

Requirements for Earth Systems Science Concentration

Each of the main discipline areas is listed separately, along with the number of units required in each group.

In addition to the requirements below, students must **also demonstrate second-semester language proficiency.**

TIER ONE

Traditions and Culture (TRAD) (6 units):

COURSE	TITLE	UNITS
		3
		3

Individuals and Societies (INDV) (6 units):

COURSE	TITLE	UNITS
		3
		3

TIER TWO

Arts (3 units):

COURSE	TITLE	UNITS
		3

Individuals and Societies (INDV) (3 units):

COURSE	TITLE	UNITS
		3

Humanities (3 units):

COURSE	TITLE	UNITS
		3

* Note that one of the General Education requirements above must also be a course on non-western cultures or gender/race/class/ethnicity.

English (6 units):

COURSE	TITLE	UNITS
ENGL 101	First-Year Composition	3
ENGL 102	First-Year Composition	3

Math (6-8 units):

COURSE	TITLE	UNITS
MATH 124	Calculus I with Applications (P: MATH 120R, or MATH 110/112 and MATH 111, or an acceptable score on the UA Math Readiness Test)	5
or 125	Calculus I	3
MATH 129	Calculus II (P: MATH 124 or MATH 125)	3

Chemistry (8 units):

COURSE	TITLE	UNITS
CHEM 151	Fundamentals of Chemistry I (P: MATH 110 or an equivalent level of proficiency as demonstrated by Math Readiness Test)	4
CHEM 152	Fundamentals of Chemistry II (P: CHEM 151)	4

Physics (8 units):

COURSE	TITLE	UNITS
PHYS 102	Introductory Physics I (P: placement into college algebra or equivalent)	3
PHYS 181	Introductory Laboratory I (CR: PHYS 102 or PHYS 131)	1
PHYS 103	Introductory Physics II (P: PHYS 102)	3
PHYS 182	Introductory Laboratory II (P: PHYS 181; CR: PHYS 103 or PHYS 132)	1
or		
PHYS 131	Introductory Physics I (P: MATH 124/125; CR: MATH 129)	4
PHYS 132	Introductory Physics II (P: MATH 129, PHYS 131)	4

Computer Science (3 units) (GEOG 330, GIS course, or Stats)

COURSE	TITLE	UNITS
		3

Biology (4 units)

COURSE	TITLE	UNITS
ECOL 182R	Introductory Biology I (P: Level III placement on Math Readiness Test; CR: ECOL 182L)	3
ECOL 182L	Introductory Biology Laboratory I (CR: ECOL 181R)	1

Earth System Core (19 units):

COURSE	TITLE	UNITS
GEOS 251	Physical Geology (Fall and Spring)	4
GEOS 302	Principles Stratigraphy and Sedimentation (P: GEOS 251) (Fall only) (WP)	4
GEOS 478	Global Change (P: intro courses in biological or physical sciences) (Fall)	3
GEOS 342	Evolution of the Earth, Ocean, and Atmosphere (P: GEOS 251, CHEM 151, and MATH 124. CR: CHEM 152)	3
GEOS 414 or other	Field experience or internship	4

Earth System Distribution (11 units):

COURSE	TITLE	UNITS
GEOS 450 or HWR 431	Geomorphology (P: GEOS 251) (Spring) Hydrogeology (P: GEOS 251, MATH 129) (Fall)	4 4
GEOS 412A or HWR 450	Ocean Sciences (P: One year of science or consent of instructor) (Spring) Environmental Hydrology (CHEM 103A, CHEM 103B, MATH 129) (Spring)	4 3

One of the following:

GEOS 308	Paleontology (P: GEOS 251) (Fall only)	3
HWR 480	Isotope Tracers in Hydrogeology (P: CHEM 103B, GEOS 251) (Fall)	3
GEOS 322	Introduction to Geophysics (P: GEOS 251; CR: MATH 124) (Spring only)	3
ATMO 421C	Physical Climatology: Mechanisms of Change (P: MATH 129)	3

Advisor Approved Emphasis Courses (upper-division science and math) (16 units):

COURSE	TITLE	UNITS

OTHER GEOSCIENCES OPPORTUNITIES

Research experience (GEOS 399, 399, 492, etc.)

SESS club (Fridays, 12-1)

Preceptorship program (GEOS 397A)

2008-2009 Finish in Four! ACADEMIC PLAN
Geosciences: Earth Systems Science Concentration

THIS SAMPLE PROGRAM SHOULD NOT BE FOLLOWED WITHOUT CONSULTATION
 WITH THE DEPARTMENT ADVISOR.

Freshman Year

MATH 124 or 125	3 (5)	MATH 129	3
ENGL 101	3	ENGL 102	3
Tier 1 Trad	3	Tier 1 Trad	3
GEOS 251	<u>4</u>	ECOL 182R/182L	4
	13 (15)	Tier I Indv	<u>3</u>
			16

Sophomore Year

PHYS 131	4	PHYS 132	4
CHEM 151	4	CHEM 152	4
GEOS 302	4	GEOS 412A	4
GEOS 308	<u>3</u>	Tier 1 Indv	<u>3</u>
	15		15

Junior Year

GEOS 478	3	GEOS 450	4
Tier 2 Arts	3	GEOS Advisor-Approved	4
GEOS 342	3	Stats or Comp Sci	3
Free Electives	3	Free Electives	<u>3</u>
GEOS Advisor-Approved	<u>3</u>		14
	15		

Summer Session

GEOS 414 or internship	<u>4-6</u>
	4-6

Senior Year

GEOS Advisor-Approved	6	GEOS Advisor-Approved	3
Tier 2 Indv	3	Free Electives	8
Free Electives	<u>6</u>	Tier 2 Humanities	<u>3</u>
	15		14

TOTAL UNITS: 120

NOTES:

1. One course in a student's degree program must focus on non-western cultures or gender/race/ethnicity.
2. No minor is required for this program.
3. Students who do not demonstrate second-semester proficiency in a second language upon entrance into the U of A will be required to complete up to two courses (8-10 units) in a second language. This coursework would be best completed in the freshman year.