ENVIRONMENTAL HEALTH SCIENCES MAJOR, B.S.P.H.

Contact Information
Department of Environmental Sciences and Engineering
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The undergraduate major in environmental health sciences is designed
to develop a comprehensive understanding of the environmental
factors that impact human health; the physical, chemical, and biological
processes that underlie the impact of human activity on the environment
and human health; methods used to assess the impact of human
activity on the environment and human health; and science-based
solutions for environmental problems. Students may choose to
emphasize environmental chemistry, environmental health biology, or
environmental physics by selecting those concentrations. Admission
into the program requires satisfactory completion of coursework in basic
sciences and mathematics. Recent graduates have entered graduate
programs in environmental science, microbiology, marine science,
applied mathematics, and environmental engineering. Students who
pursued employment after completing the B.S.P.H. degree are working in
environmental advocacy organizations, environmental consulting firms,
industry, and investment banking firms.

Upon completion of the B.S. in environmental science and engineering,
students should be able to:

• Demonstrate knowledge of the fundamental sciences
• Describe the relationship between public health and environmental
  sciences and engineering
• Identify major issues in environmental sciences and engineering
• Describe significant regulatory components that have shaped
  environmental policy
• Demonstrate written and oral communication skills related to
  environmental sciences and engineering issues within a public health
  context

Requirements
In addition to the program requirements listed below, students must

• attain a final cumulative GPA of at least 2.0
• complete a minimum of 45 academic credit hours earned from UNC–
  Chapel Hill courses
• take at least half of their major course requirements (courses and
  credit hours) at UNC–Chapel Hill.

For more information, please consult the degree requirements section of
the catalog (http://catalog.unc.edu/undergraduate/general-education-
curriculum-degree-requirements/#degreerequirementstext).

Admission (http://catalog.unc.edu/undergraduate/schools-college/
public-health) to the program is required. Students apply in the spring
of their sophomore year. By the end of their sophomore year successful
applicants should have earned a grade of C or better from UNC–Chapel
Hill in at least one course per group in three of the following groups:

| Group 1 | BIOL 201 | Ecology and Evolution $^H$ | 4 |
| Group 2 | CHEM 102 | General Descriptive Chemistry II | 4 |
| Group 3 | CHEM 261 | Introduction to Organic Chemistry I $^H$ | 3 |
| Group 4 | MATH 231 | Calculus of Functions of One Variable I | 3-4 |
| Group 5 | PHYS 114 | General Physics I: For Students of the Life Sciences | 4 |
| Group 6 | PHYS 118 | Introductory Calculus-based Mechanics and Relativity | 4 |

$^H$ Honors version available. An honors course fulfills the same
requirements as the nonhonors version of that course. Enrollment
and GPA restrictions may apply.

The major in environmental health sciences includes several
concentrations:

• General (p. 2)
• Environmental Chemistry (p. )
• Environmental Health Biology (p. )
• Environmental Physics (p. )

Requirements for all Concentration
Core Requirements
Public Health Core Courses:
BIOS 600 Principles of Statistical Inference 3
EPID 600 Principles of Epidemiology 3
HBEH 600 Social and Behavioral Sciences in Public Health 3
HPM 600 Introduction to Health Policy and Management 3
Other Core Courses:
Environmental Health Sciences Major, B.S.P.H.

General Concentration

Environmental Health Biology Concentration

Complete four advanced (400-level or above) courses with a substantive environmental health content

Additional Requirements

MATH 233 Calculus of Functions of Several Variables $^2$, $^3$ 4

Environmental Health Electives

All students must complete four advanced (400-level or above) courses selected from:

- ENVR 403 Environmental Chemistry Processes
- ENVR 416 Aerosol Physics and Chemistry
- ENVR 419 Chemical Equilibria in Natural Waters
- ENVR 451 Elements of Chemical Reactor Engineering
- ENVR 575 Global Climate Change: Science, Impacts, Solutions
- ENVR 650 Principles of Chemical Carcinogenesis
- ENVR 675 Air Pollution, Chemistry, and Physics

Additional Requirements

CHEM 481 Physical Chemistry I 3
MATH 233 Calculus of Functions of Several Variables $^2$, $^3$ 4
MATH 383 First Course in Differential Equations $^2$ 3
PHYS 118 Introductory Calculus-based Mechanics and Relativity 4
PHYS 119 Introductory Calculus-based Electromagnetism and Quanta 4

$^1$ Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

$^2$ preferred

$^3$ if placed out of MATH 231 and MATH 232

$^H$ Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

Environmental Chemistry Concentration

Environmental Health Electives

All students must complete four advanced (400-level or above) courses selected from:

- ENVR 403 Environmental Chemistry Processes
- ENVR 416 Aerosol Physics and Chemistry
- ENVR 419 Chemical Equilibria in Natural Waters
- ENVR 451 Elements of Chemical Reactor Engineering
- ENVR 575 Global Climate Change: Science, Impacts, Solutions
- ENVR 650 Principles of Chemical Carcinogenesis
- ENVR 675 Air Pollution, Chemistry, and Physics

Additional Requirements

CHEM 481 Physical Chemistry I 3
MATH 233 Calculus of Functions of Several Variables $^2$, $^3$ 4
MATH 383 First Course in Differential Equations $^H$ 3
PHYS 118 Introductory Calculus-based Mechanics and Relativity 4
PHYS 119 Introductory Calculus-based Electromagnetism and Quanta 4

$^2$ preferred

$^H$ Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.
Environmental Health Sciences Major, B.S.P.H.

Environmental Health Electives
All students must complete four advanced (400-level or above) courses selected from the following list:

- ENVR 403 Environmental Chemistry Processes
- ENVR 416 Aerosol Physics and Chemistry
- ENVR 451 Elements of Chemical Reactor Engineering
- ENVR 452 Fluid Dynamics
- ENVR 453 Groundwater Hydrology
- ENVR 666 Numerical Methods
- ENVR 671 Environmental Physics I
- ENVR 472 Quantitative Risk Assessment in Environmental Health Microbiology
- ENVR 675 Air Pollution, Chemistry, and Physics

Additional Requirements
- MATH 233 Calculus of Functions of Several Variables\(^H\) 4
- MATH 383 First Course in Differential Equations\(^H\) 3

\(^H\) Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

Sample Plan of Study
Sample plans can be used as a guide to identify the courses required to complete the major and other requirements needed for degree completion within the expected eight semesters. The actual degree plan may differ depending on the course of study selected (second major, minor, etc.). Students should meet with their academic advisor to create a degree plan that is specific and unique to their interests. The sample plans represented in this catalog are intended for first-year students entering UNC–Chapel Hill in the fall term. Some courses may not be offered every term.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>First Year</td>
<td></td>
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<tr>
<td>Fall Semester</td>
<td></td>
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<tr>
<td>MATH 231</td>
<td>Calculus of Functions of One Variable I or BioCalculus I</td>
<td>3-4</td>
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<tr>
<td>BIOL 101</td>
<td>Principles of Biology and Introductory Biology Laboratory(^H)</td>
<td>4</td>
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<tr>
<td>Spring Semester</td>
<td></td>
<td>8</td>
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<tr>
<td>CHEM 101</td>
<td>General Descriptive Chemistry I and Quantitative Chemistry Laboratory I</td>
<td>4</td>
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<tr>
<td>BIOL 201</td>
<td>Ecology and Evolution(^H)</td>
<td>4</td>
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<tr>
<td>Sophomore Year</td>
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<td>8</td>
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<tr>
<td>Fall Semester</td>
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<tr>
<td>CHEM 102</td>
<td>General Descriptive Chemistry II and Quantitative Chemistry Laboratory II(^H)</td>
<td>4</td>
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Special Opportunities in Environmental Health Sciences
Honors in Environmental Health Sciences
Students who have a grade point average of 3.3 or higher are eligible to participate in honors research and to write an honors thesis.

Study Abroad
There are several opportunities for pursuing environmental study abroad, both through the department and through the UNC Study Abroad Office (http://studyabroad.unc.edu/studyabroad.cfm).

Undergraduate Research
Many undergraduate students participate in the research programs of the department. Students are encouraged to consult individual faculty
members for opportunities to participate in such research. In addition, the department has information concerning fellowships and internships, some of which are combined with research opportunities in laboratories or field settings.