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) *Begin according to placement:* 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) *Select two (PS 11 strongly recommended):* 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) *Select one:* CS 50 – Introduction to Computer Science I CS 51 – Introduction to Computer Science II CS 61 – Systems Programming & Machine Organization	 _____
Sophomore Forum *Required, non-credit.*	 _____

REQUIRED COURSES (Circle or fill-in for courses planned in each category.)	**Semester** (FA/SP Year)
Environmental Science & Engineering Core (4 courses) ES 6 – Intro to Environmental Science & Engineering *Select three:* ES 109 – Earth Resources and the Environment ES 112 – Thermodynamics by Case Study 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 – Physics & Chemistry: In the Context of Energy & Climate ES 160 – Space Science: 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	_____ _____ _____ _____
Approved Electives (3 courses) *Select three (course titles are listed on page 3):* 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 Earth & Planetary Sciences 134, 138, 186, 187, 208, 236 No more than one from*: Engineering Sciences 50, 51, 53, or Earth & Planetary Sciences 50 No more than one from: Engineering Sciences 52, 153, or 154 No more than one from: Engineering Sciences 111, 115, 121, 150, Statistics 110, Applied Math 101, 104, 105, or 108	_____ _____ _____

* 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