**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)

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<tr>
<td>Earth System Science:</td>
<td>Any four-unit upper-division course (100-199) except 114, 116, 190C, 198 or H198; (ESS 199/H199 may be counted only once)</td>
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<td>Physics:</td>
<td>51A, 51B, 115A, 120, 134A, 137, 144, 145</td>
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<td>Mathematics:</td>
<td>2D or 3A (may be counted only once), 3D, 105A, 112A, 115</td>
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<td>Mechanical and Aerospace Engineering (MAE):</td>
<td>91, 130A, 164, 180, 185</td>
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<td>Civil and Environmental Engineering (CEE):</td>
<td>156, 162, 171, 172, 176, 178</td>
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<td>Biological Sciences:</td>
<td>93, 94, 98, D105, E106, E167, E179, E179L, E186, E189, M133</td>
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<td>Criminology, Law and Society:</td>
<td>C148;</td>
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<td>Planning, Policy, and Design:</td>
<td>133, 138, 139;</td>
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<td>Public Health:</td>
<td>161</td>
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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