

OVERVIEW OF GEOBIOLOGY BS MAJOR

Overview of Program Goals

Geobiology is the interdisciplinary study of the Earth and its biosphere. It embraces the history of life and its interactions with the earth over geologic time; it also includes study of interactions between living organisms and physical and chemical processes in the modern environment on Earth, and possibly elsewhere in the universe. Thus, geobiology encompasses the fields of paleobiology and paleontology, biogeochemistry, geomicrobiology and astrobiology. The degree program provides students with a strong background in general science and especially in Geosciences and Biology, with core selections from both disciplines. Students gain practical field experience in the study of the physical environment and ecological properties. The senior thesis provides students with hands-on research experience, as well as an emphasis on data synthesis and the written expression of scientific observations and ideas. Students will be well prepared for advanced studies in this emerging discipline, and for careers in the environmental sciences. Geobiology is critical to the study of environmental quality, global change and environmental-human health interactions, all of which have profound importance in legal, economic and policy arenas. For the GEOBI BS degree in Geosciences, a minimum of 121 credits is required

REQUIREMENTS FOR THE GEOBIOLOGY BS MAJOR

The B.S. degree in Geobiology requires a minimum of 121 credits. The following are included in Requirements for the Major:

- 21 (out of 45) credits for General Education
- A First-Year Seminar
- Requirements for writing across the curriculum

General Education (24 credits) requirements include Arts (GA), Humanities (GH), and Social Sciences (GS) (6 credits each), US Cultures and International Cultures (US/IL: 6 credits) and Health and Physical Activity (GHS: 3 credits). Gen. Ed. courses in Writing and Speaking (GWS: 6 credits), Natural Sciences (GN: 9 cr.) and Quantification (GQ: 6 cr.) are filled in the major.

Required Courses for the Geobiology BS—general option (31)

ENGL 15 Rhetoric and composition or ENGL 30 Honors freshman composition

ENGL 202C Technical writing or CAS 100 Effective Speech

EMSC 100S EMS Freshman seminar (students who transfer to EMS and have not taken EMSC 100S, must complete both ENGL 202C and CAS 100)

MATH 140, 141 Calculus with analytical geometry

CHEM 110, 111 Chemical principles

CHEM 112, 113 Experimental chemistry

PHYS 211, 213 General Physics

Required Geoscience and Biology Courses

Required Biology Courses

BIOL 110 Basic concepts and biodiversity

BIOL 220W Populations and communities

Required Geosciences Courses

GEO SC 001* Physical Geology

GEO SC 201 Earth Materials

GEO SC 204 Geobiology

GEO SC 310 Earth History

*GEOSC 20 may be substituted for GEOSC 001 for students who completed it prior to joining the major.

Additional Core Coursework

4 credits from:

GEOSC 202 Chemical processes

GEOSC 203 Physical processes

3 or 4 credits from:

BIOL 230W Molecules and cells

BIOL 240W Function and development of organisms

MICRB 201 Introductory Microbiology

Field Experience

3 credits from:

GEOSC 472a Field Geology

BIOL 444 Field ecology of the Central Appalachian Highlands

Senior Thesis

GEOSC 494W Senior Thesis

GEOSC 496 Thesis research

Advanced Geobiology Electives (12)

Select 12 credits from the following list. A minimum of 3 credits must be selected from each category.

Evolution, Paleobiology and Geology

GEOSC 465 Structural Geology

GEOSC 424 Paleontology

GEOSC 439 Stratigraphy

GEOSC 420 Paleobotany

GEOSC 425 Micropaleontology

GEOSC 474 Astrobiology

ANTH 401 Human Evolution: the material record

BIOL 428 Population Genetics

BIOL 405 Molecular evolution

Biogeochemistry

GEOSC 452 Hydrogeology

GEOSC 419 Organic Geochemistry of Natural Waters and Sediments

GEOSC 412 Water resources

GEOSC 413W Techniques in geochemistry

GEOSC 410 Marine biogeochemistry

GEOSC 475W Global Biogeochemical Cycles

BIOL 435 Ecology of Lakes and Streams

BIOL 406 Symbiosis

SOILS 412W Soil Ecology

BIOL 419 Ecological and environmental problem solving

Supporting Courses (17-18)

Select 17-18 credits supportive of the student's interests. Students may apply 6 credits of ROTC.

b. The following courses require a grade of C or better, as specified by Senate Policy 82-44:

BIOL 110 (4 cr.)

BIOL 220W (4 cr.)

GEOSC 204 (4 cr.)

GEOSC 310 (4 cr.)