

Earth System Science & Environmental Engineering Curriculum
Fall 2009 - Spring 2010

Math 20100 Calculus I Pre: Math 19500 (min. C) 3 cr.		Chem 10301 General Chemistry I Pre: Math 19500 4 cr.	FIQWS 10026⁵ Freshman Inquiry Based Writing Seminar Pre/Co: Math 19500 (C min) 4 cr.	Liberal Arts (10000 or higher) 3 cr.
Math 20200 Calculus II Pre: Math 20100 (min. C) 3 cr.	Phys 20700 General Physics I Pre/Co: Math 20200 4 cr.	Chem 10401 General Chemistry II Pre: Chem 10301 4 cr.	CSc 10200 Introduction to Computing Pre: Math 20100 (min. C) 3 cr.	Engr 10610 Earth System Science & Engr. Pre: 4 cr.
Math 20300 Calculus III Pre: Math 20200 (min C) 4 cr.	Phys 20800 General Physics II Pre: Phys 20700 Pre/Co: Math 20300 4 cr.	Engr 10300 Analysis Tools for Engineers Pre: Math 20100 (min. C) 2 cr.	EAS 21700 Systems Analysis of the Earth Pre: EAS 10600 or EAS 21300, Phys 20300 or Chem 10300 4 cr.	Engl 21007 Writing for Engineering Pre: Eng 11000 3 cr.
Math 39100 Differential Equations Pre: Math 20300 3 cr.	Math 39200 Lin. Algeb & Vector Anal. Pre: Math 20300 3 cr.	Restricted Engineering Elective (Select One) Engr 20400 Electrical Circuits Pre/Co: Phys 20800 (min. C) Pre/Co: Math 20300 (min. C) 3 cr.		Restricted Elective I Thermo (Select one from a, b, or c) a) ChE 22900 : Thermo I b) Chem 33000 : Pchem I c) Engr 23000 : Thermo 3 cr.
Technical Elective⁵ (1 course) See the list below 3 cr.	Fluid Mechanics ME 35600 or CE 35000 or ChE 34100 Fluid Mechanics Pre: Math 39100 (C min) Phys 20800 (C min) Pre/Co: Math 39200 3 cr.		Engr 59910 Geographic Information Sci. Pre: Math 39200 3 cr.	Restrictive Elective II ⁷ (Select One) a. ChE 33000 : Thermo II b. Chem 33200 : Pchem II c. ME 43000 : Thermal Sys. Anal. d. Chem 26100 : Organic Chem 3 cr.
Technical Elective⁵ (1 course) See the list below 3 cr.	CE 36500 Hydrology or Hydraulics Pre: CE 350000 3 cr.	CE 37200 Environmental Impact Assessment Pre: CE 26400, Chem 10401 (C min), Pre/Co: CE 35000 3 cr.	Engr 30100 Introd. to Remote Sensing Pre: Phys 20800, Math 20300 & Engr 10300 or Csc 10200 3 cr.	Liberal Arts (10000 or higher) 3 cr
Technical Elective⁵ (1 course) See the list below 3 cr.	Technical Elective⁵ (1 course) See the list below 3 cr.	CE 47400 Environmental Engineering Pre: CE 36500 & CE 37200 3 cr.	Engr 59869 ESE Design I Pre: Seniors Only 2 cr.	2 Liberal Arts (10000 or higher) 6 cr
Technical Electives⁵ (Select two Technical Electives)				Engr 59870 ESE Design II Pre: Engr 59869 3 cr.
Engineering		Science		
Remote Sensing EE33300: Ant, Microwave, Waveguides EE42800: Photonics Lab EE46200: Photonics Engineering EE42800: Photonics Eng Lab Engr55680: Special Topics in RS Energy ChE59812: Energy Systems Eng EE35700: Power Engineering EE45500: Elements of Power Sys ME43300: Heat Transfer ME47100: Energy Sys Design ME53600: Energy Conversion ME54700: Env Control 6cr.	Water Resources & Environment CE45100: Water Resources CE48200: Env Engineering II CE57100: Water Quality Anal Other Engineering Electives Engr5100X: Spec Projects in ESE ENGR 59803: Industrial Ecology CE33500: CompMethods in CE CE40100: Fundamentals of Engr ChE34200: Transport Phen II ChE34900: Prob. stat&design of Exp EE20500: Linear Systems I EE31100: Probability and Statistics ME32200: Comp methods in Engr. ME55600: Advanced Fluid Mech	Biology Bio 10100: Foundation of Bio I Bio 10200: Foundation of Bio II Bio20700: Organism Biology Bio22800: Ecology and Evolution Bio22900: Cell and Molecular Bio Bio35000: Microbiology Chemistry Chem 24300 Quant Analysis Chem 26300 Org Chem II Chem 27200 Org Chem Lab Chem 33100: Physical Chem Lab I Chem 33200: Physical Chem II Chem 43400: PChem/ Ins Lab	Chem 40600 Env Chemistry Chem 40700 Org Env Chemistry Earth and Atmospheric Sciences EAS31700: Satellite Meteorology EAS31800: Fund of Atmosph Sci EAS32800: Global Env Hazards EAS43900: Mineral Energy Res EAS44600: Groundwater Hyd EAS48800: Climate Change Physics Phys32100: Modern Physics Phys45200: Optics	2 Liberal Arts (20000 or higher) 6 cr.

- New freshmen engineering students are no longer required to take **NSS 10000: New Freshman Seminar** (0 cr.).
- “C” Passing Grade Requirement:** Courses in shaded area () require a minimum passing grade of “C”.
- CUNY CPE, ACT & SKAT Requirements:** Students must pass the CUNY/ACT in Reading and Writing and CUNY Mathematics Skills Assessment Test (SKAT) before completing 61 credits. Students must pass the CUNY Proficiency Examination (CPE) before graduation.
- General Education / Liberal Arts Requirements:**
ESE 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 (f, g, h, j). Engr 27600 (Engineering Economics) is an accepted 20000 level course.
Only courses in these four clusters are eligible: Professional and Ethical Responsibilities Cluster (Outcome f), Communication Cluster (outcome g), Global and Societal Context Cluster (outcome h), and Contemporary Issues Cluster (Outcome j). A list of approved courses is posted on the School of Engineering web site at <http://www.cuny.edu/engineering/genreq.html> and can be viewed at the Office of Undergraduate Affairs (ST-209) or the Office of Student Programs (T-2M). This list is subject to periodic review and updates.
- Technical Elective Requirements:** Total 6 courses (18 credits) three of which must come from engineering.
- Restricted, Fluid Mechanics & Technical Electives:** Total credits from Science & Engineering Electives is 30 Credits, 18 of which must be in Engineering. All electives must be approved by the ESE advisor.
- Restricted Elective II:** Select one from a, b, or c corresponding to Thermodynamics Elective Or select d.
- Other Graduation Requirements:** 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: 33 credits of 30000-level or higher Earth and Environmental Systems Engineering courses.
- New Transfer Students** who have already completed the equivalent of Calculus II (Math 20200) should not take Engr 10100 or FIQWS 10026. They are required to complete an additional 1-credit ESE Advanced Laboratory Elective course.
- Program Changes:** Substitution of other courses for required courses must be approved by the Earth and Environmental Systems Engineering advisor and the Associate Dean of the Office of Undergraduate Affairs (ST-209).
- Note, that the latest version of the program curriculum sheet supersedes the curriculum reported in the Undergraduate Bulletin.

Total Credits: 127