

THE CITY COLLEGE – SCHOOL OF ENGINEERING
Earth System Science & Environmental Engineering Curriculum
Fall 2019 – Spring 2020

January 2, 2020

Math 20100 Calculus I Pre: Math 19500 (C min.) 4 cr.		Chem 10301 General Chemistry I Pre: Math 19500 (C min.) 4 cr.	Engl 11000 ⁷ Freshman Composition 3 cr.	Engr 10100 ⁷ Engineering Design Pre/Co: Math 19500 (C min.) 1 cr.	Liberal Arts ⁵ 3 cr.
Math 21200 Calculus II Pre: Math 20100 (C min.) 4 cr.	Phys 20700 General Physics I Pre/Co: Math 21200 4 cr.	Chem 10401 General Chemistry II Pre: Chem 10301 (C min.) 4 cr.	CSc 10200 Introduction to Computing Pre: Math 19500 (C min.) or Pre/Co: Math 20100 (C min.) 3 cr.		Engr 10610 Earth System Science & Engr 4 cr.
Math 21300 Calculus III Pre: Math 21200 (C min.) 4 cr.	Phys 20800 General Physics II Pre: Phys 20700 Pre/Co: Math 21300 4 cr.	Engr 20800 Computation Methods for ESE Pre: Math 20100 & 21200 (both C min.) Co: Math 21300 2 cr.	EAS 21700 Systems Analysis of the Earth Pre: Either EAS 10600 or Engr 10610; and either Phys 20300 or Chem 10301 4 cr.	Engr 21007 ⁹ Writing for Engineering Pre: Engr 11000 3 cr.	
Math 39100 Differential Equations Pre: Math 21300 (C min.) 3 cr.	Math 39200 Lin. Algebr & Vector Anal. Pre: Math 21300 (C min.) 3 cr.	Restricted Engineering Elective		Restricted Elective I Thermo	
		Engr 20400 Electrical Circuits Pre/Co: Phys 20800 (C min.) Math 21300 (C min.) 3 cr.	or	CE 23100 Statics Pre: Phys 20700 (C min.) Math 21200 (C min.) & CSc 10200 3 cr.	Engr 23000 Thermo Pre: Chem 10301 (C min.) Pre/Co: Phys 20800 (C min.) Math 21300 (C min.) 3 cr.
				ChE 22900 Thermo I (Spring Only) Pre: Chem 10401, Phys 20700, Math 39100 3 cr.	CE 26400 CE Data Analysis Pre: Csc 10200 Pre/Co: Engr 21007, Math 21300 (C min.) 3 cr.
Bio 10100 Bio Fundamentals I 4 cr.	Engr 30100 Introd. to Remote Sensing Pre: Phys 20800, Math 21300 & (Engr 20800 or Csc 10200) 3 cr.	Fluid Mechanics (Select One)		Technical Elective ⁴ See the list below 3 cr.	ENGR 27600 ⁹ Engineering Economics Pre: Math 20100 (C min.) 3 cr.
		ME 35600 Fluid Mechanics Pre: Math 39100 (C min.) Phys 20800 (C min.) Pre/Co: Math 39200 3 cr.	ChE 34100 Transport Phen I (Fall Only) Pre: Math 39100 (C min.) ChE 22900 3 cr.	CE 35000 Fluid Mechanics Pre: CE 23100 (C min.) CSc 10200 Pre/Co: Math 39100 (C min.) 3 cr.	
Engr 59910 Geographic Inform. Sci. Pre: CE 26400 3 cr.	CE 36500 Hydraulic Engr Pre for CE majors: CE 35000 (C min.) Pre for ESE majors: CE 35000 or ME 35600 or ChE 34100 3 cr.	CE 37200 Environmental Impact Assessment Pre for CE majors: CE 26400, Chem 10401 (C min.) & CE 35000 (C min.) Pre for ESE majors: CE 26400, Chem 10401 (C min.) & [CE 35000 or ME 35600 or ChE 34100] 3 cr.	Restricted Elective II (Select One)		Liberal Arts ⁵ 3 cr.
			ME 43000 Thermal Sys. Anal. Pre: Engr 23000 & ME 35600 3 cr.	ChE 33000 Thermo II (Fall Only) Pre: ChE 22900, Math 39100 (C min.) Pre/Co: ChE 22800 (or CE 26400 for ESE), Phys 20800 3 cr.	
Technical Elective ⁴ See the list below 3 cr.	Technical Elective ⁴ See the list below 3 cr.	CE 47400 Environmental Engineering Pre: CE 36500 & CE 37200 3 cr.	Engr 59869 ESE Design I (Fall Only) Pre: Three of: ENGR 30100, ENGR 59910, CE 36500, CE 37200, CE 47400 3 cr.	Liberal Arts ⁵ 3 cr.	Liberal Arts ⁵ (20000 or higher) 3 cr.
Technical Elective ⁴ See the list below 3 cr.	Technical Elective ⁴ See the list below 3 cr.	Technical Elective ⁴ See the list below 3 cr.	Engr 59870 ESE Design II (Spring Only) Pre: Engr 59869 3 cr.		Liberal Arts ⁵ 3 cr.

Engineering Technical Electives	ME 43300 Heat Transfer ME 47100 Energy Systems Design ME 53600 Energy Conversion ME 53700 Turbomachinery Design ME 54700 Environmental Control ME 55600 Advanced Fluid Mechanics ENGR 31230 Energy and the Environment ENGR 41230 The Management of Hazardous Wastes ENGR 5100X* Spec Projects in ESE ENGR 55400 Reactor Physics and Engineering ENGR 55500 Reactor Thermal Hydraulics ENGR 55600 Nuclear Reactor Design, Operation and Safety ENGR 55680 Special Topics in RS ENGR 59803 Industrial Ecology ENGR 59920 Bldg Mod&Simulatn ENGR 59950 Special Topics in Earth System and Environmental Engr	<i>*Some courses are fewer than 3 credits. Technical electives must total 18 cr.</i>	Science Technical Electives	EAS 30800 Earth Syst Mod/Databases EAS 31003 EAS Independent Study EAS 41700 / 31700 Satellite Meteorology EAS 30900 / 31800 Fund of Atmos Sci EAS 32800 Global Hazards EAS 34500 Hydrology EAS 36500 Coastal and Ocean Proc EAS 41300 Environmental Geochem EAS 43900 Mineral/Energy Resources EAS 44600 Ground Water Hydro EAS 48800 Climate Change EAS 56100 Geophysics	CHEM 24300 Quant Analysis CHEM 26100 Organic Chemistry I CHEM 26300 Organic Chemistry II CHEM 27200 Organic Chemistry Lab CHEM 33100* Physical Chemistry Lab I CHEM 33200 Physical Chemistry II CHEM 40600/01 Environmental Chem. CHEM 40700 Environ Organic Chem CHEM 43400 PChem & Chem Instr Lab PHYS 32100 Modern Physics PHYS 32300 Quantum Mechanics PHYS 45200 Optics
--	--	--	------------------------------------	---	---

- The latest version of the curriculum sheet supersedes any curriculum and pre/coreq information in the Undergraduate Bulletin or online.
- “C” Passing Grade Requirement:** Courses in shaded area require a minimum passing grade of “C”.
- Skills tests:** Certain students may be required to pass CUNY Assessment Tests in one or more subjects within 1 or 2 years of admission.
- Technical Elective Requirements:** These are to be selected from the list of approved engineering and science technical electives (see table). An appropriate sequence of courses will be selected based on student interest. **All technical electives MUST be approved by an advisor.** Of the 18 credits for electives, a minimum of 9 credits must come from engineering courses.
- Liberal Arts electives:** ESE students must take **six** approved courses, of which at least two must have course numbers of 20000 or higher. **Four** of the courses should satisfy Flexible Core (Pathways) liberal arts requirements in the Creative Expression (CE), World Cultures & Global Issues (WCGI), Individual & Society (IS), and U.S. Experience (US) areas. Prior courses in these four areas from other colleges can satisfy the electives. The remaining **two** courses must be chosen from the list on the Grove School of Engineering web site at cnv.cuny.edu/engineering/gen-ed.
See cnv.cuny.edu/engineering/pathways for details and the Pathways course lists. A prior degree may remove the requirement of all six courses
- Other Graduation Requirements:** Apply for graduation during registration for the last semester. Minimum GPA of 2.00. Minimum QPA of zero. Residency Requirement: 33 credits of 30000-level or higher Earth System Science & Environmental Engineering courses taken at CCNY.
- Transfer students with credit for Math 21200** (Calculus II) are considered too advanced for Engr 10100. They should take a 1-credit ESE advanced laboratory elective course instead. FIQWS 10026 fulfills the requirements for Engr 11000 and Engr 10100.
- Program Changes:** Substitution of other courses for required courses must be approved by the Director of the Earth System Science & Environmental Engineering Program (ST-553), and the Associate Dean of the Office of Undergraduate Affairs (ST-209).
- ENGL 21007 (Writing for Engineering) and ENGR 27600 (Engineering Economics) are required courses in the Earth System Science & Environmental Engineering curriculum instead of General Education requirements. ENGR 27600 satisfies one of the 2000 level course requirement.

Total Credits: 130