

B.S. in Geology: Earth System Science Specialization

Revised Mar 2009

Earth System Science is the study of the different components of the earth ... emphasizing **interactions** among the components and their implications for global change... and future sustainability of human life on earth. Graduates in this specialization will find many opportunities in research science, environmental consulting, government agencies, and graduate school.

FRESHMAN YEAR		
<i>First Semester</i>		
__BIOL 151	General Biology I	(3-0) 3
__MATH 123	Calculus I	(4-0) 4
__CHEM 112	General Chemistry	(3-0) 3
__CHEM 112L	Exper. Gen. Chemistry I	(0-1) 1
__GEOL 201	Physical Geology	(3-0) 3
__GEOL 201L	Physical Geology Lab	(0-1) 1
__IS 110	Explorations	<u>2</u>
		17

<i>Second Semester</i>		
__CHEM 114	General Chemistry II	(3-0) 3
__CHEM 114L	Exper. Gen. Chemistry II	(0-1) 1
__MATH 125	Calculus II	(4-0) 4
__ENGL 101	Composition I	(3-0) 3
__PHYS 211	Univ. Physics I	(3-0) 3
__	Gen Ed Humanities Elective ¹	<u>(3-0) 3</u>
		17

SOPHOMORE YEAR		
<i>First Semester</i>		
__ATM 301	Intro Atmospheric Sci	(3-0) 3
__GEOL 331	Stratig. and Sedimentation	(2-1) 3
__MATH 225	Calculus III	(4-0) 4
__PHYS 213	Univ. Physics II	(3-0) 3
__	Gen Ed Social Science Elective ¹	<u>(3-0) 3</u>
		16

<i>Second Semester</i>		
__ENGL 279	Technical Communications I	(3-0) 3
__GEOL 212	Mineralogy and Crystall.	(2-1) 3
__GEOE 211	Erth Sys. Eng. Anal.	(1-1) 2
__PE	Physical Education	1
__	Gen Ed Humanities/Social Science Elective ¹	<u>6</u>
		15

JUNIOR YEAR

<i>First Semester</i>		
__ENGL 289	Technical Communications II ¹	3
__GEOL 341	Elementary Petrology	(2-1) 3
__GEOL 316	Intro. to GIS	(2-1) 3
__BIOL 311	Principles of Ecology	(3-0) 3
__GEOL 321	Search for Our Past	(3-0) 3
__	Humanities/Social Science Elective	<u>1</u>
		16

Suggested electives

This list is not intended to be restrictive. Many other courses are available.

BIOL 330 Environmental Science
 GEOE 451 Economic Geology
 ATM 402 Global Carbon Cycle
 ATM 403 Biogeochemistry
 MATH 321 Differential Equations

CHEM 316 Fundamentals of Organic Chemistry
 GEOE 475 Ground Water
 GEOL 361 Oceanography
 GEOL 419 Advanced Geospatial Analysis
 MATH 441 Engineering Statistics

List GE Hum Electives (6 cr)

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 _____ ()

List GE Soc Sci Electives (6 cr)

_____ ()
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List Hum/SS Electives (4 cr)

_____ ()
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List Program Electives (7 cr)

_____ ()
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List Free Electives (7 cr)

_____ ()
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<i>Second Semester</i>		
__GEOE 322	Structural Geology	(2-1) 3
__ATM 406	Global Environmental Change	(2-1) 3
__	Program electives ²	3
__	Free electives	4
__PE	Physical Education	<u>1</u>
		14

<i>Summer</i>		
__GEOL 410	Field Geology	<u>(0-2) 6</u>
		6

SENIOR YEAR		
<i>First Semester</i>		
__GEOL 464	Senior Research I	(1-0) 1
__GEOL 351	Earth Resources & Environment	(3-0) 3
__GEOL 420	Intro to Remote Sensing	(3-0) 3
__	Program Electives	2
__	Free Electives	3
__	Humanities/Social Science elective	<u>3</u>
		15

<i>Second Semester</i>		
__GEOL 465	Senior Research II ³	3
__GEOL 417	GIS Database Development	(3-0) 3
__GEOE 482	Applied Geomorph* *	(2-1) 3
__	Program Electives	<u>3</u>
		12

128 semester credits are required.

**Courses offered alternate years.

Critical sequence, must be taken in the specified semester.

Curriculum Notes

¹ Students must complete 27 credits of the general education core in their first 64 credit hours, including 6 credits of science, 3 cr math, 6 cr English/Technical Communication, 6 cr humanities, and 6 cr social science. ENGL 289 yields an addition 3 general education credits, for a total of 30.

² A program elective is any 300-400 level course with a prefix of GEOL, GEOE, ATM, BIOL, CHEM, or MATH. MATH 441 is particularly recommended.

³ Under exceptional circumstances, a student may petition the department chair to substitute a program elective for senior research.

Additional work in mathematics and statistics is encouraged, especially for students planning to go to graduate school.