PROGRAM IN ENVIRONMENTAL SCIENCE

The interdisciplinary program in Environmental Science is administered by the College of Natural Resources (https://catalog.uidaho.edu/colleges-related-units/natural-resources).

The Environmental Science Program offers B.S., M.S., P.S.M., and Ph.D. degrees that emphasize the importance of an interdisciplinary approach for students committed to studying and solving environmental issues. The diverse multi-disciplinary faculty represents all colleges at the university and includes soil scientists, engineers, geographers, biologists, ecologists, political scientists, sociologists, chemists, philosophers, and hydrologists, as examples.

Career opportunities in the environmental sciences are diverse and numerous. Graduates are employed in the private and public sectors in areas such as natural resource management, pollution prevention, air and water quality monitoring, hazardous waste management, environmental and land use planning, rangeland health, environmental policy, environmental remediation, and environmental regulation and compliance.

The curriculum leading to the B.S. degree in environmental science offers students the opportunity to combine studies in several disciplines and professional fields in order to gain an understanding of the complex nature of environmental problems. In addition to understanding relationships among traditional disciplines, the program creates an integrated and coherent approach to environmental problem solving.

The curriculum includes the university core (general education) requirements, a common set of required courses and breadth electives for all environmental science majors, as well as the student's choice of one of three option areas. The required courses and electives for all majors are designed to build a strong base of knowledge in biological, physical, and social sciences, supplemented by a set of electives, in consultation with an environmental science advisor participating in the program. All students complete a senior project as part of their course of study.

Three option areas are offered: biological science, physical science, and social science.

Professional Certificates: Twelve-credit professional certificates in water science and environmental contamination assessment are also available through the Environmental Science Program. The certificates can be completed on the Moscow campus or through distance education. Procedural details are available in the program office.

Graduate training in the Environmental Science Program provides students with the opportunity to specialize in one of eight emphasis areas: ecology/biological science, waste management, earth science/hydrology, natural resource management, physical science, policy and law, environmental health/toxicology, and water science.

Admission to the graduate program is based on: ability to complete graduate-level work evidenced by undergraduate transcripts; the applicant's statement of research and career objectives; the compatibility of the student's objectives with faculty expertise and program objectives; and availability of graduate faculty to act as major advisor for the applicant. The GRE, applicant's statement of objectives, and three letters of recommendation and resume are required. Students without backgrounds in environmental science may be admitted after certain undergraduate deficiencies are completed.

Questions regarding the B.S. in Environmental Science should be directed to the Student Services Undergraduate Advisor, Chelsea Pugh (208/885-7132, chelseap@uidaho.edu). Questions for the M.S., P.S.M., or Ph.D. programs should be directed to the Graduate Program Coordinator, Dr. Lubia Cajas Cano de Gliniewicz (208/885-6113, lubia@uidaho.edu).

J.D. Wulfhorst, Director (17A College of Natural Resources 83844-1130; phone 208/885-6113; fax 208/885/4674; envs@uidaho.edu; www.uidaho.edu/envs).

BLEW, Roger D; 2002; Adjunct Assistant Professor of Environmental Science; Ph.D.; 1991; University of Calgary.

*DAKINS, Maxine E; 1994; Professor of Environmental Science; Ph.D.; 1994; SUNY at Syracuse.

*FORCE, Jo Ellen; 1979; Affiliate Professor of Environmental Science; Ph.D.; 1978; Ohio State University.

FUJITA, Yoshiko; 2004; Adjunct Assistant Professor of Environmental Science; Ph.D.; 1997; Stanford University.

*GOBLE, Dale D; 1982; Affiliate Professor of Environmental Science; J.D.; 1978; University of Oregon.

KHRISTOFOROVA, Nadezhda K; 2000; Adjunct Professor of Environmental Sciences; D.Sc.; 1985; Institute of Evolution Morphology & Ecology of Animals.

LATTIN, William C; 2013; Adjunct Faculty of Environmental Science; Ph.D.; 2008; University of Idaho.

MAIUIRE, Todd D; 2004; Adjunct Assistant Professor of Environmental Science; M.S.; 1995; Kansas State University.

*MAGUIRE, Todd D; 2004; Adjunct Assistant Professor of Environmental Science; M.S.; 1995; Kansas State University.

*MAGUIRE, Todd D; 2004; Adjunct Assistant Professor of Environmental Science; M.S.; 1995; Kansas State University.

*MULKEY, Stephen S; 2004; Adjunct Assistant Professor of Environmental Science; Ph.D.; 1996; University of Pennsylvania.

NEWCOMBE, David A; 2005; Adjunct Assistant Professor of Environmental Science; Ph.D.; 2003; University of Idaho.

PIET, Steven J; 2002; Adjunct Assistant Professor of Environmental Science; D.Sc.; 1999; Massachusetts Institute of Technology (MIT).

REED, David W; 2003; Adjunct Assistant Professor of Environmental Science; Ph.D.; 1999; University of Idaho.

*RUDZITIS, Gundars; 1983; Affiliate Professor of Environmental Science; Ph.D.; 1977; University of Chicago.

WALDEN, Von P; 2001; Affiliate Professor of Environmental Science; Ph.D.; 1995; University of Washington.

ZACHARIAS, Mark; 2005; Adjunct Assistant Professor of Environmental Science; Ph.D.; 2001; University of Guelph.

ZACHARIAS, Mark; 2005; Adjunct Assistant Professor of Environmental Science; Ph.D.; 2001; University of Guelph.
**Majors**

- Environmental Science (B.S.Env.S.) (https://catalog.uidaho.edu/colleges-related-units/natural-resources/environmental-science/environmental-science-bsenvs)

**Environmental Science Graduate Program**

- Environmental Science (M.S.) (https://catalog.uidaho.edu/colleges-related-units/natural-resources/environmental-science/environmental-science-ms)
- Natural Resources and Environmental Science (P.S.M.) (https://catalog.uidaho.edu/colleges-related-units/natural-resources/environmental-science/natural-resources-environmental-science-psm)
- Environmental Science (Ph.D.) (https://catalog.uidaho.edu/colleges-related-units/natural-resources/environmental-science/environmental-science-phd)
- Concurrent J.D./M.S. Environmental Science Degrees (https://catalog.uidaho.edu/colleges-related-units/natural-resources/environmental-science/concurrent-jdms-environmental-science-degrees)

**Environmental Science**

**ENVS 101 Introduction to Environmental Science**

*Gen Ed: Natural and Applied Sciences*

Introduction to basic principles in the biological, physical, and social science areas of environmental science.

**ENVS 102 Field Activities in Environmental Sciences**

*Gen Ed: Natural and Applied Sciences*

Field studies for ENVS 101. Field demonstrations on waste management, water, air pollution, and the ecosystem. Field trips required.

**Prereq or Coreq:** ENVS 101.

**ENVS 200 (s) Seminar**

ENVS 200 (s) Seminar (cr arr).

**ENVS 225 (s) International Environmental Issues Seminar**

**ENVS 225 (s) International Environmental Issues Seminar (3 cr)**

*Gen Ed: International*

Same as IS 225. Designed for individuals who have an interest in understanding environmental issues from a global perspective. The course focuses on various social and physical issues related to the environment and natural resources using human population dynamics as a backdrop. ENVS 101 recommended. (Spring only)

**ENVS 299 (s) Directed Study**

**ENVS 400 (s) Seminar**

ENVS 400 (s) Seminar (cr arr)

**Prereq:** Junior standing.

**ENVS 404 (s) Special Topics**

**ENVS 404 (s) Special Topics (cr arr).**

**ENVS 405 (s) Professional Development**

**ENVS 409 Principles of Environmental Toxicology**

**ENVS 409 Principles of Environmental Toxicology (3 cr)**

Same as FS J409/j509. Fundamental toxicological concepts including dose-response relationships, absorption of toxicants, distribution and storage of toxicants, biotransformation and elimination of toxicants, target organ toxicity and teratogenesis, mutagenesis, and carcinogenesis; chemodynamics of environmental contaminants including transport, fate, and receptors; chemicals of environmental interest and how they are tested and regulated; risk assessment fundamentals. Students registering for FS 509 are required to prepare an additional in-depth report. Recommended Preparation: Biol 102 or 115, Chem 111, 112, 275, and Stat 251.

**ENVS 415 Environmental Lifecycle Assessment**

**ENVS 415 Environmental Lifecycle Assessment (3 cr)**

Environmental life cycle assessment is the study of the environmental impacts resulting from the human production of goods and services from raw material acquisition through ultimate disposition. The class covers the basic concepts of life cycle assessment including definition of system boundaries, inventory of energy and material inputs and resultant emissions, assessment of impacts on human health and the environment, and interpretation of results. Recommended preparation: basic physical and biological sciences and familiarity with spreadsheet programs such as Excel. Additional assignment/projects required for graduate credit.

**ENVS 428 Pollution Prevention**

**ENVS 428 Pollution Prevention (3 cr)**

Basic concepts of pollution prevention and waste minimization; pollution prevention strategies and case studies for solid waste, hazardous waste, water and energy use, and air pollution. (Fall only)

**ENVS 429 Environmental Audit**

**ENVS 429 Environmental Audit (3 cr)**

Details on a variety of equipment and processes used by business in order to decrease generation of solid and hazardous waste. (Fall only)

**ENVS 436 Principles of Sustainability**

**ENVS 436 Principles of Sustainability (3 cr)**


**ENVS 446 Drinking Water and Human Health**

**ENVS 446 Drinking Water and Human Health (3 cr)**

Understand the characterization, testing, and treatment of chemical, microbial and hazardous compounds and their impact on human health. Be familiar with drinking water standards, regulatory aspects and protection of municipal, community, and private well systems. (Spring, Alt/yr)

**ENVS 450 Environmental Hydrology**

**ENVS 450 Environmental Hydrology (3 credits)**

Cross-listed with SOIL 450

Carries no credit after BE 355 or CE 325. Comprehensive understanding of the hydrologic processes associated with the environmental processes. Includes components of the hydrologic cycle, analysis of precipitation and run off, evapotranspiration, routing, peak flow, infiltration, soil and water relationships, snowmelt, and frequency analysis. (Spring only)

**Prereq:** MATH 170.
### ENVS 479 Introduction to Environmental Regulations

**EnVS J479/J579 Introduction to Environmental Regulations (3 cr)**

Interpretation and implementation of local, state, and federal environmental rules; introduction to environmental regulatory process; topics include regulatory aspects of environmental impact assessment, water pollution control, air pollution control, solid and hazardous waste, resource recovery and reuse, toxic substances, pesticides, occupational safety and health, radiation, facility siting, environmental auditing and liability. Additional projects/assignments reqd for grad cr. (Fall only)

### ENVS 482 Natural Resource Policy and Law

**EnVS R-J482/R-J582 Natural Resource Policy and Law (3 cr)**

Examination of U.S. natural resource policy and law including historical contexts and current policies and laws. Additional projects/assignments reqd for grad cr. Recommended Preparation: an undergraduate course in political science. (Spring, Alt/yr)

### ENVS 484 History of Energy

**EnVS 484 History of Energy (3 cr)**

Covers the history of humanity’s relationship to energy. Takes a historical approach beginning with ancient sources of energy, the discovery and exploitation of coal and the industrial revolution, the critical importance of oil and its derivatives, natural gas, nuclear and renewables. Finishes with a look to possible future energy sources.

### ENVS 485 Energy Efficiency and Conservation

**EnVS 485 Energy Efficiency and Conservation (3 cr)**

Includes aspects of science, policy, and economics of energy use and efficiency measures. Considers use trends and existing and potential efficiencies primarily on a national scale with some consideration of both global and local situations. Focuses on residential and transportation energy with some coverage of commercial and industrial energy use.

### ENVS 497 (s) Senior Research

**EnVS 497 (s) Senior Research (2-4 cr, max 4)**

*Gen Ed: Senior Experience*

Open only to majors in environmental science. Preparation of proposal, poster, formal presentation and written thesis or report based on research or project conducted with a faculty member. Research addresses an environmental problem using laboratory, field, or library techniques.

**Prereq:** Senior standing

**Prereq or Coreq:** Engl 316 or Engl 317.

### ENVS 498 (s) Internship

**EnVS 498 (s) Internship (cr arr).**

### ENVS 499 (s) Directed Study

**EnVS 499 (s) Directed Study (cr arr).**

### ENVS 500 Master’s Research and Thesis

**EnVS 500 Master’s Research and Thesis (cr arr).**

### ENVS 501 (s) Seminar

**EnVS 501 (s) Seminar (cr arr).**

### ENVS 502 (s) Directed Study

**EnVS 502 (s) Directed Study (cr arr).**

### ENVS 504 (s) Special Topics

**EnVS 504 (s) Special Topics (cr arr).**

### ENVS 505 (s) Professional Development

**ENVS 509 Principles of Environmental Toxicology**

See EnvS J409/J509.

### ENVS 515 Environmental Lifecycle Assessment

**EnVS 515 Environmental Lifecycle Assessment (3 cr)**

See EnvS J415/J515.

### ENVS 536 Principles of Sustainability

**EnVS 536 Principles of Sustainability (3 cr)**

See EnVS J436/J536.

### ENVS 541 Sampling and Analysis of Environmental Contaminants

**EnVS 541 Sampling and Analysis of Environmental Contaminants (3 cr)**

Covers the sampling and analysis of environmental contaminants from a statistical perspective. Includes designing sampling plans for environmental studies, statistically analyzing environmental data, and touches on more advanced techniques such as time series analysis and censored data. (Fall only)

**Prereq:** Stat 251.

### ENVS 546 Drinking Water and Human Health

**EnVS 546 Drinking Water and Human Health (3 cr)**

See EnVS J446/J546.

### ENVS 552 Environmental Philosophy

3 credits

Cross-listed with PHIL 452 and PHIL 552

Philosophical examination of various ethical, metaphysical, and legal issues concerning humans, nature, and the environment; issues covered may include biodiversity and species protection, animal rights, radical ecology, environmental racism, wilderness theory, population control, and property rights. Additional projects/assignments required for graduate credit.

### ENVS 577 Law, Ethics and the Environment

3 credits

Cross-listed with AGEC 577

Examines the laws and related ethical questions pertaining to agricultural and natural resource issues. Graduate credit includes special projects and additional discussion meetings. Recommended Preparation: BLAW 265.

**Prereq** for 477: Junior standing

**Prereq** for 577: Graduate standing and FOR 235, CORE 106, or POLS 364; or Permission.

### ENVS 579 Introduction to Environmental Regulations

**EnVS 579 Introduction to Environmental Regulations (3 cr)**

See EnVS J479/J579.

### ENVS 582 Natural Resource Policy and Law

**EnVS R-J582 Natural Resource Policy and Law (3 cr)**

See EnVS R-J482/R-J582.

### ENVS 598 (s) Internship

### ENVS 599 (s) Research

**EnVS 599 (s) Non-thesis Master’s Research (cr arr)**

Research not directly related to a thesis or dissertation.

**Prereq:** Permission.

### ENVS 600 Doctoral Research and Dissertation

**EnVS 600 Doctoral Research and Dissertation (cr arr).**

### ENVS 604 (s) Special Topics

**EnVS 604 (s) Special Topics (cr arr)**

**Prereq:** Enrollment in a Doctoral Program and Permission.