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;
   **Public Health:** 161
   **Urban Planning and Public Policy (UPPP):** 139
   **Computing Skills** (one of the following may be counted toward the degree): ICS 31, EECS10, MAE 10, Physics 53, or another approved programming course

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____ 198/198/199/H199A-B-C____
   (ESS 198/198/199/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____ 198/198/199/H199A-B-C____
   (ESS 198/198/199/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____ 198/198/199/H199A-B-C____
   (ESS 198/198/199/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____ 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 2018