Environmental Management  
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The cross disciplinary environmental management minor prepares students to apply the principles of environmental science and engineering to contemporary environmental problems in natural resource, industrial and public policy contexts. The minor is particularly suitable for students interested in professional careers in industrial environmental management, natural resources management, and environmental policy and planning. After fulfilling prerequisite requirements in biology and statistics, students pursue the minor by completing core courses and electives.  
The environmental management minor strives to develop graduates who can apply science and technology to a broad range of practical environmental problems in a variety of professional settings. Students are expected to be literate and competent in the sciences and mathematics underlying environmental problem solving.  
The environmental management minor requires a total of 29 credits, including prerequisite courses. The prerequisites must have been completed successfully before the student may be enrolled in the environmental management minor. Prerequisite courses may be fulfilled as part of the student’s major. At least one elective course must be outside of the student’s major.  
Prerequisites  
BIO 124. Ecology and Evolution  
Three hours from one of the following:  
- ISAT 251. Topics in Statistics for ISAT  
- MATH 220. Elementary Statistics  
- MATH 285. Data Analysis  
- MATH 318. Introduction to Probability and Statistics  
Credit Hours  
Prerequisites  
BIO 124. Ecology and Evolution  
Three hours from one of the following:  
- ISAT 251. Topics in Statistics for ISAT  
- MATH 220. Elementary Statistics  
- MATH 285. Data Analysis  
- MATH 318. Introduction to Probability and Statistics  
Credit Hours  
Required Courses  
ISAT 320-321. Fundamentals of Environmental Science and Technology I-II  
CHEM 241. Organic Chemistry I  
ISAT 302. Instrumentation and Measurement of the Environment  
ENVT 400. Capstone Seminar  
Credit Hours  
Required Courses  
ISAT 320-321. Fundamentals of Environmental Science and Technology I-II  
CHEM 241. Organic Chemistry I  
ISAT 302. Instrumentation and Measurement of the Environment  
ENVT 400. Capstone Seminar  
Credit Hours  
Concentration  
See descriptions below  
Credit Hours  
Concentration  
See descriptions below  
Credit Hours  
Concentrations  
Students completing the environmental management minor must concentrate in one of three areas: natural resources, industrial systems or environmental policy. Students should be aware that some of the listed courses may have additional prerequisites.  
Natural Resources  
ISAT 424. Natural Resource Management  
Choose two of the following courses:  
- BIO 402. Forest Ecology  
- BIO 456. Landscape Ecology  
- BIO 457. Biological Applications of Geographic Information Systems  
- BIO 459. Freshwater Ecology  
- BIO 465. Environmental Toxicology  
- CHEM 354. Environmental Chemistry Field Camp  
- CHEM/GEOL 355. Geochemistry of Natural Waters  
- GEOG 340. Biogeography  
- GEOG 341. Wilderness Techniques  
- GEOG 342. Management and Protection of Natural Resources  
- GEOG 343. Wildlife Management  
- GEOL 340. Soils and Land Use  
- ISAT 420. Environmental Analysis and Modeling  
- ISAT 425. Environmental Hydrology  
- ISAT 422. Sustainability: An Ecological Process  
Credit Hours  
Industrial Systems  
ISAT 422. Environmental Management  
Choose two of following courses:  
- HTH 352. Environmental Health  
- HTH 450. Epidemiology  
- ISAT 423. Environmental Remediation  
- ISAT 427. Industrial Hygiene  
- ISAT 428. Industrial Ecology  
Environmental Policy  
ISAT 421. Environmental Policy and Regulation  
ISAT 422. Environmental Management or  
ISAT 424. Natural Resource Management  
One of the following courses:  
- BIO 465. Environmental Toxicology  
- ECON 305. Environmental Economics  
- ECON 340. Economics of Natural Resources  
- GEOG 325. Environmental Ethics  
- GEOG/ISAT 429. Sustainability, An Ecological Process  
- HIST 427. US Environmental History  
- ISAT 411. Energy Economics and Policy  
- ISAT 420. Environmental Analysis and Modeling  
- ISAT 423. Environmental Remediation  
- ISAT 471. Transportation: Energy, Environment, and Society  
- ISAT 472. Transportation: Air Quality Monitoring and Regulation  
- PPA 484. Environmental Regulatory Politics and Policy  
- SCOM 354. Communication, Environment and Environmentalism  
- SOCI 311. Sociology of the Environment  
Other courses may apply by permission of the coordinator.  
Environmental Science  
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The environmental science minor is a cross disciplinary program that can be elected by any student. Students pursuing programs ranging from the physical, natural or social sciences, to education, journalism, or business could benefit from this broadly-based environmental curriculum. The program draws from courses that focus on the application of scientific concepts and principles to the understanding of environmental problems and their solutions. The minor draws upon the expertise of faculty in the areas of biology, chemistry, geography, physics, and integrated science and technology.  
The environmental science minor:  
- provides a scientific background to those students interested in environmental law, environmental economics and environmental sustainability,  
- broadens the student’s understanding of how sciences are linked to environmental questions,  
- complements any major by focusing on courses related to environmental issues.  
The minimum requirement for a minor in environmental science is 24 credit hours taken from the four groups outlined below. Students wishing to complete more than one of the environmental minors (environmental management, environmental science and environmental studies) may receive dual credit for the capstone course (ENVT 400), but may not receive dual credit for any other courses that might be shared by the minors. Pre-approved study abroad and/or internship experiences may be substituted for one or more of the courses listed below.  
No more than two courses from a single subject area can count toward the completion of the Environmental Science minor. A score of four or greater in AP Environmental Science substitutes for GEOL 115 or ISAT 112.  
http://www.jmu.edu/catalog/13


### Environmental Studies

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The environmental studies minor provides an cross disciplinary education engaging socio-cultural, scientific and technical issues raised by the oft-conflicting needs and desires of globally interacting societies. Designed to complement any major, the goals of the environmental studies minor include:

- to help undergraduates develop an awareness of the cultural, political and scientific aspects of the world’s environmental problems.
- to better prepare students for further study at the graduate or professional school level and careers in the expanding field of environmental professions.

The minimum requirement for a minor in environmental studies is 24 credit hours taken from the four categories outlined. No more than three courses from a single subject (e.g., GEOG, GEOL, ANTH, ENG, etc.) may count toward completion of the environmental studies minor. Students wishing to complete more than one of the environment minors (environmental management, environmental science and environmental studies) may receive dual credit for the capstone course (ENVT 400), but may not receive dual credit for any other courses that might be shared by the minors.

#### Courses

**Introduction to Environmental Literacy** 1  
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- ENTH 198. Biological Anthropology
- GEO 103. Contemporary Biology
- ENG 221. Literature, Nature, Environment (this section only)
- ENVT 200. Environmental Systems Theory
- GEOL 102. Environment: Earth
- GEOL 115. Earth Systems and Climate Change
- ISAT 112. Environmental Issues in Science and Tech
- GEOG 210 Physical Geography

**Socio-Cultural Approaches to Environmental Studies** 2  
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- ANTH 373. Anthropological Perspectives on Environment and Development
- ECON 305. Environmental Economics
- ECON 340. Economics of Natural Resources
- ENG 371. Literature and the Environment
- ENG 372. Eco-Criticism and Environmental Ethics
- GEOG 290. Human Interaction with the Physical Environment
- GEOG 300. Population Geography
- GEOG 310. Environmental Issues
- GEOG 311. Endangered Environments
- GEOG 320. Human Dimensions of Global Change
- GEOG 322. Agricultural Systems
- GEOG 325. Environmental Ethics
- GEOG 341. Wilderness Techniques
- GEOG 342. Management and Protection of Natural Resources
- GEOG 343. Wildlife Management
- GEOG 345. Geography of Poverty
- GEOG/ISAT 429. Sustainability: An Ecological Process
- GEOG 430. Geography of Crop Plants
- HIST 427. U.S. Environmental History
- ISAT 421. Environmental Policy and Regulation
- PPA 484. Environmental Regulatory Policy and Politics
- SCOM 354. Communication, Environment and Environmentalism
- SOCI 311. Sociology of the Environment
- WRTC 410/SCOM 485. Rhetoric of Environmental Science and Technology

- Approved special topics courses
- Approved internship programs
- Approved study abroad courses

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1 Can be double-counted with General Education
2 All students must complete the capstone course ENVT 400. Students must have completed 15 hours of their environment minor in order to enroll in the capstone.
3 Requires approval by the environmental science minor coordinator.