

Plan of Study for the Environmental Science & Engineering Track
of the Engineering Sciences AB Concentration
Effective for Students Declaring the Concentration after July 1, 2017

NAME: _____

CLASS: _____

EMAIL: _____

DATE: _____

This Plan of Study Form is for a (*Circle One*): **DECLARATION** **REVISION**

REQUIRED COURSES (Circle or fill-in for courses planned in each category.)	Semester (FA/SP Year)
Mathematics (2-4 courses) <i>Begin according to placement:</i> Math 1a – Introduction to Calculus I Math 1b – Calculus, Series, and Differential Equations Applied Mathematics 21a – Mathematical Methods in the Sciences I (or Mathematics 21a or 23a) Applied Mathematics 21b – Mathematical Methods in the Sciences II (or Mathematics 21b or 23b)	 _____ _____ _____ _____
Physics (2 courses) AP 50a – Physics as a Foundation for Sci. & Eng. Part I (or PS 12a or Physics 15a or 16) AP 50b – Physics as a Foundation for Sci. & Eng. Part II (or PS 12b or Physics 15b)	 _____ _____
Chemistry (2 courses) <i>Select two (PS 11 strongly recommended):</i> Life Sciences 1a – An Integrated Introduction to the Life Sciences (or Life & Physical Sciences A – Foundational Chemistry and Biology) Physical Sciences 10 – Quantum and Statistical Foundations of Chemistry Physical Sciences 11 – Foundations and Frontiers of Modern Chemistry (or Physical Sciences 1 – Chemical Bonding, Energy, and Reactivity)	 _____ _____
Computer Science (1 course) <i>Select one:</i> CS 50 – Introduction to Computer Science I CS 51 – Introduction to Computer Science II CS 61 – Systems Programming & Machine Organization	 _____
Sophomore Forum <i>Required, non-credit.</i>	 _____

REQUIRED COURSES (Circle or fill-in for courses planned in each category.)	Semester (FA/SP Year)
<p>Environmental Science & Engineering Core (4 courses)</p> <p>ES 6 – Intro to Environmental Science & Engineering</p> <p><i>Select three:</i></p> <p>ES 109 – Earth Resources and the Environment</p> <p>ES 112 – Thermodynamics by Case Study</p> <p>ES 130 – Biogeochemistry of Carbon Dioxide and Methane</p> <p>ES 131 – Introduction to Physical Oceanography and Climate</p> <p>ES 132 – Introduction to Meteorology and Climate</p> <p>ES 133 – Atmospheric Chemistry</p> <p>ES 135 – Physics & Chemistry: In the Context of Energy & Climate</p> <p>ES 160 – Space Science: Theory and Applications</p> <p>ES 161 – Applied Environmental Toxicology</p> <p>ES 162 – Hydrology & Environmental Geomechanics</p> <p>ES 163 – Pollution Control in Aquatic Ecosystems</p> <p>ES 164 – Environmental Chemistry</p> <p>ES 165 – Water Engineering</p> <p>ES 166 – State-of-the-Art Instrumentation in Environmental Sciences</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Approved Electives (3 courses)</p> <p><i>Select three (course titles are listed on page 3):</i></p> <p>Engineering Sciences 91r (1 term), 109, 112, 123, 130, 131, 132, 133, 135, 137, 160, 161, 162, 163, 164, 165, 169, 181, 220, 265, 267, 268, 269</p> <p>Earth & Planetary Sciences 134, 138, 186, 187, 208, 236</p> <p>No more than one from*: Engineering Sciences 50, 51, 53, or Earth & Planetary Sciences 50</p> <p>No more than one from: Engineering Sciences 52, 153, or 154</p> <p>No more than one from: Engineering Sciences 111, 115, 121, 150, Statistics 110, Applied Math 101, 104, 105, or 108</p>	<p>_____</p> <p>_____</p> <p>_____</p>

* ES 50, 53, or EPS 50 may only count as an Approved Elective if taken during the Freshman or Sophomore year.

Required Signatures:

Student

Date

Assistant Director of Undergraduate Studies

Date

ADUS indicate if a petition is needed: Yes _____ No _____

Director of Undergraduate Studies

Date

COURSE TITLES FOR APPROVED ELECTIVES:

For courses co-listed in another department, students must enroll in the Engineering Sciences offering.

ES 91r – Supervised Reading and Research
ES 109 – Earth Resources and the Environment
ES 112 – Thermodynamics by Case Study
ES 123 – Intro to Fluid Mechanics & Transport Processes
ES 130 – Biogeochemistry of Carbon Dioxide and Methane
ES 131 – Introduction to Physical Oceanography and Climate
ES 132 – Introduction to Meteorology and Climate
ES 133 – Atmospheric Chemistry
ES 135 – Phys & Chem: In the Context of Energy & Climate at the Global & Molecular Level
ES 137 – Energy within Environmental Constraints
ES 160 – Space Science and Engineering: Theory and Applications
ES 161 – Applied Environmental Toxicology
ES 162 – Hydrology & Environmental Geomechanics
ES 163 – Pollution Control in Aquatic Ecosystems
ES 164 – Environmental Chemistry
ES 165 – Water Engineering
ES 166 – State-of-the-art Instrumentation in Environmental Sciences
ES 169 – Seminar on Global Pollution Issues
ES 181 – Engineering Thermodynamics
ES 220 – Fluid Dynamics
ES 265 – Advanced Water Treatment
ES 267 – Aerosol Science and Technology
ES 268 – Chemical Kinetics
ES 269 – Environmental Nanotechnology
EPS 134 – Global Warming Debates: The Reading Course
EPS 138 – Mysteries of Climate Dynamics
EPS 186 – Low Temperature Geochemistry I: Introduction to Biogeochemical Cycles
EPS 187 – Low Temperature Geochemistry II: Modern and Ancient Biogeochemical Processes
EPS 208 – Physics of Climate
EPS 236 – Environmental Modeling

No more than one from:

ES 50 – Introduction to Electrical Engineering
ES 51 – Computer-Aided Machine Design
ES 53 – Quantitative Physiology as a Basis for Bioengineering
EPS 50 – The Fluid Earth: Oceans, Atmosphere, Climate, and Environment

No more than one from:

ES 52 – The Joy of Electronics - Part 1
ES 153 – Laboratory Electronics
ES 154 – Electronic Devices and Circuits

No more than one from:

AM 101 – Statistical Inference for Scientists and Engineers
AM 104 – Series Expansions & Complex Analysis
AM 105 – Ordinary & Partial Differential Equations
AM 108 – Nonlinear Dynamical Systems
ES 111 – Introduction to Scientific Computing
ES 115 – Mathematical Modeling
ES 121 – Introduction to Optimization: Models & Methods
ES 150 – Introduction to Probability with Engineering Applications
Statistics 110 – Introduction to Probability