Earth and Environmental Sciences, Hydrological Sciences Concentration, B.S.

Earth and Environmental Sciences

The Earth and Environmental Sciences program focuses on the suite of dynamic processes acting at or near the surface of the Earth. Study spotlights the composition and dynamics of the atmosphere, biosphere, hydrosphere and/or surficial materials including environmental applications of these fields of study. Coursework covers areas such as environmental geology, hydrology, remote sensing, surfaces processes, soil science, and Environmental Information Systems. This program also offers Concentrations in Hydrologic, Atmospheric, or Environmental Sciences, which provide students the opportunity to be recognized for more focused academic work.

Students majoring in Earth and Environmental Sciences pursue careers in environmental consulting, environmental planning, meteorology, land development planning, site analysis, terrain analysis, and teaching. This degree also prepares students for graduate studies in hydrology and remote sensing. There are employment opportunities in both government and private industry with the greatest range of positions available to students who earn graduate degrees. For details, see the *UNC Charlotte Graduate Catalog* regarding the M.S. in Earth Sciences program.

Degree Requirements

The B.S. in Earth Sciences with a Concentration in Hydrologic Sciences consists of a minimum of 43 credit hours of required Earth Science (ESCI), Geography (GEOG), Meteorology (METR), and Geology (GEOL) courses, 17 credit hours of required extra-departmental courses, and 4 credit hours of elective courses.

General Education Courses (37-43 credit hours)

For details on required courses, refer to the General Education program.

Major Courses (22 credit hours)

- ESCI 1101 - Earth Sciences-Geography (3)
- ESCI 1101L - Earth Sciences-Geography Laboratory (1)
- ESCI 2101 - The Environmental Dilemma (3)
- ESCI 2210 - Field Methods in the Earth and Environmental Sciences (3)
- ESCI 3101 - Global Environmental Change (3)
- ESCI 4600 - Earth Sciences Seminar (1)
- GEOG 3120 - Fundamentals of Geographic Information Systems (4)
- GEOL 1200 - Physical Geology (3)
- GEOL 1200L - Physical Geology Laboratory (1)

Concentration Courses (21 credit hours)

- ESCI 3105 - Oceanography (3)

- ESCI 3205 - Water Resources (3)
- ESCI 4140 - Hydrologic Processes (4)
- ESCI 4155 - Fluvial Processes (4)
- ESCI 4222 - Watershed Science (3)
- GEOL 4145 - Hydrogeology (4)

Related Courses (17 credit hours)

- CHEM 1251 - General Chemistry I (3)
- CHEM 1251L - General Chemistry I Laboratory (1)
- MATH 1241 - Calculus I (3)

Statistics Course

Select one of the following:

- STAT 1220 - Elements of Statistics I (BUSN) (3)
- STAT 1221 - Elements of Statistics I (3)
- STAT 1222 - Introduction to Statistics (3)

Mathematics or Statistics Courses

Select one of the following:

- MATH 1242 - Calculus II (3)
- STAT 2223 - Elements of Statistics II (3)

Science and Related Lab Course

Select one of the following science courses and related lab:

- CHEM 1252 - General Chemistry II (3)
- CHEM 1252L - General Chemistry II Laboratory (1)

- PHYS 1101 - Introductory Physics I (3)
- PHYS 1101L - Introductory Physics I Laboratory (1)

Restricted Elective Courses (4 credit hours)

Select 4 credit hours from the Earth and Environmental Sciences electives list below or other required courses from the Concentrations in Atmospheric Sciences or Environmental Sciences of the B.S. in Earth Sciences.

- BIOL 3215 - Economic Botany (3)
- BIOL 4162 - Advanced Biotechnology I (3)
- BIOL 4163 - Advanced Biotechnology II (3)
- CEGR 3143 - Hydraulics and Hydrology (3)
- ESCI 3170 - Environmental Quality Management (3)
- ESCI 3180 - Environmental Impact Analysis (3)
- ESCI 4160 - Contaminant Transport (3)
- ESCI 4180 - Digital Image Processing in Remote Sensing (4)
- ESCI 4210 - Soil Science (4)
- ESCI 4233 - Geoenvironmental Site Characterization (4)
- GEOG 3215 - Environmental Planning (3)

- GEOG 3250 - World Food Problems (3)
- GEOG 4216 - Landscape Ecology (3)
- GEOL 3120L - Geochemistry Laboratory (1)
- GEOL 3124 - Sedimentology (4)
- GEOL 4105 - Geomorphology (3)
- GEOL 4105L - Geomorphology Laboratory (1)
- GEOL 4120 - Geologic Mapping and Interpretation (4)
- GEOL 4125 - Geologic Summer Field Camp (6)
- GEOL 4140 - Coastal Geology (3)
- GEOL 4165 - Aqueous Geochemistry (4)
- GEOL 4175 - Geochemistry (3)
- GEOL 4410 - Applied Soil Science (4)
- METR 3250 - Dynamic Meteorology (4)
- METR 3252 - Weather Analysis Laboratory (1)
- METR 4150 - Applied Climatology (3)
- METR 4240 - Boundary-Layer Meteorology (3)

Note:

Students are responsible for meeting all required prerequisites for elective courses.

Unrestricted Elective Courses

As needed.

Degree Total = 120 Credit Hours

Cooperative Education Program

Students in the Geography and Earth Sciences programs may obtain practical work experience while pursuing their degrees by participating in the Cooperative Education program. The work experience is approved by the department and is closely related to the student's field of study. The Cooperative Education Program allows qualified students either to alternate semesters of academic study with semesters of full-time work experience or to combine part-time academic study and part-time work during the same semester. Students who are in good standing with the University, have a minimum overall GPA of 2.5, and have completed 30 credit hours are eligible to apply. Transfer students are required to complete 12 credit hours at the University prior to application. Students interested in learning more about participating in this program should contact the Department of Geography and Earth Sciences or the University Career Center.

Honors Program

For details about the Honors Program in Earth and Environmental Sciences, visit the program page.

Suggested Curriculum

For a suggested curriculum progression toward completing the major, please see the Academic Plan of Study available online at academics.uncc.edu.