

# Geology

## Faculty/Staff

Arthur Schwarz, Chair.

Adjunct: Art Chadwick

## Program

Southwestern Adventist University, in conjunction with Loma Linda University, offers a geology program with major emphasis in sedimentology, stratigraphy and paleontology. The freshman and sophomore years are taken on the campus of Southwestern Adventist University, while the junior and senior years are taken on the campus of Loma Linda University.

# Geology Degrees and Certificates

# Geology Transfer Program

Freshman and sophomore sample schedule for transfer to Loma Linda University.

## Freshman Year

This major requires three elective hours.

Item #	Title	credits
	BIOL 111, or BIOL 112	4
	CHEM 111, CHEM 112	8
ENGL 121	Freshman Composition	3
	GEOL 111, GEOL 112	8
MATH 180	Precalculus	4

## Summer

Item #	Title	credits
GEOL 240	The Dinosaurs	4

## Sophomore Year

This major requires two elective hours.

Item #	Title	credits
CHEM 310	Environmental and Geological Chemistry	4
ENGL 220	Research Writing	3
GEOL 220	Mineralogy	4
GEOL 320	Stratigraphy and Sedimentary Petrology and Petrography	4
	PHYS 121, PHYS 122	8
KINA 111	Physical Fitness	1
	Religion Electives for Two Year Program	6
	History Electives for Two Year Program	3
	<b>Total credits:</b>	<b>69</b>

## Category Descriptions

### BIOL 111, or BIOL 112

Credits: 4

Item #	Title	credits
BIOL 111	General Biology I	4
BIOL 112	General Biology II	4

### CHEM 111, CHEM 112

Credits: 8

Item #	Title	credits
CHEM 111	General Chemistry I	4
CHEM 112	General Chemistry II	4

## GEOL 111, GEOL 112

Credits: 8

<b>Item #</b>	<b>Title</b>	<b>credits</b>
GEOL 111	Physical Geology	4
GEOL 112	Principles of Historical Geology and Paleontology	4

## PHYS 121, PHYS 122

Credits: 8

<b>Item #</b>	<b>Title</b>	<b>credits</b>
PHYS 121	General Physics I	4
PHYS 122	General Physics II	4

## Religion Electives for Two Year Program

Credits: 6

<b>Item #</b>	<b>Title</b>	<b>credits</b>
RELB 211	Life and Teachings of Jesus	3
RELB 322	Daniel	3
RELB 323	Revelation	3
RELB 328	Survey of the Old Testament	3
RELB 335	Introduction to the New Testament	3
RELH 230	History of the Seventh-day Adventist Church	3
RELH 233	Biblical Archaeology	3
RELH 314	Origin & Development of the Bible	3
RELH 320	Ellen White Writings	3
	RELH 331 or RELH 332	3
RELT 101	Christian Beliefs	3
RELT 212	Introduction to Christian Ethics	3
RELT 325	World Religions	3
RELT 327	Integrated Wellness Connections	3
RELT 360	Philosophy and the Christian Worldview	3
RELT 410	Biblical Conflict Resolution	3
RELT 419	Philosophy of Science	3

## History Electives for Two Year Program

Credits: 3

## **Geology Classes**

### GEOL 111: Physical Geology

A study of the earth, its composition, and the forces that control and change it. Laboratory includes recognition of common rocks and minerals and training in use of geologic maps and interpreting the physical processes recorded in the earth's surface. Laboratory includes a four-day field trip.

**Credits:** 4

**Lab Hours:** 3

**Lecture Hours:** 3

**Program:** [Geology](#)

**Semester Offered:** Periodically

## GEOL 112: Principles of Historical Geology and Paleontology

A study of the disciplines of historical geology and invertebrate paleontology. Emphasis will be on the tools of historical interpretation. Laboratory will cover the invertebrate and vertebrate fossil groups systematically. May apply toward biology major by petition. Laboratory includes a four-day field trip. Field trip fee.

**Credits:** 4

**Lab Hours:** 3

**Lecture Hours:** 3

**Program:** [Geology](#)

**Semester Offered:** Periodically

## GEOL 220: Mineralogy

Introduction to crystallography; crystal optics; structure, composition, properties, stability and geological occurrences of minerals; and mineral identification. Student will be familiar with laboratory techniques for mineral identification, including x-ray, thin-section, and microprobe analyses.

**Credits:** 4

**Lab Hours:** 3

**Lecture Hours:** 3

**Prerequisites:**

[GEOL 112](#)

[CHEM 112](#)

**Program:** [Geology](#)

**Semester Offered:** Spring even years

## GEOL 240: The Dinosaurs

A field course covering the taxonomic relationships, environment and fossil record of the dinosaurs. Includes extensive training in field methods of vertebrate paleontology and participation in the dinosaur research project. Taught for four weeks in Wyoming. Field fee covering the cost of transportation, room and board.

**Credits:** 4

**Lab Hours:** 1

**Lecture Hours:** 3

**Prerequisites:**

GEOL 112 or permission of instructor

**Program:** [Geology](#)

**Semester Offered:** Summer

## GEOL 298: Individual Study Topics

A study in an area of student interest under the direction of a staff member. This study may involve data collection, or library work and will involve a written report. Content and method of study must be arranged prior to registration. May be repeated for a total of 3 credits.

**Credits:** 1-3

**Prerequisites:**

GEOL 111, 112, and approval of instructor

**Program:** [Geology](#)

# GEOL 320: Stratigraphy and Sedimentary Petrology and Petrography

An introduction to the description, origin, and historical interpretation of stratified rocks.

**Credits:** 4

**Prerequisites:**

GEOL 111

GEOL 112

**Program:** Geology

**Semester Offered:** Periodically

## GEOL 330: Summer Field Geology

Stratigraphic and structural mapping of sedimentary and related igneous and metamorphic rocks and analysis of data collected in the field. Taught for four weeks in Wyoming in connection with the Dinosaur course. Field fee covering the cost of transportation, room and board.

**Credits:** 4

**Lab Hours:** 1

**Lecture Hours:** 3

**Prerequisites:**

GEOL 320

**Program:** Geology

**Semester Offered:** Summer

## GEOL 380: Research Methods

A general introduction to the techniques and methodologies of scientific literature and presentations based upon library and on-line research. Each student will select a specific topic for research, prepare a paper, and make an oral presentation based on that work. The student will learn scientific methodology, basic statistical skills, and critical data analysis.

**Credits:** 2

**Prerequisites:**

GEOL 111, 112 or any entry level science sequence

**Program:** Geology

**Semester Offered:** Fall

## GEOL 419: Philosophy of Science

A study of the philosophies and methodologies of science. Includes a review of the history of scientific and religious thought and the role each has played in the development of modern theories of origin. (Also taught as RELT or BIOL 419.)

**Credits:** 3

**Program:** Geology

**Semester Offered:** Spring

## GEOL 480: Research in Geology

and approval of instructor A supervised research experience involving the development of a research proposal, data collection, and a written paper. Research proposal may be developed in GEOL 380. May be repeated for a total of 5 credits.

**Credits:** 1-3

**Prerequisites:**

GEOL 380

and approval of instructor

**Program:** Geology**Semester Offered:** Periodically

## GEOL 481: Senior Thesis

This course is designed to permit the student to develop a publishable-quality research paper. Instruction consists of writing techniques and guidance in the completion of this project. Students will give several oral progress-reports, a final presentation at the Honors Research Symposium, and a completed Senior Thesis.

**Credits:** 1**Prerequisites:**

GEOL 480

**Program:** Geology**Semester Offered:** Spring

## GEOL 498: Individual Study Topics

Special study may be pursued beyond completed course work under the direction of a staff member. This study may involve data collection or library work and will involve a written report. Content and method of study must be arranged prior to registration. May be repeated for a total of 3 credits.

**Credits:** 1-3**Prerequisites:**

GEOL 111, 112; two upper division courses, and permission of the instructor

**Program:** Geology