

Plan of Study for the Environmental Science & Engineering AB Concentration
Effective for Students Declaring the Concentration after August 1, 2018

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)
<p>Mathematics (2-4 courses)</p> <p><i>Begin according to placement:</i></p> <p>Math 1a – Introduction to Calculus I</p> <p>Math 1b – Calculus, Series, and Differential Equations</p> <p>Applied Mathematics 21a – Mathematical Methods in the Sciences I (or Mathematics 21a or 23a)</p> <p>Applied Mathematics 21b – Mathematical Methods in the Sciences II (or Mathematics 21b or 23b)</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Physics (2 courses)</p> <p>AP 50a – Physics as a Foundation for Sci. & Eng. Part I (or PS 12a or Physics 15a or 16)</p> <p>AP 50b – Physics as a Foundation for Sci. & Eng. Part II (or PS 12b or Physics 15b)</p>	<p>_____</p> <p>_____</p>
<p>Chemistry (2 courses)</p> <p><i>Select two:</i></p> <p><i>Recommended:</i> Physical Sciences 11 – Foundations and Frontiers of Modern Chemistry: A Molecular and Global Perspective (or Physical Sciences 1 – Chemical Bonding, Energy, and Reactivity)</p> <p>Life Sciences 1a – An Integrated Introduction to the Life Sciences (or Life & Physical Sciences A – Foundational Chemistry and Biology)</p> <p>Physical Sciences 10 – Quantum and Statistical Foundations of Chemistry</p> <p>Chemistry 17 – Principles of Organic Chemistry (or Chemistry 20 – Organic Chemistry)</p> <p>Chemistry 60 – Foundations of Physical Chemistry</p>	<p>_____</p> <p>_____</p>
<p>Environmental Science & Engineering Introductory Course (1 course)</p> <p>ESE 6 – Intro to Environmental Science & Engineering (may substitute SPU 25, SPU 29, SPU 31 or other appropriate course by petition)</p>	<p>_____</p>
<p>Sophomore Forum</p> <p><i>Required, non-credit.</i></p>	<p>_____</p>

REQUIRED COURSES (Circle or fill-in for courses planned in each category.)	Semester (FA/SP Year)
<p>Breadth in Environmental Science & Engineering (2 courses) <i>Strongly recommended to select one course on environmental physics and one course on environmental chemistry. With permission of the Director of Undergraduate Studies, students may substitute alternative ESE courses.</i></p> <p><i>One course on environmental physics: ESE 131, 132, 162</i></p> <p><i>One course on environmental chemistry: ESE 133, 163, EPS 186</i></p>	<p>_____</p> <p>_____</p>
<p>Approved Electives (5 courses) <i>Select five from the options below (course titles are listed on page 3). With permission of the Director of Undergraduate Studies, up to two courses may be substituted with a relevant upper-level course from other areas of the natural sciences and engineering. Courses marked with an * are approved for the required design experience (see below).</i></p> <ul style="list-style-type: none"> • ESE 109, 130*, 131, 132, 133, 136, 138, 160*, 161, 162, 163*, 166*, 169* • ES 91r (one term), 96*, 112, 115*, 123, 181, 183 • EPS 134, 186, 187 • OEB 55, 120, 157 	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Design Experience <i>All students must take an approved course (see courses marked with an * above) with significant design experience as one of their ESE Breadth or Approved Electives. This requirement may also be satisfied with a design component within a senior thesis or independent research project (ES 91r).</i></p>	

Required Signatures:

Student

Date

Associate Director of Undergraduate Studies

Date

ADUS indicate if a petition is needed: Yes _____

No _____

Director of Undergraduate Studies

Date

COURSE TITLES FOR APPROVED ELECTIVES:

ESE 109 – Earth Resources and the Environment
ESE 130 – Biogeochemistry of Carbon Dioxide and Methane
ESE 131 – Introduction to Physical Oceanography and Climate
ESE 132 – Introduction to Meteorology and Climate
ESE 133 – Atmospheric Chemistry
ESE 136 – Climate and Climate Engineering
ESE 138 – Mysteries of Climate Dynamics
ESE 160 – Space Science and Engineering: Theory and Applications
ESE 161 – Applied Environmental Toxicology
ESE 162 – Hydrology
ESE 163 – Pollution Control in Aquatic Ecosystems
ESE 166 – State-of-the-art Instrumentation in Environmental Sciences
ESE 169 – Seminar on Global Pollution Issues

ES 91r – Supervised Reading and Research
ES 96 – Engineering Problem Solving and Design Project
ES 112 – Thermodynamics by Case Study
ES 115 – Mathematical Modeling
ES 123 – Intro to Fluid Mechanics & Transport Processes
ES 181 – Engineering Thermodynamics
ES 183 – Introduction to Heat Transfer

EPS 134 – Global Warming Debates: The Reading Course
EPS 186 – Low Temperature Geochemistry I: Introduction to Biogeochemical Cycles
EPS 187 – Low Temperature Geochemistry II: Modern and Ancient Biogeochemical Processes

OEB 55 – Ecology: Populations, Communities, and Ecosystems
OEB 120 – Plants and Climate
OEB 157 – Global Change Biology