

Sample Program--- B.S. in Earth System Science
Concentration in Geosciences Education with Secondary Teaching Certification

FRESHMAN		Units		Units		Units
Fall			Winter		Spring	
Math 2A	4	Math 2B	4	Math 2D or 3A	4	
Chemistry 1A	4	Chemistry 1B	4	Chemistry 1C, 1LC	6	
EarthSS 1	4	Physics 20A	4	Gen. Ed.	4	
Elective	4	Phys Sci 5: Intro to Sci/Math Teaching	3	Elective	4	
	16		15		18	
SOPHOMORE						
Fall			Winter		Spring	
EarthSS 51	4	EarthSS 53	4	EarthSS 55	4	
P.S. 105: Middle School Sci/Math Teaching	3	Physics 3B, 3LB	5.5	Physics 3C, 3LC	5.5	
Chem 1LD	2	Chem/Physics 193: Research Methods	4	History 60/LPS 60: Making of Modern Science **	4	
Physics 3A	4			EarthSS 191	1	
	13		13.5		14.5	
JUNIOR						
Fall			Winter		Spring	
EarthSS 116	4	EarthSS Elective	4	EarthSS 114	4	
EarthSS 191	1	Approved Elective	4	EarthSS Elective	4	
Educ 55: Know & Learn Sci/Math	5	Educ 143AW: Classroom Interactions I	4	Educ 148: Complex Pedagogical Design	6	
Gen. Ed.	4	Elective	4			
	14		16		14	
SENIOR						
Fall			Winter		Spring	
EarthSS 140	4	EarthSS Elective	4	EarthSS Elective	4	
Gen. Ed.	4	Educ 109: Read & Writing in Sec. Classroom	4	Approved Elective	4	
Educ 143BW: Classroom Interactions II (I- UDW/VII)	4	Educ 158: Student Teaching in Math & Science	6	Education 158: Student Teaching in Math & Science	6	
	12		14		14	

Major Requirements

A. *Required Major Courses:* Complete the following courses: ESS 1 or ESS 3 or ESS 5, ESS 51, 53, 55, 114, 116, 191, 192, Math 2A-2B, Math 2D or Math 3A.

B. *Sequences and Labs:* One sequence and accompanying labs from: Chem 1A-B-C, Chem 1LC-LD or Chem H2A-2B-2C, Chem H2LA-H2LB-H2LC. One sequence and accompanying labs from Physics 3A-3B-3C, Physics 3LB-3LC or Physics 7C-7E, Physics 7LC.

C. *ESS Electives:* Seven electives from the following (at least four must be ESS courses): Bio Sci 93, 94, 98, Bio Sci D105, E106, E179, E197L, E186, E189, Bio Sci M133, Chem 51A, Chem 51B-51LB, Chem 51C-51LC, Chem H52A-H52LA, Chem H52B-H52LB, Chem H52C, Chem 131A-B-C, CRM/LAW C148, Engrree 156, 162, 171, 172, 176, 178, Engrmae 60, 91, 130A, 164, 185, Math 2D, 3D, 105A, 112a, 115, Physics 51A-B, 115A, 120, 134A, 137, 144, 145, PP&D 139, Pubhlth 161.

* All 4-unit upper-division ESS courses except ESS 114, ESS 116, ESS 190C, and ESS 198 or ESS H198 (ESS 199 or one quarter of H199A-B-C may count only once toward the elective requirement)

D. *Computing Skills:* One of the following may be counted: EECS 10, Engrmae 10, I&C Sci 31, Physics 53, or approved programming course.

** Also offered during Winter quarter

Cal Teach Courses

- **PS 5/BS 14** Intro to Science & Math Teaching (F,W,S)-
Fieldwork
- **PS 105/BS 101** Middle School Teaching (F,W)- Fieldwork
- **Chem 193/Physics 193/BS 108** Research Methods (W)
- **LPS 60/Hist 60** Making of Modern Science (science majors only W, S, Summer)

- **Math 8** (math majors only, S, summer)

- **ED 55** Knowing and Learning (F)

- **ED 143AW** Classroom Interactions I (W, ED 55 prereq)-
Fieldwork

- **ED 148** Complex Pedagogical Design (S, ED 143AW
prereq)-Fieldwork

- **ED 143BW** Classroom Interactions II (F, ED 148 prereq)-
Fieldwork

- **ED 109** Reading & Writing in Sec. Classroom (W, ED 148
prereq)

- **ED 158** Student Teaching I (W, ED 109 coreq, ED 143BW
prereq)- Fieldwork

- **ED 158** Student Teaching II (S, ED 158 I prereq)- Fieldwork