page.

Student organization WWW pages are not College publications and their contents do not necessarily represent the views of the College.

The contents of student organization WWW pages must comply with the General Rules on Information Content stated in this policy.

Terms and Conditions of Use

Any person who uses the WWW facilities at City College consents to all of the provisions of this policy and agrees to comply with all of its terms and conditions and with all applicable local, state, and federal laws and regulations.

Any user of the WWW whose actions involving the WWW violate this, or any other College policy or regulation, may be subject to limitations or eliminations of WWW privileges as well as other disciplinary actions.

APPENDIX B.15

Policy Against Sexual Harassment

Policy Statement

It is the policy of The City University of New York to promote a cooperative work and academic environment in which there exists mutual respect for all University students, faculty, and staff. Harassment of employees or students based upon sex is inconsistent with this objective and contrary to the University policy of equal employment and academic opportunity without regard to age, sex, sexual orientation, alienage or citizenship, religion, race, color, national or ethnic origin, handicap, and veteran or marital status. Sexual harassment is illegal under Federal, State, and City laws, and will not be tolerated within the University.

The University, through its colleges, will disseminate this policy and take other steps to educate the University community about sexual harassment. The University will establish procedures to ensure that investigations of allegations of sexual harassment are conducted in a manner that is prompt,

fair, thorough, and as confidential as possible under the circumstances, and that appropriate corrective and/or disciplinary action is taken as warranted by the circumstances when sexual harassment is determined to have occurred. Members of the University community who believe themselves to be aggrieved under this policy are strongly encouraged to report the allegations of sexual harassment as promptly as possible. Delay in making a complaint of sexual harassment may make it more difficult for the college to investigate the allegations.

A. Prohibited Conduct

It is a violation of University policy for any member of the University community to engage in sexual harassment or to retaliate against any member of the University community for raising an allegation of sexual harassment, for filing a complaint alleging sexual harassment, or for participating in any proceeding to determine if sexual harassment has occurred.

B. Definition of Sexual Harassment

For purposes of this policy, sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and other oral or written communications or physical conduct of a sexual nature when:

submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic standing; submission to or rejection of such conduct by an individual is used as a basis for employment or academic decisions affecting such individual; or

such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile or abusive work or academic environment.

Sexual harassment can occur between individuals of different sexes or of the same sex. Although sexual harassment most often exploits a relationship between individuals of unequal power (such as between fac-

ulty/staff member and student, supervisor and employee, or tenured and untenured faculty members), it may also occur between individuals of equal power (such as between fellow students or co-workers), or in some circumstances even where it appears that the harasser has less power than the individual harassed (for example, a student sexually harassing a faculty member). A lack of intent to harass may be relevant to, but will not be determinative of, whether sexual harassment has occurred.

C. Examples of Sexual Harassment

Sexual harassment may take different forms. Using a person's response to a request for sexual favors as a basis for an academic or employment decision is one form of sexual harassment.

Examples of this type of sexual harassment (known as quid pro quo harassment) include, but are not limited to, the following:

- requesting or demanding sexual favors in exchange for employment or academic opportunities (such as hiring, promotions, grades, or recommendations);

- submitting unfair or inaccurate job or academic evaluations or grades, or denying training, promotion, or access to any other employment or academic opportunity, because sexual advances have been rejected.

Other types of unwelcome conduct of a sexual nature can also constitute sexual harassment, if sufficiently severe or pervasive that the target does find, and a reasonable person would find, that an intimidating, hostile or abusive work or academic environment has been created.

Examples of this kind of sexual harassment (known as hostile environment harassment) include, but are not limited to, the following:

- sexual comments, teasing, or jokes;
- sexual slurs, demeaning epithets, derogatory statements, or other verbal abuse.

Appendix C

Section 494C(j) of the Higher Education Act of 1965, as amended, provides that a student, faculty member, or other person who believes he or she has been aggrieved by an institution of higher education has the right to file a written complaint.

In New York State, a complaint may be filed by any person with reason to believe that an institution has acted contrary to its published standards or that conditions at the institution appear to jeopardize the quality of the institution's instructional programs or the general welfare of its students. Any person who believes he or she has been aggrieved by an institution on or after May 4, 1994, may file a written complaint with the State Education Department within three years of the alleged incident.

How to File a Complaint

1. The person should first try to resolve the complaint directly with the institution by following the internal complaint procedures provided by the institution. An institution of higher education is required to publish its internal complaint procedure in a primary information document such as the catalog or student handbook. (The Department suggests that the complainant keep copies of all correspondence with the institution.)

2. If a person is unable to resolve the complaint with the institution or believes that the institution has not properly addressed the concerns, he or she may send a letter or telephone the Postsecondary Complaint Registry to request a complaint form. Please telephone (212) 951-6493 or write to:

New York State Education Department
Postsecondary Complaint Registry
One Park Avenue, 6th Floor
New York, NY 10016

3. The Postsecondary Complaint Registry Form should be completed, signed, and sent to the above address. The completed form should indicate the resolution being sought and any efforts that have been made to resolve the complaint through the institution's internal complaint processes. Copies of all relevant documents should be included.

4. After receiving the completed form, the Department will notify the complainant of its receipt and make any necessary request for further information. When appropriate, the Department will also advise the institution that a complaint has been made and, when appropriate, the nature of the complaint. The complainant will also be notified of the name of the evaluator assigned to address the specific complaint. The evaluator may contact the complainant for additional information.

5. The Department will make every effort to address and resolve complaints within ninety days from receipt of the complaint form.

Complaint Resolution

Some complaints may fall within the jurisdiction of an agency or organization other than the State Education Department. These complaints will be referred to the entity with appropriate jurisdiction. When a complaint concerns a matter that falls solely within the jurisdiction of the institution of higher education, the complainant will be notified and the Department will refer the complaint to the institution in question and request that the matter receive a review and response.

Upon conclusion of the Department's complaint review or upon a disposition of the complaint

by referral to another agency or organization, or to the institution of higher education, the Department will issue a written notice to the complainant describing the resolution of the complaint. The complainant may contact the Department evaluator directly for follow-up information or for additional assistance.

Appendix D

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- Levitt, Jonathan R.** Biology
- Lew, Herman** Media and Communication Arts
- Lewis, James I.** History
- Li, Christine** Biology
- Li, Jacqueline Jie** Mechanical Engineering
- Liaw, Been-Ming B.** Mechanical Engineering
- Lin, Feng-Bao** Civil Engineering
- Llonch, Fabian** Architecture
- Lombardi, John R.** Chemistry
- Lopez, Iris D.** Sociology
- Lubell, Michael** Physics
- Lucci, Stephen J.** Computer Science
- Luciano, David** SEEK
- Lynch, Arthur D.** Psychology
- Macari, Hanque** Architecture
- MacGowan-Gilhooly, Adele** Childhood Education
- Makse, Hernan** Physics
- Maldarelli, Charles** Chemical Engineering
- Malone, Charles** Childhood Education
- Manassah, Jamal T.** Electrical Engineering
- Marcus, Jane** English
- Marcus, Michael B.** Mathematics
- Marinoff, Louis** Philosophy
- Masur, Louis** History
- Mazzola, Elizabeth** English
- McCahery, Kathleen M** Sociology
- McCracken, Daniel D.** Computer Science
- McCran, Grace-Ellen** Library
- McKelvie, Neil** Chemistry
- McKnight, Claire E.** Civil Engineering
- McNeil, William G.** Architecture
- Mendelsohn, Loren D.** Library
- Menken, Kate** Childhood Education
- Mercado, Juan Carlos** Foreign Languages and Literatures
- Meriles, Carlos** Physics
- Miletta, Alexander** Childhood Education
- Miller, Renata K.** English
- Milstein, Glen** Psychology
- Mirsky, Mark** English
- Mittelman, Roy** Foreign Languages and Literatures
- Morgenstern, Mira** Political Science
- Mosenkis, Daniel D.** Mathematics
- Moshary, Fred** Electrical Engineering
- Mowshowitz, Abbe** Computer Science
- Murphy, Geraldine** English
- Muthukumar, Vangal** Physics
- Naddeo, Barbara** History
- Nair, V.P.** Physics
- Nazon, Marie** SEEK
- Nehm, Ross** Secondary Education
- Nesmith, Eugene** Theatre and Speech
- Netzer, Sylvia** Art
- Neujahr, James L.** Childhood Education
- Norton, Nadjwa** Childhood Education
- Ocken, Stanley** Mathematics
- O'Donnell, Shaugn** Music
- Oppenheim, Norbert** Civil Engineering
- Oppenheimer, Paul E.** English
- Paaswell, Robert E.** Civil Engineering
- Pach, Janos** Computer Science
- Pappas, Nicholas** Philosophy
- Paris, Michael** Political Science
- Parra, Lucas** Biomedical Engineering
- Parker, Neville A.** Civil Engineering
- Patitucci, John** Music
- Perl, Jonathan** Music
- Petricevic, Vladmir** Physics
- Pezzano, Mark** Biology
- Pieslak, Jonathan** Music
- Pignataro, Thea** Mathematics
- Plaud-Morales, Mildred** SEEK
- Polychronakos, Alexis** Physics
- Posamentier, Alfred** Dean, Education/Secondary Education
- Preston, George N.** Art
- Price, Thomas** Civil Engineering
- Primeau, Cynthia** Psychology
- Proudfoot, Ruth E.** Psychology
- Prout, Linda R.** Media and Communication Arts
- Raboteau, Emily** English
- Raia, Frederica** Earth and Atmospheric Science
- Raj, Rishi** Mechanical Engineering
- Ranalli, George** Dean, Architecture/Architecture
- Rassi, Babak** Media and Communication Arts
- Ratner, Andrew** Secondary Education
- Ravindran, Kaliappa** Computer Science
- Reeves, Scott** Music
- Renique, Gerardo** History
- Reynolds, Fred** Dean, Humanities & Arts/English
- Rich, Andrew** Political Science
- Rinard, Irvn H.** Chemical Engineering
- Ring, Rochelle M.** Mathematics
- Roberts, Jennifer** Foreign Languages and Literatures
- Roberts, Sylvia** Leadership and Special Education
- Rock, Florence C.** SEEK
- Rockwell, Robert F.** Biology
- Rorschach, Elizabeth** Secondary Education
- Rosario, Julio A.** Library
- Rosario, Margaret** Psychology
- Rosen, Jeffrey J.** Psychology
- Rosenberg, Clifford** History
- Rosenberg, Seth** Secondary Education
- Ross, George G.** Computer Science
- Rotella, Vittorio** Foreign Languages and Literatures
- Roth, Millicent** Psychology
- Roytman, Leonid M.** Electrical Engineering
- Rumschitski, David S.** Chemical Engineering
- Ryan, Kevin** Chemistry
- Saadawi, Tarek N.** Electrical Engineering
- Saltz, Ina** Art
- Sadegh, Ali M.** Mechanical Engineering

- Samad-Matias, M.A.** Anthropology
Sank, Diane Anthropology
Sarachik, Myriam P. Physics
Sargut, Gokse Economics
Scheinberg, Norman Electrical Engineering
Schmeltzer, David Physics
Schonfeld, Irvin Leadership and Special Education
Schulz, Horst H. Chemistry
Schwinger, David L. Mathematics
Semel, Susan Secondary Education
Senie, Harriet Art
Shachmurove, Yochanan Economics
Shattuck, Mark Physics
Shell, Niel Mathematics
Shinnar, Reuel Chemical Engineering
Shpilrain, Vladimir Mathematics
Silverstein, Brett Dean, Social Science/Psychology
Simms, Simon A. Chemistry
Simon, Lisa Childhood Education
Sit, William Y. Mathematics
Slade, Arietta Psychology
Skolnik, Richard History
Smiley, Ellen E. Acting Deputy Provost/Psychology
Smith, Beverly Secondary Education
Smith, Frederick W. Physics
Sobel, Kenneth M. Electrical Engineering
Soliday, Mary English
Sorkin, Michael Architecture
Sourian, Eve Foreign Languages and Literatures
Spears, Arthur K. Anthropology
Spielman, Arthur J. Psychology
Staloff, Darren History
Starcevic, Elizabeth Foreign Languages and Literatures
Steele, Janet A. Music
Stein, Judith S. History
Steinberg, Mark Chemistry
Steinberg, Richard Secondary Education
Steiner, Carol A. Chemical Engineering
Steiner, Jeffrey Earth and Atmospheric Sciences
Stern, Nancy Childhood Education
Stewart, Charles C. Library
Strzewzewski, Mary Ruth Foreign Languages and Literatures
Stylianou, Despina Secondary Education
Subak-Sharpe, Gerald Electrical Engineering
Subramaniam, Kolluru Civil Engineering
Sun, Yi Electrical Engineering
Tamargo, Maria Dean, Science/Chemistry
Tarbell, John Biomedical Engineering
Tardos, Gabriel I. Chemical Engineering
Tarlow, Lynn Secondary Education
Tartter, Vivien Psychology
Tasayco, Maria-Luisa Chemistry
Tchernichovski, Ofer Biology
Thau, Frederick E. Electrical Engineering
Thayer, Stephen Psychology
Thompson, Gordon E. English
Tinajero, Araceli Foreign Languages and Literatures
Trainor, Gergana Economics
Troeger, Douglas R. Computer Science
Tu, Jiufeng Physics
Tuber, Steven B. Psychology
Twombly, Robert C. History
Ubarretxena, Iban Chemistry
Urkowitz, Steven S. Theatre and Speech
Uttich, Richard M. Library
Uwazurike, Chudi P. Sociology
Uyar, Umit Electrical Engineering
Valle, Jon Leadership and Special Education
Van Nort, Sydney Library
Vazquez, Maribel Biomedical Engineering
Veaser, H. Aram English
Venkatesh, Tadmiri R. Biology
Verheggen, Claudine Philosophy
Villa, Robin Library
Vitaklov, Sergey A. Physics
Vulis, Michael Computer Science
Wachtel, Paul L. Psychology
Wall, Diana Anthropology
Wall, Edward Childhood Education
Wallace, Michele English
Wallenstein, Barry English
Wallman, Joshua Biology
Walser, Ardie D. Electrical Engineering
Ware, Linda Leadership and Special Education
Watkins, Charles Mechanical Engineering
Watts, James F. History
Wei, Jie Computer Science
Weil, Susan Secondary Education
Weinbaum, Sheldon Mechanical Engineering
Weiner, Ross Economics
Weinstein, Lissa Psychology
Weinstock, Ira Chemistry
Weintraub, Annette Art
Weintraub, Lee Architecture
Weiss, Andrea Media and Communication Arts
Weissman, David Philosophy
Wiley, Megan Civil Engineering
Wilgus, Ann Childhood Education
Williams, Gregory H. President
Willinger, David P. Theatre and Speech
Wilner, Joshua English
Winslow, Margaret A. Earth and Atmospheric Sciences
Wittig, Ann Civil Engineering
Wolberg, George Computer Science
Wolfe, Amy Library
Xiao, Jizhong Electrical Engineering
Yali, Ann-Marie Psychology
Yu, Honghui Mechanical Engineering
Yu, Zhonghua Chemistry
Zago, Andrew Architecture
Zahran, Mohamed Electrical Engineering
Zhang, Pengfei Earth and Atmospheric Sciences
Zhu, Zhigang Computer Science
Zuzolo, Ralph C. Biology

Appendix I

APPROVED UNDERGRADUATE DEGREE PROGRAMS

HEGIS CODE

THE COLLEGE OF LIBERAL ARTS AND SCIENCE

American Studies	B.A.	0313.00
Anthropology	B.A.	2202.00
Area Studies—Asian-Latin American & Latino-Russian	B.A.	0399.00
Area Studies—Black-Puerto Rican-Jewish	B.A.	0399.00
Art	B.A.	1002.00
Electronic Design and Multimedia	B.F.A.	
0605.00		
Biology	B.A., B.S.	0401.00
Chemistry	B.S.	1905.00
Communications	B.A.	0601.00
Comparative Literature	B.A.	1503.00
Economics	B.A., B.A./M.A.	2204.00
English	B.A., B.A./M.A.	1501.00
Environmental and Earth System Science	B.S.*	
Film	B.F.A.	1010.00
Geology	B.A., B.S.	1914.00
History	B.A., B.A./M.A.	2205.00
International Studies	B.A.	2210.00
Management and Administration	B.A.	0506.00
Mathematics	B.A., B.S., B.A./M.A.	1701.00
Math in Scientific and Industrial Applications	B.S.	1703.00
Music	B.A., B.F.A.	1005.00, 1004.00
Philosophy	B.A.	1509.00
Physics	B.A., B.S.	1902.00
Political Science	B.A.	2207.00
Pre-Law	B.A.	4903.00
Psychology	B.A., B.S., B.A./M.A.	2001.00
Publishing	Certificate	5008.00
Romance Languages—French, Italian, Spanish	B.A.	1101.00
Sociology	B.A., B.A./M.A.	2208.00
Theatre	B.A.	1007.00

THE SCHOOL OF ARCHITECTURE

Architecture	B.S./B.Arch	0202.00
Landscape Architecture	B.S.	0204.00

HEGIS CODE

THE SCHOOL OF EDUCATION*Education*

Art Education "K-12"	B.A.	0831.00
Bilingual Childhood Education	B.S.Ed.	0802.00
Bilingual Extension Certificate	Certificate	0802.00
Childhood Education	B.S.Ed.	0802.00
Music Education "K-12"	B.A.	0832.00

Education (Secondary)

Biology Education "7-12"	B.S.	0401.01
Chemistry Education "7-12"	B.S.	1905.01
Earth Science Education "7-12"	B.S.	1917.01
English Education "7-12"	B.A.	1501.01
Language other than English – Spanish	B.A.	1105.01
Mathematics Education "7-12"	B.A.	1701.01
Physics Education "7-12"	B.S.	1902.01
Social Studies Education "7-12"	B.A.	2201.01

THE SCHOOL OF ENGINEERING

Biomedical Engineering	B.E.	0905.00
Chemical Engineering	B.E.	0906.00
Civil Engineering	B.E.	0908.00
Computer Engineering	B.E.	0999.00
Computer Science	B.S.	0701.00
Electrical Engineering	B.E.	0909.00
Environmental and Earth System Science	B.E.*	
Mechanical Engineering	B.E.	0910.00

CENTER FOR WORKER EDUCATION

Early Childhood Education	B.S.	0823.00
Interdisciplinary Liberal Arts and Sciences	B.A., B.S.	4901.00

THE SCHOOL OF BIOMEDICAL EDUCATION

Biomedical Science	B.S.	0499.00
Physician's Assistant Program	B.S.	1299.10

* BS/BE program pending registration by the New York State Department of Education

- Aaron Davis Hall253
- Absence, Policy on276
- Academic Offerings255
- Academic Regulations274
- Academic Services 267
- Academic Standards 277
- Accelerated Study Fee263
- Accreditation, The City College of New York 252
- Administration, Officers of..... 307
- Administrative Staff308
- Admissions257
- Freshman Honors Programs 258
- Advanced Placement258
- Architecture, Landscape Architecture
 and Urban Design, School of259
- Early Admissions (High School Juniors)260
- Education, School of259
- Engineering, School of259
- Freshman Admissions257
- International Students259
- Liberal Arts and Science, College of259
- Matriculated and Non-Degree Students257
- Readmission to the College260
- Second Degree260
- Seek Program258
- Senior Citizens260
- Special Categories for Admission260
- Transfer Admission Requirements259
- Advertising and Public Relations
 Specialization102
- Advising267
- Advising, Academic267
- Affirmative Action, Policies on4
- Alcohol, Policy on290
- Alumni Association288
- American Studies, Program in11
- Anthropology, Department of13
- Appeals, Academic , 277, 293
- Architecture, Urban Design
 and Landscape Architecture, School of163
- Accreditation165
- Advisement165
- Architecture164
- Awards, Scholarships and Honors164
- City College Architectural Center164
- Transfer Requirements165
- Urban Landscape Program164
- Art, Department of17
- Asian Studies Program26
- Athletics272
- Attendance276
- Auditing275
- Biology, Department of29
- Biomedical Education, Sophie Davis School of245
- Biomedical Engineering, Department of206
- Black Studies Program35
- Bookstore273
- Bylaws, CUNY Board of Trustees289
- Cafeteria273
- Career Center273
- Chemical Engineering, Department of210
- Chemistry, Department of38
- Child Development and Family Service Center 273
- Childhood Education, Department of181
- City University of New York (CUNY)
 Board of Trustees306
- Civil Engineering, Department of215
- Clubs and Organizations255
- College Preparatory Initiative257
- Communications, Film and Video (see Media and
 Communications Arts)
- Comparative Literature Program44
- Complaints305
- Computer Engineering221

Computer Science, Department of	224	Graduation Requirements	202
Computing		Honors, Awards, and Professional Societies	199
General Facilities	254	Institutes	198
User Responsibilities	295	Laboratories and Research	194
Core Course Descriptions	283	Probation and Dismissal, Academic	202
Core Curriculum	280	Quality Point Accumulation	201
Counseling		Student Programs, Office of	193
Employment	273	English as a Second Language, Department of	63
Health	272	English, Department of	57
Psychological	272	“F” Repeat Policy	278
Course		Faculty Listing	310
Loads	277	Family Educational Rights and	
Numbering		Privacy Act(FERPA)	301
Repeating	277	Film and Video Specialization	102
Restrictions on Foreign Language Courses	279	Financial Aid	265
CUNY/ACT Basic Skills Tests	258	Aid for Part-Time Study	266
Dean’s List	275	City University Supplemental Tuition	
Degree Programs	314	Assistance Program (CUSTA)	266
Degree Requirements	279	Federal Aid to Native Americans	265
Disciplinary Regulations	290	Loans	266
Dismissal, Academic	277	Merit-Based Scholarships	266
Drugs, Policy on	290	New York State Scholarships and Awards	265
Dual Major	275	Pell Grant	265
Earth and Atmospheric Science, Department of	46	Search for Education, Elevation and	
Economics, Department of	51	Knowledge (SEEK)	266
Education, School of	171	Student’s Aid Association	266
Admissions	176	Tuition Assistance Program (TAP)	265
Liberal Arts Core Requirement	177	Work-Study Program	265
Licensing and Certification Requirements	179	Finley Student Center	272
Mission and Vision	173	Foreign Languages and Literatures,	
Professional Training	178	Department of	64
Standards and Regulations	178	Foreign Students	
Student Life and Services	180	Admissions	259
Undergraduate Programs	176	Free Electives	280
Electrical Engineering, Department of	230	Freshman Year Programs	268
Employment Assistance	273	Intersession Program	268
Employment, Student	261	Undergraduate Summer Immersion Program	268
Engineering, School of	189	Goldman Center for Sports and Recreation	253
Academic Standards	201	Governance	288
Accreditation	191	Grade Point Average (GPA)	275
Administration	191	Grading System	274
Admission Requirements	192	Graduation Honors	276
Cooperative Education	202	Graduation Requirements	276
Credit Requirements, Residency	192	Graduation, Application for	276
Curricular Guidance	201	Grievances	276
Degree Programs	191		

- Health Services Office272
- History and Philosophy of Science and
Technology Program80
- History, Department of74
- Honors Programs
CUNY Honors College269
Freshman Honors270
Research Honors269
- Housing253
- Identification Cards261
- Immunization Requirement261
- Information Desk254
- International Student and Scholar Services,
Office of271
- International Students 259
- International Studies Program82
- Intersession (January) Program268
- Italian Studies Program..... 87
- Jewish Studies Program88
- Job Placement261
- Journalism Specialization103
- Labor Studies Program91
- Lateness, Policy on276
- Latin American and Latino Studies93
- Liberal Arts and Science, College of9
Academic Standards10
Degree Requirements10
Degrees Offered10
- Library Facilities254
- Library Faculty309
- Loan Programs266
- Major Field of Study275
- Management and Administration Program51
- Mathematics, Department of96
- Matriculated Status257
- Mechanical Engineering, Department of236
- Media and Communication Arts,
Department of102
- Minors275
- Music, Department of111
- Non-Degree Status260
- Non-Discrimination, Policy on4
- Pass/Fail Option275
- Pell Grant265
- Philosophy, Department of120
- Placement Examinations258
- Plagiarism 294
- Post Baccalaureate Status260
- Pre-Freshman Program259
- Pre-Law Program135
- Premedical Studies Program137
- Privacy, Policy on256
- Probation, Academic277
- Proficiencies
Foreign Language279
Spoken English279
Written English279
- Psychological Center272
- Psychology, Department of139
- Public Policy and Public Affairs Program144
- Radio Station273
- Readmission to the College260
- Residency Requirements, New York State264
- Resignation from Courses274
- Retention261
- Second Degree
Secondary Education, Department of
SEEK Counseling and Student Support Services,
Department of149
- Senior Citizens260
- Services for Students with Disabilities,
Office of271
- Sexual Harassment, Policy on 4, 303
- Smoking, Policy on290
- Sociology, Department of145
- Sophie Davis School of Biomedical Education245
Admissions248
Physician Assistant Program248
- Sports273
- Standards, Academic277
- Student Affairs, Division of271
- Student Life255
- Student Rights, Rules and Regulations289
- Student Services271
- Students Records, Policy on301

Theatre and Speech, Department of	151
Tobacco, Policy on	290
Transfer Admission Requirements	259
Tuition and Fees	263
Tuition Assistance Program (TAP)	265
Tuition Refunds	264
Tutoring Services	267
Urban Landscape Architecture	164
Veteran's Affairs	273
Visitors, Other Colleges	260
Warning, Academic	277
Wellness and Counseling Center	272
Women's Studies Program	155
Work-Study Program	265
Worker Education, Center for	157
Writing-Across-the-Curriculum	279

DIRECTIONS TO THE CITY COLLEGE CAMPUS

By Train

IRT #1 or #9 local to 137th Street and Broadway, walk up 138th Street three blocks to Convent Avenue.

IND "A" or "D" express or "B" or "C" local to 145th Street and St. Nicholas Avenue, walk west one block to 145th Street and Convent Avenue, then south to 138th Street.

IRT #4 or #5 express or #6 local to 125th Street and Lexington Avenue, change there for the M-100 or M-101 bus to Amsterdam Avenue and 138th Street, walk east one block to Convent Avenue.

Metro North to 125th Street and Park Avenue, change there for the M-100 or M-101 bus to Amsterdam Avenue and 138th Street, walk east one block to Convent Avenue.

Note: The City College operates shuttle buses between the campus and the 137th Street (Broadway) and 145th Street (St. Nicholas) subway stations.

By Bus

M-18 to 138th Street and Convent Avenue.

M-4 or M-5 to Broadway and 137th Street, walk up 138th Street three blocks to Convent Avenue.

M-100 or M-101 to Amsterdam Avenue and 138th, walk east one block to Convent Avenue.

M-11 to 135th and Amsterdam Avenue, change to the M-100 or M-101 or walk north to 138th Street, then east one block to Convent Avenue.

BX-19 to 145th and Convent Avenue, walk south on Convent Avenue to 138th Street.

By Car

From the West Side: Westside Highway traveling north, exit at 125th Street, right to Amsterdam Avenue, left to 133rd Street, right one block to Convent Avenue. Traveling south from the George Washington Bridge, exit at 125th Street, first left onto 132nd Street, one block to Broadway, left to 133rd Street, right two blocks to Convent Avenue.

From the East Side: Triborough Bridge to Harlem River Drive, exit at 135th Street to end, turn right on St. Nicholas Avenue, then left onto 141st Street, make left on Convent Avenue to campus.

Parking on Campus

A limited number of parking spaces are available for Day Session students. All Evening Division students may obtain parking spots on the South Campus for use after 4:00 p.m. Day Session students may obtain applications for parking from the office of the Vice President for Student Affairs (Administration 201; 650-5426). Evening Division students will find applications for parking permits included with their registration materials. There is a fee per semester for parking.