

## GEOLOGY AND GEOGRAPHY

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Geography and Geology courses provide the scientific foundation for the investigation and understanding of the physical and cultural environments of the Earth and their interactions. Geography provides the basis for measurement of the physical world, the role of humankind as inhabitant of the dynamic Earth, and the spatial variation of human activity. Geology provides the basis for investigation and understanding of the Earth itself.

The curriculum of the Department of Geology and Geography is designed to fulfill multiple needs of students in learning about this dynamic environment. The main purposes are to provide 1) courses that help all students fulfill General Education requirements; 2) courses for students seeking North Carolina Teacher Licensure in Science and Middle Grades Education; and 3) courses to broaden the knowledge of students majoring in other disciplines. Courses in Geography can be used to meet General Education requirements in Social Sciences. Courses in Geology can be used to meet General Education requirements in Natural Sciences and Mathematics.

Although the department does not offer a major in either geology or geography, students in any major can minor in these fields. Students seeking a baccalaureate degree in Elementary Education, Special Education, or Physical Education may choose an academic concentration in either Geology or Geography.

### BACHELOR OF SCIENCE IN SCIENCE EDUCATION (9-12)

Coordinator: Rachel McBroom, Biology Dept.

Upon successful completion of the program of study in Science Education and related requirements, graduates are eligible for a Standard Professional I license to teach in the State of North Carolina. For a more detailed description, including the program standards and goals and objectives, turn to Undergraduate Licensure Programs in the School of Education section of this catalog.

Course Requirements	Sem. Hrs.
<b>Freshman Seminar and General Education</b>	45(33)*
<b>Specialty Area</b> —Select one area of concentration (*12 semester hours of Natural Sciences and Mathematics may count toward General Ed)	
<b>Biology Concentration:</b> See Biology Dept. for listing of course requirements.	62
<b>Chemistry Concentration:</b> See Biology Dept. for listing of course requirements.	62
<b>Earth Science Concentration:</b> See Biology Dept. for listing of course requirements.	62
<b>Physics Concentration:</b> See Biology Dept. for listing of course requirements.	62
<b>Professional Studies</b> EDN 3020, 3120, 3500, 4190, SED 3000	15
<b>Content Pedagogy</b> SCE 3000, 3010, 4000, 4490 CSC 4050	18
<b>Biology, Chemistry, Earth Science, or Physics Concentration Total:</b>	128

NOTE: Students who desire teacher licensure in Science Education should declare the major as soon as possible in their college career. Consultation with the Coordinator of Undergraduate Science Education in the Department of Biology prior to registering for General Education courses is strongly recommended.

## LICENSURE IN SCIENCE FOR MIDDLE GRADES EDUCATION (6-9)

Students majoring in Middle Grades Education (6-9) are required to complete one teaching specialty area and one academic/professional concentration. For a detailed description of the program of study in Middle Grades Education, including the program standards and goals and objectives, turn to Undergraduate Licensure Programs in the School of Education section of this catalog.

Students majoring in Middle Grades Education (6-9) with a Science teaching specialty area should consult with the Coordinator of Undergraduate Science Education in the Department of Biology and the Middle Grades Program Coordinator in the School of Education. For a more detailed description, including the program standards and goals and objectives, turn to Undergraduate Licensure Programs in the School of Education section of this catalog.

<b>Requirements for Licensure in Science for a B.S. in Middle Grades Education (6-9)</b>	<b>Sem. Hrs.</b>
PHS 1100, 1080, 1090; BIOL 1000; BIO 1000, 1030, 3040; GLY 1150 & GLYL 1150, GLY 1250 & GLYL 1250; SCE 3000, 3010, 3500	
	<b>Total: 30</b>

## ACADEMIC CONCENTRATIONS

For students seeking a baccalaureate degree in Elementary Education, Special Education, or Physical Education, the Department offers two Academic Concentration options of 24-26 hours each. An Academic Concentration is available to other students, regardless of major.

<b>Required Courses for an Academic Concentration in Geography</b>	<b>Sem. Hrs.</b>
GGY 1020 and 2500	
Choose 3 courses from the following: GGY 1150, 2000, 2060, 2460, 2620	
Choose 3 courses from the following: GGY 3290, 3720, 4010, GGYS 4xxx; GLY 3660	
	<b>Total: 24-25</b>

<b>Required Courses for an Academic Concentration in Geology</b>	<b>Sem. Hrs.</b>
GLY 1000 & GLYL 1000 or GLY 1150 & GLYL 1150; GLY 1250 & GLYL 1250	
Choose 6 courses from the following: GLY 2260, 2460, 2620, 3100, 3250, 3660, 4250, GLYS 4xxx; GGY 2500	
	<b>Total: 26</b>

## MINORS

<b>Required Courses for a Minor in Geography</b>	<b>Sem. Hrs.</b>
GGY 1020 and 2500	
Choose 2 courses from the following: GGY 1150, 2000, 2060, 2260, 2460, 2620	
Choose 2 courses from the following: GGY 3290, 3720, 3770, 4010, GGYS 4xxx	
	<b>Total: 18-19</b>

<b>Required Courses for a Minor in Geology</b>	<b>Sem. Hrs.</b>
GLY 1000 & GLYL 1000 or GLY 1150 & GLYL 1150; GLY 1250 & GLYL 1250	
Choose 4 courses from the following: GLY 2260, 2460, 2620, 3100, 3250, 3660, 4250, GLYS 4xxx; GGY 2500	
	<b>Total: 20</b>

## COURSES

### GEOGRAPHY (GGY)

#### **GGY 1010. Principles of Geography**

The study of the earth's physical and human geography from a spatial perspective. Techniques and methodology to study interactions between human activities and the physical environment are emphasized. Credit, 3 semester hours.

#### **GGY 1020. World Regional Geography**

Survey of most countries and regions of the world. An examination of cultures, economies, and physical characteristics as they relate to regional development and contemporary problems in world affairs. Presents an overview of the multicultural earth. Credit, 3 semester hours.

#### **GGY 1150. Earth Science (GLY 1150)**

The same course as GLY 1150. Credit, 3 semester hours.

#### **GGYL 1150. Earth Science Laboratory (GLYL 11500)**

The same course as GLY 115L. Credit, 1 semester hour.

#### **GGY 2000. Cultural Geography**

Concept of culture applied to the human environment. Geographical variations and evolution resulting from interaction between cultural and physical processes. Culture and technological change. Population and migration. Cultural effects on perception of the environment. Credit, 3 semester hours.

#### **GGY 2060. Economic Geography (ECN 2060)**

Geographic analysis of the location, development and distribution of major industries, resources, agricultural products, and economic services. Study of economic development problems and prospects. Credit 3 semester hours.

#### **GGY 2460. Weather and Climate (GLY 2460, PHS 2460)**

Study of atmospheric elements and controls, weather analysis and forecasting, and air pollution issues. Also includes a survey of world climate regions and applications of climate data. Credit, 3 semester hours.

#### **GGY 2500. Introduction to Cartography**

Concepts and skills of map use and interpretation. Cartographic techniques and conventions for production of thematic maps. Basic concepts of geographic information systems and remote sensing. Credit, 3 semester hours.

#### **GGY 2620. Environmental Geology (GLY 2620)**

The same course as GLY 2620. Credit, 3 semester hours.

#### **GGY 3290. Society and the Environment**

A study of the social aspects of the natural environment. Environmental factors influencing societal development, and ideological conceptions which relate people to their surroundings are explored. The interdependence of culture and physical resources is stressed. Credit, 3 semester hours.

#### **GGY 3312. Political Geography (PSPA 3312)**

An examination of how geography and politics are tied together at a variety of spatial scales and in different global locations. Includes discussions of political geography both within and between states as well as those areas beyond the states, such as the sea and outer space. Credit, 3 semester hours.

#### **GGY 3720. North America**

Analysis of physical and cultural bases of North American geographic patterns. Emphasis upon natural conditions, settlement patterns, and regional structure. Credit, 3 semester hours.

**GGY 3770. Geography of American Indians**

An historical and cultural geography of American Indians from the time of European contact. Will focus upon population dynamics, settlement, patterns, economic development, land use, and physical resources. Credit, 3 semester hours. PREREQ: GGY 1010 or GGY 1020.

**GGY 4010. Internship in Geography**

Practical experience with a planning agency through an arranged internship. Supervision is provided by a designated official of the agency and by a member of the department faculty. Credit, 3-4 semester hours. PREREQ: Permission of instructor.

**GGY 4040. Remote Sensing**

Remote sensing of Earth's surface. Techniques of photography, multispectral scanning, and microwave imagery from airplane, satellite, and manned-spacecraft platforms. Image interpretation, practical applications in Earth Science, and use of remotely sensed data in Geographic Information Systems. Credit, 3 semester hours.

**GGY 4100. Land Use Planning**

Study of the diverse factors affecting human use of the physical environment. The roles of topography, soils, groundwater, wastewater, streamflow, wetlands, and landscape ecology in environmental land use planning will be considered in detail. Credit, 3 semester hours. PREREQ: GGY 1010 and GGY 2500.

**GGYS 4xxx. Special Topics in Geography**

This course will focus on a topic of general interest and explore it in depth. The topic will be announced in the schedule of classes. Possible topics include regional areas, such as Sub-Saharan Africa, or specialized fields such as Quantitative methods in Climatology, or Geographic Information Systems. The course may be repeated for a maximum of 6 semester hours. Credit, 3 semester hours. PREREQ: GGY 1010 or 1020.

**GEOLOGY (GLY)****GLY 1000. Physical Geology**

Introduction to earth materials and processes. Topics include minerals and rocks, weathering, landscape formation by streams, glaciers and ocean waves, study of volcanoes, earthquakes and plate tectonics. Credit, 3 semester hours.

**GLYL 1000. Physical Geology Laboratory**

Study of common minerals and rocks; use of topographic and geologic maps. Credit, 1 semester hour. PREREQ: Current enrollment in or completion of GLY 1000.

**GLY 1150. Earth Science (GGY 1150)**

Includes topics in geology, oceanography, meteorology and astronomy. Minerals and rocks, volcanoes, earthquakes; ocean tides and currents, shoreline processes; atmospheric pressure, wind, precipitation, weather patterns; sky observation, solar system. Credit, 3 semester hrs.

**GLYL 1150. Earth Science Laboratory (GGYL 1150)**

Study of common minerals and rocks, topographic maps, climate classification, weather processes. Credit, 1 semester hour. PREREQ: Current enrollment in or completion of GLY 1150.

**GLY 1250. Earth History**

Geologic history of the earth as recorded in the rock record. Topics include geologic time, evolution of the atmosphere, continents and oceans, fossils, and the development of life through time. Credit, 3 semester hours.

**GLYL 1250. Earth History Laboratory**

Study of animal and plant fossils, environments of deposition, geologic maps. Credit, 1 semester hour. PREREQ: Current enrollment in or completion of GLY 1250.

**GLY 2260. Oceanography**

Ocean circulation, properties of ocean water, waves and tides, and processes of shoreline erosion and deposition. The relationship between marine processes and human use of coastal areas will be emphasized. Credit, 3 semester hours. PREREQ: GLY 1000 or GLY 1150.

**GLY 2460. Weather and Climate (GGY 2460, PHS 2460)**

The same course as Geography 2460. Credit, 3 semester hours.

**GLY 2620. Environmental Geology (GGY 2620)**

Aspects of geology related to problems arising from intensive use of the earth by modern society. The use of earth materials, energy resources and groundwater will be considered along with land use planning. Credit, 3 semester hours. PREREQ: GLY 1000 or GLY 1150.

**GLY 3100. Minerals and Rocks**

Study of minerals and rocks with an emphasis on origins, classification, and identification. Credit, 3 semester hours. PREREQ: GLY 1000 or GLY 1150 and concurrent enrollment in GLY 3110.

**GLY 3110. Minerals and Rocks Laboratory**

A survey of minerals and rocks with an emphasis on environments of origin, classification, textural features, and identification. Laboratory stresses mineral and rock identification and typical associations. Credit, 1 semester hour. PREREQ: GLY 1000 or GLY 1150 and concurrent enrollment in GLY 3100.

**GLY 3250. Paleontology**

Study of fossil invertebrates, vertebrates and plants with emphasis on evolutionary trends. Credit, 3 semester hours. PREREQ: GLY 1000 or GLY 1150 & BIO 1000.

**GLY 3660. Geomorphology**

Advanced study of land forms-fluvial, solution, glacial, marine, eolian, volcanic, and structural. History of geomorphic theories and regional land forms will also be covered. Credit, 3 semester hours. PREREQ: GLY 1000 or GLY 1150.

**GLY 4010. Geology Internship**

Practical experience with a consulting firm, university, museum, or government agency through a planned internship. Supervision is provided by a designated member of the firm, university, or agency and by a member of the departmental faculty. Credit, 3 semester hours. PREREQ: Departmental approval.

**GLY 4150. Geology Field Trip**

Field trip to selected geologic sites to increase appreciation and understanding of geologic, biologic, and cultural resources in areas outside of the UNCP community. A fee is charged to cover travel expenses. Course may be taken for credit up to 3 times. Credit, 1 - 3 semester hours. PREREQ: GLY 1150.

**GLY 4250. Stratigraphy and Sedimentology**

Study of environments of deposition of sediments and stratigraphic principles including facies and correlation. Classic examples from the geologic record will be used. Credit, 3 semester hours. PREREQ: GLY 1250.

**GLYS 4xxx. Special Topics in Geology**

This course will focus on a topic of general interest and explore it in depth. The topic will be announced in the schedule of classes. Possible topics include dinosaurs, natural disasters, etc. The course may be repeated for a maximum of 6 semester hours. Credit, 3 semester hours. PREREQ: GLY 1150.