Environmental Information Systems
Dr. Steven P. Frysinger, Coordinator
Phone: (540) 568-2710 Email: frysinsp@jmu.edu
Website: http://www.jmu.edu/EnvironmentalInfoSys

The cross disciplinary minor in environmental information systems is designed for undergraduates interested in using computer and information management technology to solve environmental problems and improve environmental stewardship. Some examples of environmental information systems are database systems to track and report hazardous materials in factories, decision support systems to facilitate risk analysis and management, GIS-based natural resource inventory systems and automated business management systems to support and document environmental compliance.

The environmental information systems minor requires a minimum of 24 credit hours. Core courses are intended to ensure knowledge of the foundation disciplines. Electives should be chosen in consideration of the student’s particular interests within the general field of environmental information systems. At least one elective course must be outside of the student’s major. Students are advised to check prerequisites of listed courses.

Required Courses
Core Courses
- CS 139. Algorithm Development 1
- ISAT 340. Software Development 1
- ISAT 320. Fundamentals of Environmental Science and Technology I
- ISAT 321. Fundamentals of Environmental Science and Technology II
- GEOG 215. Geospatial Tools I – Cartography and GIS 1

Elective Courses
- CIS/BSAN 364. Decision Support Systems
- CS 239. Advanced Computer Programming 1
- CS 474. Database Design and Application 1
- GEOG 216. Geospatial Tools II – Remote Sensing and GPS
- GEOG 368. Introduction to Geographic Information Science
- GEOG 385. Principles of Remote Sensing
- GEOG 466. GIS and Geographic Databases
- ISAT 341. Modeling and Simulation
- ISAT 420. Environmental Analysis and Modeling
- ISAT 426. Environmental Information Systems

Environmental Management
Dr. Steven P. Frysinger, Coordinator
Phone: (540) 568-2710 Email: frysinsp@jmu.edu
Website: http://www.jmu.edu/environmentalmgt

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
- ISAT 251. Topics in Statistics for ISAT
- MATH 220. Elementary Statistics
- MATH 285. Data Analysis
- MATH 318. Introduction to Probability and Statistics

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

Concentrations
- Choose two of following courses:
  - ISAT 422. Environmental Management
  - ISAT 423. Environmental Remediation
  - ISAT 424. Natural Resource Management
  - ISAT 425. Environmental Hydrology
  - ISAT 427. Industrial Hygiene
  - ISAT 436. Water Quality

Concentrations
- Choose two of 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

Concentration
- Choose two of the 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

Note: ISAT 252 or CIS 221 substitute for CS 139; ISAT 310 substitutes for CS 239; CS 474 substitutes for ISAT 340, ISAT 340 or COB 204 substitute for CS 274; CIS 330 substitutes for CS 474.

1 Dr. equivalent by permission of director.

http://www.jmu.edu/catalog/14