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# ENVIRONMENTAL SCIENCES (ENS)

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Interdisciplinary study in environmental science comes naturally from the interaction of humankind with the environment. The goal of this department is to provide competent students with sufficient knowledge in biology and in chemistry and with practical aspects of laboratory and field experiences in the environment. Great career opportunities exist in local, state, and federal government and in industry.

## Requirements for a Major in Environmental Sciences:

In addition to the general education requirements, the following courses are required:

	Semester Hours
CH 101, 102, General Chemistry I, II .....	8
CH 201, 202, Quantitative Analysis and Lab.....	4
CH 206, Biological Chemistry .....	4
CH 260, Inorganic Chemistry .....	4
BIO 101, Introduction to Biology .....	4
BIO 102, General Botany.....	4
BIO 103, General Zoology.....	4
BIO 301, Microbiology.....	4
BIO 330, General Ecology.....	4
BIO 416, General Taxonomy.....	4
BIO 462/ENS 462, Topics in Environmental Biology.....	3
ENS 215, Environmental Problems.....	4
ENS 425, Field Experience in Environmental Studies.....	<u>1-4</u>
Total	52-55

All students must attain a minimum grade point average of 2.50 for all courses taken at Averett University in the major in order to graduate. These major courses include all required for the degree, as well as all taken as electives in Biology, Environmental Sciences and Chemistry and General College Physics I and II.

All seniors shall take a comprehensive examination administered by the faculty of the department. The subject matter for the examination will encompass all required core courses for the degree. The examination will be taken in the first semester of the senior year. The student is required to make 75 (out of a possible 100 points) to pass. Any student who does not pass the examination will be given the opportunity to repeat the examination the following semester. Given the timing of the examination, all core courses should be completed prior to the senior year.

Any student who does not pass the comprehensive examination or who fails to meet the minimum grade point average of 2.50 may remain in the program until these criteria are met, providing the minimum requirements of the College are maintained.

## Sample Four-Year Course Sequence:

### Environmental Sciences

#### Freshman Year:

BIO 101, Introduction to Biology  
BIO 102, General Botany  
BIO 103, General Zoology  
CH 101, 102, General Chemistry I, II

#### Sophomore Year:

ENS 215, Environmental Problems  
BIO 301, Microbiology  
CH 201, 202, Quantitative Analysis and Lab

#### Junior Year:

BIO 330, General Ecology  
CH 206, Biological Chemistry  
CH 260, Inorganic Chemistry  
BIO 462/ENS 462, Topics in Environmental Biology

#### Senior Year:

BIO 416, General Taxonomy  
ENS 425, Field Experience in Environmental Studies

### Courses of Instruction

- 215 Environmental Problems and Lab (Same as BIO 215) (4)  
The study of the interdependency and interconnectedness related to power (fossil fuel, nuclear, solar, and other alternatives). Air and water pollution, waste generation and disposal, wetlands, soils and chemicals and water and sewage treatment methods will be discussed. Laboratory exercises related to these topics will be conducted. No prerequisites.
- 330 Environmental Chemistry and Lab (4)  
A study of the sources, reactions, transport, effects and fates of chemical species in water, soil and air. A variety of techniques are used to illustrate these factors in lecture and laboratory, including sampling, analysis, computer modeling, bioassay and development of an environmental impact study. Prerequisites: CH 101, 102, 206, BIO 101, and BIO 102 or 103.
- 342 Environmental Policy and Law (Same as BIO 342 and POS 342) (3)  
A survey of environmental laws and regulations in the United States: who makes the laws and why, and who enforces the laws and how. Consideration will be given to the experience of other countries and to alternative paradigms of environmental protection.
- 410 Instrumental Analysis in Biology and Chemistry and Lab (4)  
A study which combines CH 320, Instrumental Analysis, with the analytical methods and equipment used in the biological sciences, such as microscopy, soil analysis, D.O., B.O.D., etc. Includes laboratory experiences. Team taught by Biology and Chemistry faculty. Prerequisites: CH 101, 102, 206, 260 and BIO 101, 102, 103, 301, 330. Alternate years or on demand.
- 417 Water Quality Assessment and Lab (Same as CH 417) (4)  
A course that introduces water quality testing and assessment. Commonly used testing methods and instrumentation provide a range of skills that may be used in the classroom and in the field. Topics include EPA-approved sampling and data collection techniques, instrument calibration and operation, environmental public policy issues, and the use of spreadsheets for data compilation. Aquatic environments will be monitored on a regular basis. No prerequisites.

425 Field Experience in Environmental Studies

(1-4)

A field experience in which students, during their senior year, work with various government agencies and private enterprises by investigating, documenting, and writing research paper(s) pertaining to the environmental problems. They will also attend and conduct seminars. Prerequisite: ENS majors with senior status.

462 Topics in Environmental Biology (Same as BIO 462)

(3)

A seminar course that will examine the scientific, historical, ethical, political, and economic dimensions of the environment. Readings, oral, written and video presentations, and class discussions will comprise the format of this course. This course will meet University writing, oral and technology competencies. Prerequisite: Junior or Senior Biology majors or permission of instructor.