

# Geology (GEOL)

The Department of Geosciences offers the Bachelor of Science degree in geology and the Bachelor of Science degree in earth science (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences/earthsciences>). It is emphasized that students wishing to become practicing professional geologists should hold the Bachelor of Science degree in geology at a minimum. It is further recognized that practicing professional geologists typically hold a Master of Science degree. The education of students pursuing the Bachelor of Science in earth science degree should reflect general education in the liberal arts with emphasis in geology.

The goal of the program leading to the Bachelor of Science degree in geology is to provide students with a broad spectrum of the various subdisciplines of geology, while at the same time honoring an emphasis in the traditional areas of mineralogy, igneous, metamorphic and sedimentary petrology, structural geology and stratigraphic principles. This curriculum will prepare students to enter graduate programs without deficiencies at the University of Arkansas or other established programs.

Along with the normal degree program, the department offers a B.S. in geology with a concentration in geophysics.

For requirements for the M.S. degree in geology, see the *Graduate School Catalog*.

## B.S. in Geology

### Requirements for a Major in Geology leading to the B.S. Degree:

In addition to the University Core requirements (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore>) and the Fulbright College of Arts and Sciences Graduation Requirements (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>), the following course requirements must be met. Bolded courses from the list below may be applied to portions of the University Core requirements.

CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) 4  
& CHEM 1101L and University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)

CHEM 1123 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) 4  
& CHEM 1121L and University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)

Select one of the following: 8

PHYS 2013 College Physics I (ACTS Equivalency = PHYS & PHYS 2011L 2014 Lecture) 4  
& PHYS 2033 and College Physics I Laboratory (ACTS & PHYS 2031L Equivalency = PHYS 2014 Lab)  
and College Physics II (ACTS Equivalency = PHYS 2024 Lecture)  
and College Physics II Laboratory (ACTS Equivalency = PHYS 2024 Lab)

or

PHYS 2054 University Physics I (ACTS Equivalency = PHYS & PHYS 2074 2034) 4  
and University Physics II (ACTS Equivalency = PHYS 2044 Lecture)

MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) 4

MATH 2564 Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa) 4

Six hours in a single world language at the 1013 Elementary II level or higher. <sup>1</sup> 6

Three hours of upper-level science as approved by adviser 3

A minimum of 40 semester hours of GEOS courses to include:

GEOS 1113 General Geology (ACTS Equivalency = GEOL 1114 Lecture) 2-4  
& GEOS 1111L and General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab)  
or GEOS 3052 Geology for Engineers

GEOS 1133 Earth Science (ACTS Equivalency = GEOL 1124 & GEOS 1131L Lecture) 4  
and Earth Science Laboratory (ACTS Equivalency = GEOL 1124 Lab)

GEOS 2313 Mineralogy and Petrology 3

GEOS 3383 Principles of Landscape Evolution 3

GEOS 3413 Sedimentary Rocks & Fossils 3

GEOS 3514 Structural Geology 4

GEOS 4063 Principles of Geochemistry 3  
or GEOS 4433 Geophysics

GEOS 4223 Stratigraphy and Sedimentation 3

GEOS 4686 Geology Field Camp 6

GEOS 4873 Geological Data Analysis 3

GEOS 4924 Earth System History (ACTS Equivalency = PHSC 1104) 4

And an additional 9 hours of geology courses selected from GEOS courses numbered 3000 or higher. 9

Total Hours 80-82

<sup>1</sup> World language courses taken are dependent on placement level in sequence.

**Writing Requirement:** A scholarly writing assignment will be included in all geoscience courses numbered 2000 and above. Those papers submitted in geoscience courses 3000 and above will fulfill the Fulbright College writing requirement. The college writing requirement may also be met by the completion of an honors thesis.

## Geology B.S. Nine-Semester Degree Program

Students wishing to follow the nine-semester degree plan should see the University Core requirements (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore>). Core requirement hours may vary by individual, based on placement and previous credit granted. Once all core requirements are met, students may substitute a three-hour (or more) general elective in place of a core area.

This program does require a summer field camp after the junior year.

First Year	Units		
	Fall	Spring	Summer
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013)	3		
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) <sup>1</sup>	4		

GEOS 1113 General Geology (ACTS Equivalency = GEOL 1114 Lecture) & GEOS 1111L General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab) or GEOS 3052 Geology for Engineers	4		
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) & CHEM 1101L University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)	4		
ENGL 1023 Composition II (ACTS Equivalency = ENGL 1023)	3		
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa) <sup>1</sup>	4		
CHEM 1123 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) & CHEM 1121L University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)	4		
GEOS 1133 Earth Science (ACTS Equivalency = GEOL 1124 Lecture) & GEOS 1131L Earth Science Laboratory (ACTS Equivalency = GEOL 1124 Lab)	4		
Year Total:	15	15	

<b>Second Year</b>		<b>Units</b>	
	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>
GEOS 2313 Mineralogy and Petrology <sup>1</sup>	3		
Select one of the following:	4		
PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034)			
PHYS 2013 College Physics I (ACTS Equivalency = PHYS 2014 Lecture) & PHYS 2011L College Physics I Laboratory (ACTS Equivalency = PHYS 2014 Lab)			
University/State Core US History Course	3		
University/State Core Social Science Requirement	3		
1013 Elementary II world language course (or higher, depending on placement)	3		
GEOS 3413 Sedimentary Rocks & Fossils <sup>1,2</sup>		3	
Select one of the following:		4	
PHYS 2074 University Physics II (ACTS Equivalency = PHYS 2044 Lecture)			

PHYS 2033 College Physics II (ACTS Equivalency = PHYS 2024 Lecture) & PHYS 2031L College Physics II Laboratory (ACTS Equivalency = PHYS 2024 Lab)			
University/State Core Fine Arts or Humanities requirement			3
University/State Core Social Science requirement			3
2003 Intermediate I world language course (or higher level)			3
Year Total:	16	16	

<b>Third Year</b>		<b>Units</b>		
	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>	
GEOS 3383 Principles of Landscape Evolution <sup>1,2</sup>	3			
University/State Core Humanities or Fine Arts requirement (as needed)	3			
University/State Core Social Science requirement	3			
General Elective	6			
GEOS 3514 Structural Geology <sup>1,2</sup>			4	
GEOS 4223 Stratigraphy and Sedimentation <sup>1,2</sup>			3	
GEOS 4873 Geological Data Analysis <sup>1,2</sup>			3	
General Electives			3	
GEOS 4686 Geology Field Camp				6
Year Total:	15	13		6

<b>Fourth Year</b>		<b>Units</b>		
	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>	
GEOS 4063 Principles of Geochemistry <sup>1,2</sup> or GEOS 4433 Geophysics	3			
GEOS electives numbered 3000 or above <sup>1,2</sup>	6			
General Elective	3			
GEOS 4924 Earth System History (ACTS Equivalency = PHSC 1104) <sup>1,2</sup>			4	
GEOS electives numbered 3000 or above <sup>1,2</sup>			6	
General Electives (students who completed GEOS 1113/GEOS 1111L will need to complete only 2 hours of general electives; students who completed GEOS 3052 will need to complete 4 hours)			2	
Year Total:	12	12		

<sup>1</sup> Meets 40-hour advanced credit hour requirement. See College Academic Regulations (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>).

<sup>2</sup> Meets 24-hour rule (24 hours of 3000-4000 level courses in Fulbright College), in addition to meeting the 40-hour rule. See College Academic Regulations (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>).

## B.S. in Geology

### Requirements for a Major in Geology with a concentration

**in geophysics leading to a B.S. degree:** Completion of these requirements will result in a double major in both geology and physics. In addition to the University Core requirements (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore>) and the Fulbright College of Arts and Sciences Graduation Requirements (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>), the following course requirements must be met.

CHEM 1103 & CHEM 1101L	University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) and University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)	4
CHEM 1123 & CHEM 1121L	University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) and University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)	4
PHYS 2054	University Physics I (ACTS Equivalency = PHYS 2034)	4
PHYS 2074	University Physics II (ACTS Equivalency = PHYS 2044 Lecture)	4
PHYS 2094	University Physics III	4
MATH 2554	Calculus I (ACTS Equivalency = MATH 2405)	4
MATH 2564	Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa)	4
MATH 2574	Calculus III (ACTS Equivalency = MATH 2603) (Sp, Su, Fa)	4
MATH 2584	Elementary Differential Equations (Sp, Su, Fa)	4
A minimum of 45 semester hours of GEOS and PHYS courses to include:		
GEOS 1113 & GEOS 1111L	General Geology (ACTS Equivalency = GEOL 1114 Lecture) and General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab)	2-4
or GEOS 3052 Geology for Engineers		
GEOS 2313	Mineralogy and Petrology	3
GEOS 3383	Principles of Landscape Evolution	3
GEOS 3413	Sedimentary Rocks & Fossils	3
GEOS 3514	Structural Geology	4
GEOS 4223	Stratigraphy and Sedimentation	3
GEOS 4433	Geophysics	3
GEOS 4924	Earth System History (ACTS Equivalency = PHSC 1104)	4
GEOS 4686	Geology Field Camp	6
PHYS 3113	Analytical Mechanics	3
PHYS 3453	Electromagnetic Theory I	3
PHYS 3613	Modern Physics	3

PHYS 4073	Introduction to Quantum Mechanics	3
PHYS 4991	Physics Senior Seminar	1
Total Hours		80-82

**Writing Requirement:** A scholarly writing assignment will be included in all geoscience courses numbered 2000 and above. Those papers submitted in geoscience courses 3000 and above will fulfill the Fulbright College writing requirement. The college writing requirement may also be met by the completion of an honors thesis.

## Geology B.S. with Geophysics Concentration Nine-Semester Degree Program

Students wishing to follow the nine-semester degree plan should see the University Core requirements (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore>). Core requirement hours may vary by individual, based on placement and previous credit granted. Once all core requirements are met, students may substitute a three-hour (or more) general elective in place of a core area.

	Units		
	Fall	Spring	Summer
ENGL 1013 Composition I (ACTS Equivalency = ENGL 1013)	3		
MATH 2554 Calculus I (ACTS Equivalency = MATH 2405) <sup>1</sup>	4		
PHYS 2054 University Physics I (ACTS Equivalency = PHYS 2034) <sup>1</sup>	4		
CHEM 1103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) & CHEM 1101L University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)	4		
ENGL 1023 Composition II (ACTS Equivalency = ENGL 1023)			3
PHYS 2074 University Physics II (ACTS Equivalency = PHYS 2044 Lecture) <sup>1</sup>			4
MATH 2564 Calculus II (ACTS Equivalency = MATH 2505) (Sp, Su, Fa) <sup>1</sup>			4
GEOS 1113 General Geology (ACTS Equivalency = GEOL 1114 Lecture) & GEOS 1111L General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab)			4
Year Total:	15	15	

	Units		
	Fall	Spring	Summer
PHYS 2094 University Physics III <sup>1</sup>	4		
MATH 2584 Elementary Differential Equations (Sp, Su, Fa) <sup>1</sup>	4		

CHEM 1123 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) & CHEM 1121L University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)	4		
GEOS 2313 Mineralogy and Petrology	3		
PHYS 3613 Modern Physics <sup>1,2</sup>		3	
MATH 2574 Calculus III (ACTS Equivalency = MATH 2603) (Sp, Su, Fa) <sup>1</sup>			4
GEOS 3413 Sedimentary Rocks & Fossils <sup>1, 2</sup>		3	
University Core Social Science Requirement		3	
General Elective			1
Year Total:	15		14

Third Year	Units		
	Fall	Spring	Summer
PHYS 3113 Analytical Mechanics <sup>1,2</sup>	3		
GEOS 4223 Stratigraphy and Sedimentation <sup>1, 2</sup>	3		
GEOS 3383 Principles of Landscape Evolution <sup>1, 2</sup>	3		
University Core History Requirement	3		
University Core Social Science Requirement	3		
GEOS 3514 Structural Geology <sup>1, 2</sup>		4	
University Core Social Science Requirement		3	
General Electives		6	
GEOS 4686 Geology Field Camp			6
Year Total:	15	13	6

Fourth Year	Units		
	Fall	Spring	Summer
PHYS 4073 Introduction to Quantum Mechanics <sup>1,2</sup>	3		
GEOS 4433 Geophysics <sup>1, 2</sup>	3		
University Core Humanities or Fine Arts Requirement (as needed)	3		
Electives	3		
PHYS 3453 Electromagnetic Theory <sup>1,2</sup>		3	
PHYS 4991 Physics Senior Seminar <sup>1,2</sup>		1	
GEOS 4924 Earth System History (ACTS Equivalency = PHSC 1104) <sup>1, 2</sup>		4	
University Core Fine Arts or Humanities Requirement (as needed)		3	
General Electives		4	
Year Total:	12	15	

Total Units in Sequence:

120

<sup>1</sup> Meets 40-hour advanced credit hour requirement. See College Academic Regulations (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>).

<sup>2</sup> Meets 24-hour rule (24 hours of 3000-4000 level courses in Fulbright College), in addition to meeting the 40-hour rule. See College Academic Regulations (<http://catalog.uark.edu/undergraduatecatalog/collegesandschools/jwilliamfulbrightcollegeofartsandsciences>).

## Minor in Geology

**Requirements for a Minor in Geology:** A minor in geology shall be awarded upon completion of the following course work:

GEOS 1113 & GEOS 1111L	General Geology (ACTS Equivalency = GEOL 1114 Lecture) and General Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab) or GEOS 3052 Geology for Engineers	2-4
GEOS 1133 & GEOS 1131L	Earth Science (ACTS Equivalency = GEOL 1124 Lecture) and Earth Science Laboratory (ACTS Equivalency = GEOL 1124 Lab)	4
GEOS 2313	Mineralogy and Petrology	3
Two GEOS Courses at the 3000-level		6
One GEOS Course at the 4000-level		3
Total Hours		18-20

Students are advised to consult with a geology faculty member to develop the course work program that best complements their major area of study.

**Requirements for Departmental Honors in Geology:** The Departmental Honors Program in Geology provides upper-division undergraduate students with an opportunity to formally participate in geologic research activities. Honors candidates carry out independent study and research under the guidance of the geology faculty. Outstanding student achievement will be recognized by awarding the distinction "Geology Scholar *Cum Laude*" at graduation. Higher degree distinctions may be awarded to truly outstanding students based upon the whole of their academic program and quality of honors research.

Honors candidates in geology must do the following:

1. Satisfy departmental and college requirements for a bachelor's degree with honors,
2. Become a candidate no later than the second semester of their junior year,
3. Enroll in six hours of honors research GEOS 3901, GEOS 3911, GEOS 4972H, GEOS 4982H,
4. Take 12 hours in Honors Studies, which may include 6 hours of thesis,
5. Complete junior and senior honors courses GEOS 3901, GEOS 3911, GEOS 4972H, GEOS 4982H, and
6. Achieve a cumulative grade-point average of 3.30 in geology courses.

**Geology (B.S.) Teacher Licensure in Life/Earth Science or Physical/Earth Science Requirements:** Students wanting to teach science in middle or secondary school should consult with an adviser in the College of Education and Health Professions.