B.S. EARTH SYSTEM SCIENCE DEGREE REQUIREMENTS

Basic Requirements:

A. *One course from the following:*
ESS 1_____ 3_____ 5_____

All of the following courses:
ESS 51_____ 53_____ 55_____ 114_____ 116_____ 191_____ 192_____

Math 2A_____ 2B_____
Math 2D_____ **OR** 3A_____

Chem 1A_____ 1B_____ 1C_____; 1LC_____ 1LD_____ **OR**
Chem H2A_____ H2B_____ H2C_____; H2LA_____ H2LB_____ H2LC_____

Physics 3A_____ 3B_____ 3C_____; 3LB_____ 3LC_____ **OR**
Physics 7C_____ 7E_____; 7LC_____

B. **Additional Electives** (seven courses from the following; at least 4 must be ESS courses)

_____ _____ _____ _____ _____ _____ _____
(ESS) (ESS) (ESS) (ESS)

Earth System Science: Any four-unit upper-division course (100-199) except 114, 116, 190C, 198 or H198; (ESS 199/H199 may be counted only once)
Chemistry: 51A, 51B/LB, 51C/LC, H52A/LA, H52B/LB, H52C, 131A, 131B, 131C
Physics: 51A, 51B, 115A, 120, 134A, 137, 144, 145
Mathematics: 2D or 3A (may be counted only once), 3D, 105A, 112A, 115
Mechanical and Aerospace Engineering (MAE): 91, 130A, 164, 180, 185
Civil and Environmental Engineering (CEE): 156, 162, 171, 172, 176, 178
Biological Sciences: 93, 94, 98, D105, E106, E167, E179, E179L, E186, E189, M133
Criminology, Law and Society: C148;
Planning, Policy, and Design: 133, 138, 139;
Public Health: 161
Computing Skills (**one** of the following may be counted toward the degree): ICS 31, EECS10, MAE 10, Physics 53, or another approved programming course

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Optional **Specialization in Atmospheric Science**
(Courses may be used to fulfill electives in section B, where overlap exists.)
Four courses from the following: ESS 101____ 112____ 122____ 124____ 142____ 198/H198/199/H199A-B-C ____
(ESS 198/H198/199/H199A-B-C must be focused on atmospheric research and may be counted only once)
AND *One* advanced tools course selected from the following: ESS 118____ 138____ 150____

Optional **Specialization in Oceanography**
(Courses may be used to fulfill electives in section B, where overlap exists.)
Four courses from the following: ESS 101____ 112____ 130____ 144____ 148____ 170____ 198/H198/199/H199A-B-C ____
(ESS 198/H198/199/ H199A-B-C must be focused on oceanographic research and may be counted only once)
AND *One advanced tools course selected from the following*: ESS 118____ 138____ 150____

Optional **Specialization in Hydrology and Terrestrial Ecosystems**
(Courses may be used to fulfill electives in section B, where overlap exists.)
Four courses from the following: ESS 132____ 140____ 164____ 168____ 174____ 198/H198/199/H199A-B-C ____
(ESS 198/H198/199/ H199A-B-C must be focused on terrestrial research and may be counted only once)
AND *One advanced tools course selected from the following*: ESS 118____ 134____ 138____ 150____

Optional **Concentration in Geosciences Education with Secondary Teaching Certification**
This concentration allows students pursuing the B.S. in Earth System Science to earn a bachelor's degree and complete the required course work and field experience for a California Preliminary Single Subject Teaching Credential at the same time. In addition to the major requirements listed above, ***all of the following*** *must be completed:*
ESS 7_____ **OR** 140 _____; Physics 20A_____ **OR** 20B_____; Physical Sciences 5_____105_____;
Chemistry/Physics 193_____; LPS 60_____
Education 55_____ 109_____ 143A_____ 143B_____ 148_____ and two quarters of Education 158_____ _____

Effective Fall 2017