Geology

Art Chadwick, Chair

AIMS OF THE GEOLOGY 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.

FRESHMAN YEAR
GEOL 111, 112 Physical Geology & Historical Geology .......... 8
BIOL 111, 112 General Biology ........................................... 8
CHEM 111, 112 General Chemistry ...................................... 8
MATH 121 Precalculus ....................................................... 3
ENGL 121 Freshman Composition ........................................ 3
Elective ............................................................................ 3
TOTAL .............................................................................. 33

SUMMER
GEOL 240 The Dinosaurs .................................................... 4

SOPHOMORE YEAR
GEOL 220 Mineralogy ........................................................ 4
PHYS 111, 112 General Physics .......................................... 8
CHEM 310 Environmental & Geological Chemistry .......... 4
ENGL 220 Research Writing .............................................. 3
PEAC Elective .................................................................. 1
RLGN Elective .................................................................. 3
HIST Elective ................................................................... 3
Elective ............................................................................ 6
TOTAL .............................................................................. 32

GEOL 111 Physical Geology ................................................ 4
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. 3 Lec 3 Lab. Field trip fee. (Offered periodically)

GEOL 112 Principles of Historical Geology and Paleontology 4
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. 3 Lec 3 Lab. Field trip fee. (Offered periodically)

GEOL 220 Mineralogy ........................................................ 4
Prerequisite: GEOL 112, 112, CHEM 112
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. 3 Lec 3 Lab. (Spring, even years.)

GEOL 240 The Dinosaurs .................................................... 4
Prerequisite: GEOL 112 or permission of instructor.
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. 3 Lec 1 Lab (Summer)

GEOL 291 Selected Topics .................................................. 1-3
Prerequisite: GEOL 111, 112, and approval of instructor.
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.

GEOL 320 Stratigraphy and Sedimentary Petrology and Petrography .................................................. 4
Prerequisite: GEOL 111 and 112.
An introduction to the description, origin, and historical interpretation of stratified rocks. (Offered periodically)

GEOL 330 Summer Field Geology ........................................ 4
Prerequisite: GEOL 320
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. 3 Lec 1 Lab (Summer)

GEOL 380 Research Methods .............................................. 2
Prerequisite: GEOL 111, 112 or any entry level science sequence.
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. (Fall)

GEOL 419 Philosophy of Science ....................................... 3
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 RLGN or BIOL 419.) This course meets the upper division writing component for senior year English and supports SWAU's Quality Enhancement Plan. (Spring)

GEOL 480 Research in Geology ......................................... 1-3
Prerequisite: GEOL 380 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. (Offered periodically.)

GEOL 481 Senior Thesis .................................................... 1
Prerequisite: GEOL 480
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. This course meets the upper division writing component for senior year English and supports SWAU's Quality Enhancement Plan. (Spring)

GEOL 491 Selected Topics .................................................. 1-3
Prerequisite: GEOL 111, 112; two upper division courses, and permission of the instructor.
Special study may be pursued by completed coursework 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.