

broadest sense, with an emphasis on the role of persuasion in civil society. To that end the subjects of study range from political discourse to commercial advertisement, from the history of rhetoric to the impact of mass media, from criticism of American public oratory to issues of freedom of speech. The department offers courses involving practice, criticism, and theoretical analysis. Education in these areas has traditionally produced citizen advocates who enter public life in business, law, journalism, and communication.

A major in communication studies requires 36 hours of course work. No more than 9 hours of 100-level courses may count toward the major. While students are permitted to use communication-related courses in other departments as part of the major, at least 24 of the 36 hours must be in communication studies. The requirements and options for the major are as follows.

1. Communication Studies 100 (required)
2. At least one of the following courses in performance: 200, 201, 204.
3. At least three of the following courses in criticism and theory: 210, 220, 221, 222, 225, 241.
4. At least three of the following courses in applications and analysis: 101, 115F, 223, 224, 226, 235, 237, 243, 244, 254, 289, 290, 294, 295, 296.

The remainder of the 36 hours may be selected from the courses listed above or from the following:

English: 120W, Intermediate Composition; 200, Intermediate Nonfiction Writing; 201, Advanced Nonfiction Writing. Managerial Studies: 190, Principles of Marketing; 191, Advanced Marketing. Philosophy: 102, General Logic; 202, Formal Logic and Its Applications; 246, Philosophy of Language. Political Science: 241, American Public Opinion and Voting Behavior; 242, Political Communication. Psychology: 225, Cognitive Psychology; 231, Social Psychology. Sociology: 247, Human Behavior in Organizations; 248, Popular Culture Dynamics; 249, American Social Movements.

Minor in Communication Studies

A minor in communication studies requires completion of 18 hours from the following requirements and options in communication studies courses:

Required: 100 and either 210 or 222.

Any three of the following: 220, 221, 223, 224, 225, 226, 235, 241, 243, 244, 254.

One of the following: 200, 201, 204.

Course descriptions begin on page 157.

Earth and Environmental Sciences

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THE earth and environmental sciences are aimed at interpreting Earth's dynamic history—its age and origin as recorded in rocks and the landscape—and at understanding how geological processes affect modern environmental and ecological systems. Among the natural sciences, ours is the quintessential interdisciplinary science, providing vital perspective on how Earth's physical and geochemical template simultaneously sustains and threatens life, and influences human interactions with Earth.

The Department of Earth and Environmental Sciences (EES) offers an undergraduate major leading to the B.A. degree. Students majoring in EES participate in field and laboratory work. The comparatively small size of the faculty and student body allows many opportunities for faculty-student interaction. Students use the major as preparation for graduate study, for careers in environmental studies and resource exploration (petroleum, minerals), or for related careers in such fields as land use planning, teaching, law, or engineering.

Research programs in the department, which in many cases involve students, employ field, analytical, and experimental methods. A wide variety of earth processes are investigated, ranging from the migration of fluids and generation of magmas in Earth's crust, to the evolution of rivers and landscapes, to the evolution of sedimentary and biological environments, to geological processes in the human environment. Study areas, in addition to Middle Tennessee, include the southwestern United States, Antarctica, the Pacific northwest, and the southern Appalachians.

For students with primary interests in environmental issues, there are three degree options. A student may major in EES or may construct an individualized interdisciplinary major. Alternatively, a student may major in another conventional discipline and augment that with an environmental science or environmental studies minor.

Program of Concentration in Earth and Environmental Sciences

Three options are available within the EES major. All provide a solid grounding in the earth and environmental sciences. The differences are in requirements for supporting sciences and mathematics and for research. Option I provides a background for careers or post-graduate work in related fields such as teaching, law, or business and for some graduate programs and employment opportunities in earth and environmental sciences. Option II prepares students well for graduate work and careers in the earth and environmental sciences. Option

III (Honors) is designed for excellent, highly motivated students who want to pursue research as undergraduates.

Required EES courses for Options I and II 32 hours toward major

EES 101/111	4
EES 102 or 202	4
EES 220W	4
EES 225	4
EES 226	4
EES 230	4
EES 240	4
EES 299	1
One additional >200 course other than 289a,b or 291a,b	3

Option I. Provides students with a comprehensive background in geoscience. In addition to the courses listed above, students are required to take one course each from two of the following groups.

Group A: Physical World

Physics I (Physics 116a/118a 4 hr or Physics 121a 5 hr)
Chemistry I (Chemistry 102a/104a 4 hr)
Astronomy (201 3 hr)

Group B: Earth Life

Biological Sciences (100 4hr or 110a/111a 4 hr or 118 4 hr or
218 4 hr or 219 4 hr or 238/237 4 hr)

Group C: Quantitative Skills

Calculus I (Math 140 4 hr or 150a 3 hr or 155a 4 hr)
Statistics (Math 127a 3 hr)

Total hours: 38–41

Option II. Provides students with most course work needed for a career or graduate studies in geoscience. Students take the required EES courses and complete the following:

Physics I (116a/118a 4 hr)
Chemistry I (102a/104a 4 hr)
Calculus I (Math 150a 3 hr or 155a 4 hr)

Total hours: 43–44

In addition, the second semesters of Chemistry, Physics, and Calculus as well as one or more courses in Biological Sciences are highly recommended to complete courses commonly required for graduate school or employment. Recommended selections include:

Physics II (116b/118b 4 hr) or Chemistry II (102b/104b 4 hr)
or Calculus II (Math 150b 3 hr or 155b 4 hr)
Biological Sciences (100 4hr or 110a/111a 4 hr or 118 or 218 4
hr or 219 4 hr or 238/237 4 hr) or Astronomy (201 3 hr)

Option III. Honors. Provides research experience as well as course work preparation for a career or graduate studies in earth or environmental sciences. Course work is the same as for Option II with the addition of EES 292a and 292b (4 hours).

Total hours: 47–48

Interested students should apply to the undergraduate adviser for entry into the Honors program before the end of fall semester, junior year. A minimum of a 3.000 grade point average both overall and in the major is required for entry into the Honors program.

Working closely with a faculty adviser, students in the Honors program complete a research project of interest to both the student and faculty member during the senior year. In order to graduate with honors in EES, a student must: (1) maintain a 3.000 average; (2) complete the required courses for Option II plus EES 292a and 292b; (3) satisfactorily present the results of his/her research in written form as a senior thesis to two members of the faculty and orally to students and faculty of the department.

Minor in Earth and Environmental Sciences

The minor in EES provides students with a broad background in earth processes, systems, and history, and an introduction to environmental issues. This background is highly relevant to many different fields of endeavor. The minor does not, however, prepare students for graduate studies or employment as earth scientists.

The minor consists of at least five courses (at least 17 hours; EES 101/111 and 103/113 each count as one course). Although EES 101 (with 111) and 103 (with 113) are highly recommended, students are encouraged to choose courses based on their interests and career plans and to discuss course selection with the director of undergraduate studies. No more than two 100-level courses count toward the minor. Two courses with labs are required; one must be at the 200 level. No credit toward the minor is given for EES 289a–289b or 291a–291b.

Minor in Environmental Science

The interdisciplinary minor in environmental science requires a minimum of 15 hours. Environmental science is the study of how the earth's natural environmental processes work, how they have been or can be modified by humans and society, and how such modifications impact on the biosphere, at the levels of individuals through ecosystems. An environmental science minor provides students the opportunity to expand their education to include a coherent program in the scientific aspects of how we interact with and modify the earth's environment.

Students who want to minor in environmental science must take a minimum of five courses chosen from the courses listed below and approved by an adviser. Two must be from the core environmental science list (A), and at least two others must be from either the environmental science list (C) or the core environmental science list (A). No more than one 100-level course may be counted toward the minor. Not more than two courses can come from the student's major department, recognizing that such courses cannot be counted simultaneously for both a major and a minor.

Minor in Environmental Studies

The interdisciplinary minor in environmental studies requires a minimum of 15 hours. Humans and their society necessarily interact with and alter the earth's natural environment. The environmental studies minor allows the student to examine human interaction with the environment from a variety of points of view.

Students who want to minor in environmental studies must take a minimum of five courses chosen from the courses listed

below and approved by an adviser. Two courses must come from the core lists (A and B); at least one of these courses must be from the environmental studies core list (B). Two or more additional courses must come from either the environmental studies list (D) or the core environmental studies list (B). No more than one 100-level course may be counted toward the minor. Not more than two courses can come from the student's major department, recognizing that such courses cannot be counted simultaneously for both a major and a minor.

A) CORE ENVIRONMENTAL SCIENCE: Anthropology: 207, Environmental Anthropology. Biological Sciences: 218, Introduction to Plant Biology; 219, Introduction to Zoology; 238, Ecology; 273, Molecular Mechanisms of Environmental Toxins. Environmental Engineering: 271, Environmental Chemistry. Earth and Environmental Sciences: 260, Geochemistry.

B) CORE ENVIRONMENTAL STUDIES: Anthropology: 207, Environmental Anthropology. Engineering Science: 157, Technology and the Environment. Honors: 181, Philosophy of Nature. Sociology: 220, Population and Society; 270, Human Ecology and Society; 281, Development for a Small Planet.

C) ENVIRONMENTAL SCIENCE: Biological Sciences: 205, Evolution; 210, Principles of Genetics; 211, Genetics Laboratory; 220, Biochemistry I; 265, Biochemistry II; 270, Statistical Methods in Biology. Chemistry: 210, Introduction to Analytical Chemistry; 211, Instrumental Analytical Chemistry; 220a–220b, Organic Chemistry. Civil Engineering: 203, Fluid Mechanics; 212, Hydrology; Environmental Engineering: 260, Solid and Hazardous Waste Management; 272, Biological Unit Processes; 275, Environmental Risk Management; 280, Atmospheric Pollution. Earth and Environmental Sciences: 101, The Dynamic Earth: Introduction to Geological Sciences; 103, Oceanography; 220W, Life through Time; 320, Aqueous Geochemistry (with special approval). Mathematics: 219, Introduction to Applied Statistics.

D) ENVIRONMENTAL STUDIES: Philosophy: 244, Philosophy and the Natural Sciences; 273, Environmental Philosophy.

Licensure for Teaching

Candidates for teacher licensure in earth and space science at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog.

Course descriptions begin on page 158.

Economics

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THE Department of Economics offers an undergraduate major and minor in economics. Qualified economics majors may also elect to take graduate courses or participate in honors work.

The department participates with the Department of History in a concentration in economics and history. Other economics-related minors are discussed under Managerial Studies.

Economics 100 and 101 are prerequisites to all courses numbered above 200, except Economics 222 which only requires Economics 100.

Program of Concentration in Economics

The requirements for the major include completion of at least 33 hours in economics courses, including 100, 101, 150 or 155 (or both Math 218 and Math 219), 231, 232. Students who complete Economics 253 with Math 218 and 218L as a prerequisite need not take Economics 150 or 155. At least 9 hours must be in courses numbered 250 or above. Courses in Financial Economics do not carry credit in the economics major. Economics 115F may be counted as an elective. No more than 3 hours of independent study may be included in the minimum 33 hours required for the major.

Mathematics Prerequisite

Two semesters of calculus are strongly recommended for majors and minors in the department. Calculus is a prerequisite for Economics 150, 155, 231, and 232, courses that are required in the economics major and minor. At least one semester of calculus is required for all our programs.

Minor in Economics

The minor in economics requires 21 credit hours as follows: Economics 100, Principles of Macroeconomics, and Economics 101, Principles of Microeconomics; Economics 150, Economic Statistics, or Economics 155, Intensive Economic Statistics (or Math 218 and Math 218L); and Economics 231, Intermediate Microeconomic Theory; and 9 credit hours of electives. At least one elective must be numbered 250 or above. One semester of calculus is prerequisite to Economics 150, Economics 155, and Economics 231. Financial Economics courses may not be taken for credit in the minor in economics.

Honors Program

An honors program is available in economics. This program is designed for highly motivated students interested in doing independent research. Honors candidates must take two semesters of calculus and 36 hours of work in economics, including all 15 hours of courses required for the Economics major. The following Honors Core requirements must be met in order for Honors in Economics to be awarded: (1) Economics 253, Introduction to Econometrics (3 credit hours); (2) Economics 291a–291b, thesis proposal development as Independent Study (1 credit hour minimum); (3) Economics 292a–292b, Senior Thesis (6 credit hours); (4) Economics 295a–295b, Honors Seminar (2 credit hours); (5) 9 hours of electives including 3 hours in an Economics course above 250. Students who are not sure whether they want to complete the Honors Program are urged to take an additional 3-hour elective. Honors candidates are also required to write a senior