

A minimum of **15** credits are required for completion, and **nine** of which must be earned in courses numbered 500 and above. **Nine** credits must be graded. The overlap of coursework applied toward both the graduate certificate program and a graduate degree program must **not exceed six credits** and is **limited to elective coursework** in each program at the University of Washington.

Successful completion of a Graduate Certificate Program requires a minimum cumulative GPA of 3.0 for courses required for the Certificate and a grade of 2.7 or higher for each course counted toward the certificate.

Students enrolled in the Advanced Practice Environmental Health Nursing Graduate Certificate Program are expected to discuss their course plan with their certificate faculty advisor at the beginning of the program. Quarterly update from the student and advising meeting are required.

## CORE COURSES

### Epidemiology:

Students are required to take any one of these graduate epidemiology courses:

#### **EPI 511 Introduction to Epidemiology (4)**

Epidemiologic methods for non-epidemiology majors. Focuses on research designs and methods to describe disease occurrence and risk factor associations; uses quantitative and biomedical information to infer whether causal relationships exist between potential causes and disease in populations.

#### **EPI 512 Epidemiologic Methods I (4)**

Principles and methods of epidemiology. Covers measures of disease frequency, measures of effect, causal inferences, descriptive epidemiology, study types, misclassification, and effect modification. Designed for students who want to take 513. Prerequisite: prior or concurrent enrollment in BIOST 511 or equivalent.

#### **EPI 513 Epidemiologic Methods II (4)**

Continuation of 512. Considers how designs of epidemiologic studies may be constructed to maximize etiologic inferences. Covers confounding, randomized trials, cohort studies, case-control studies, and selected topics. Prerequisite: EPI 512.

#### **EPI 521 Epidemiology of Maternal and Child Health Problems ([3-4]-, max. 4)**

Contributions to understanding and prevention of major maternal and child health problems, including pregnancy outcome, infant and child morbidity and mortality, maternal morbidity and mortality, abnormal child growth and development, and early-life factors in adult health problems. Prerequisite: graduate, medical, or dental school standing and EPI 511 or EPI 512 or permission of instructor.

#### **EPI 526 Epidemiology of Diseases Communicable from Nature (3)**

Explores the public health aspects of zoonotic diseases, their epidemiology and approaches to control. Focuses on the major viral, rickettsial, bacterial, protozoal, helminthic, and fungal diseases transmitted from wild and domesticated animals to humans.

Prerequisite: EPI 511, EPI 512, or EPI 520 or permission of instructor.

---

## CORE COURSES

### Nursing or Public Health:

Students are required to complete one course (3 credits) chosen from the following Nursing or Public Health Courses:

#### **NSG 554 Occupational Health Nursing: Practice Issues (3)**

Examination of current, emerging occupational health and safety topics affecting worker populations. Includes discussion of workforce groups, work environments, and socio-political contexts; introduces prevalent health matters resulting from occupational exposures; applies theoretical concepts to the prevention of work-related injuries and illnesses; and identifies

issues affecting advanced professional practice and leadership roles.

**NSG 558 Occupational Health Nursing: Advanced Practice and Leadership in Program Development (3)**

Examination of advanced professional practice and leadership in the context of occupational health and safety programs. Focuses on assessment, development, implementation, and evaluation of programs involving workplace health surveillance, case management, workers' compensation, and health promotion in consideration of political, economic, legal, ethical issues, and application of current research.

**NSG 511 Prevention Issues in Community Health (3)**

An interdisciplinary overview of community health prevention approaches focusing on the social determinants of health and health disparity reduction among vulnerable populations. Analysis of community and population preventive strategies across the life course. Roles of advanced community health nurses as prevention leaders and consumers of prevention information are emphasized. Offered: W

**NSG 561 Community Health Systems for Equity (3)**

Defines, evaluates, and synthesizes how community health systems promote health equity. Emphasizes how various systems, such as care, public health, governmental, tribal, family, and social-kin, nonprofit, faith-based, and business, inhibit or promote communal health. Highlights advanced practice, practice inquiry, and leadership implications. Offered: A.

**ENV H 510 Global Environmental and Occupational Health (4)**

Provides an overview of environmental and occupational health, with major focus on developing countries. Examines a variety of environmental hazards and influential factors, interactions with human health and well-being, and relevance to public health. Considers workplace, community, home, regional, and global problems. Offered: W.

**ENV H 511 Environmental and Occupational Health (1-3, max. 3)**

Effects of exposure to chemical, physical, and biological agents, embracing the community and workplace environments. Current issues, using specific cases from recent literature as basis for classroom discussion and written assignments. Offered: W.

**ENV H 514 Fundamentals of Toxicology (3)**

Covers major fundamentals and core areas of toxicology, including dose response, absorption, distribution, metabolism, and excretion of toxicants, toxicity testing, interpretation of toxicological data; and biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses. Also explores mechanisms and fate of chemical interaction with biological systems. Prerequisite: BIOL 212, BIOC 405, or permission of instructor. Offered: A.

**ENV H 517 Children's Environmental Health (3)**

Discussion of environmental health issues as they pertain to children's health. Topics include historical perspective of public health research and policies directed at protecting children's health and emerging scientific and public health issues such as the risks and benefits of seafood consumption during pregnancy; the use of pesticides on food and in the home; air pollution and childhood asthma, and childhood injuries and the built environment. Offered: Sp.

---

## SELECTED ELECTIVE COURSES

Students are required to take a minimum of 2 courses (and a minimum of 6 credits) of elective courses selected from the following list:

**NSG 556 Program Planning and Health Systems and Multicultural Communities (4)**

Explores culture as it related to the program planning process, methods, theories, attitudes, and skills in health promotion and disease prevention through community engagement. Offered: W.

**NSG 559 Prevention Effectiveness in Community Health (1)**

Focuses on increasing effectiveness of organization- and community-level health promotion and prevention programs with multicultural communities. Includes web-based tool-kits pertaining to: cross-cultural adaptations of health promotion programs; mental health promotion in communities; institutional readiness to sustain prevention policies; and community engagement in health promotion efforts. Credit/no-credit only.

**NURS 576 Assessment and Collaboration with Communities and Systems (3)**

Examines, critiques, and applies theory in assessing communities, populations, and systems cross-culturally. Focuses on advanced practice, executive leadership/policy, and practice inquiry; broad definition of community includes organizations.

Emphasizes team work in assessment implementation, i.e., survey, interview, focus groups, observation/participant observation to advance understanding of social determinants of health.

**NURS 580 Current Issues in Occupational and Environmental Medicine (2, max. 12)**

Interdisciplinary seminar on current and emerging topics in the practice of environmental and occupational health. Faculty- and student-led presentations with an interdisciplinary focus, including occupational hygiene, nursing, and medical issues. Prerequisite: environmental health graduate student, occupational health nursing student, or permission of instructor. Offered: jointly with ENV H 596; AWSp.

**NURS 590 Ecology of Human Health (5 cr)**

Provides conceptual foundation for the study of human health ecology within nursing science. Frameworks for understanding human health as an outcome of individual, family, and group interactions and transactions with environments are applied. Provides the basis for evaluation and developing therapeutic approaches to improve health.

**ENV H 511 Environmental and Occupational Health ([1-3]-, max. 3)**

Effects of exposure to chemical, physical, and biological agents, embracing the community and workplace environments. Current issues, using specific cases from recent literature as basis for classroom discussion and written assignments. Offered: W.

**ENV H 514 Fundamentals of Toxicology (3)**

Covers major fundamentals and core areas of toxicology, including dose response, absorption, distribution, metabolism, and excretion of toxicants, toxicity testing, interpretation of toxicological data; and biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses. Also explores mechanisms and fate of chemical interaction with biological systems. Prerequisite: BIOL 212, BIOC 405, or permission of instructor. Offered: A.

**ENV H 515 Organ System Toxicology (3) T. KAVANAGH**

Focuses on organ system toxicology. Emphasizes the pathophysiology of toxicant-induced organ injury, including adaptive responses to toxicant exposure, inflammation, and tissue repair pathways. Prerequisite: ENV H 514 or permission of instructor. Offered: W.

**ENV H 516 Toxic Agents: Effects and Mechanisms (3)**

Focuses on the toxic effects and the underlying mechanisms of the principal classes of toxicants: pesticides, metals, solvents, air pollutants, persistent organic pollutants, radiation, as well as on food safety and occupational/clinical/eco toxicology. Prerequisite: ENV H 515 or permission of instructor. Offered: Sp.

**ENV H 517 Children's Environmental Health (3)**

Discussion of environmental health issues as they pertain to children's health. Topics include historical perspective of public health research and policies directed at protecting children's health and emerging scientific and public health issues such as the risks and benefits of seafood consumption during pregnancy; the use of pesticides on food and in the home; air pollution and childhood asthma, and childhood injuries and the built environment. Offered: Sp.

**ENV H 536 Health Impact Assessment (2)**

Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with URBDP 536.

**ENV H 538 Public Health and the Built Environment (2)**

Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with URBDP 538.

**ENV H 541 Ecology of Environmentally Transmitted Microbial Hazards (3)**

Focuses on the transmission of infectious microorganisms by air, food, water, and other environmental media. Provides an introduction to environmentally transmitted pathogens, and discusses factors affecting their environmental fate, transport, and persistence. Offered: A.

**ENV H 545 Water, Wastewater, and Health (4)**

Review of water supply, water quality, and water/wastewater treatment as they relate to human health. Includes water law and regulations, source water protection, basic treatment technologies for water and waste, chemical and microbial contaminants, and recreational water. Offered: A.

**ENV H 546 Pesticides and Public Health (3)**

Examines health risks and benefits associated with pesticide use in the United States and internationally; reviews exposure, toxicity, epidemiology, and regulation of pesticides, focusing on populations such as workers and children; discusses benefits derived from vector control, food production, and food preservation. Offered: W, odd years.

**ENV H 547 Environmental Change and Infectious Disease (3) G. CANGELOSI**

Uses multidisciplinary approach to address the impacts of environmental change (including climate change) on infectious disease. Concepts include categories of environmental change; infectious disease emergence/re-emergence; environmental aspects of infectious disease exposure, acquisition, and progression; pathogen growth/survival in the environment; historical and societal perspectives; surveillance; and strategies for control. Offered: Sp.

**ENV H 564 Recognition of Health and Safety Problems in Industry (2)**

Develops skills in occupational health and safety hazard recognition in a variety of important Northwest industries. Focuses on process understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: jointly with IND E 564; A.

**ENV H 570 Occupational and Environmental Epidemiology (3)**

Research in occupational and environmental determinants of disease. Defining exposed populations, characterizing exposure levels, estimating disease risks relative to exposure. Cohort, case-control, cross-sectional designs for various health outcomes. Applications to exposure standard setting and risk assessment. Prerequisite: EPI 511 or EPI 512, EPI 513 or permission of instructor. Offered: jointly with EPI 570; Sp.

**ENV H 572 Environmental Risk and Society (3)**

Examines environmental health risk assessments and explores how such assessments are viewed by affected communities. Reviews scientific risk assessment methods, risk perception, risk communication, and public participation processes. Examines the influence of advocacy and special-interest publications on risk assessment debates. Offered: W.

**ENV H 577 Risk Assessment for Environmental Health Hazards (3/4)**

Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEE 560/PB AF 589; A.

**ENV H 580 Environmental and Occupational Health Sciences Seminar (1, max. 6)**

Presentation of current environmental and occupational health research and issues. Credit/no-credit only. Offered: AWSp.

**ENV H 584 Occupational and Environmental Health: Policy and Politics (3)**

Provides an understanding of the policy process and policy issues in occupational and environmental health and safety, including exploring the relationships between science, values, and politics in the process of setting public policy. Offered: Sp.

**ENVIR 550 Global Commercialization of Sustainable Technologies (4)**

Students work on faculty-supervised interdisciplinary teams (with students from business, sciences/engineering, and public policy) to develop business plans for commercializing environmentally friendly technologies around the world. The projects involve collaborating with EPA's Environmental Technology Commercialization Center, with Battelle Labs, and with Puget Sound businesses. Offered: jointly with B BUS 550.

**ENVIR 585 Climate Impacts on the Pacific Northwest (4) Mantua, Snover**

Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ESS 585/SMEA 585; Sp.

**C ENV 500 Communicating Science to the Public Effectively (3)**

Teaches emerging scientists how to effectively communicate their research to the public. Uses lessons and tools such as group discussion, feedback, and practice. Credit/no-credit only. Offered: W.

**B E 552 Theories of Knowledge and the Built Environment (3)**

Systematic examination of alternative epistemological frameworks applicable to studying the built environment; examinations of their differences and similarities and of the possibility of a comprehensive, pluralistic approach.

**URBDP 536 Health Impact Assessment (2)**

Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with ENV H 536.

**URBDP 538 Public Health and the Built Environment (2)**

Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with ENV H 538.

**GEOG 560 Principles of GIS Mapping (5)**

Origins, development, and methods of cartographic mapping. Principles of data representation and map design for thematic mapping and spatial analysis. Introduction of principles of geographic information systems (GIS).

**GEOG 561 Urban Geographic Information Systems (5) *Elwood, Nyerges***

Uses geographic information systems to investigate urban/regional issues, including transportation, land use, environment, emergency response, and public health. Spatial data acquisition, structuring, management, and analysis in a GIS environment - for urban planning, government, and research applications. Prerequisite: minimum grade of 2.0 in GEOG 560 or permission of instructor. Offered: W.

**PB AF 547 Water Resource Economics (4)**

Explores the economics of water resources, including static and dynamic efficiency for consumers and producers and other topics concerned with water quality. Explores effects of climate change on water resources, and economic approaches to mitigate these effects.

**PB AF 582 Communicating Climate Change (4)**

Surveys climate change communications and the role in achieving climate change policy goals. Assesses climate change communication in light of scientific evidence as well as student reactions. Explores theories and frameworks to evaluate and improve climate change communications. Examines the role of climate change communication as a policy tool.

**PB AF 587 Water and Sanitation Policy in Economically Developing Countries (3/4)**

Examines the policy dimensions of providing water supply and sanitation services in developing countries.

**PB AF 588 Environmental Risk Analysis (4)**

Examines a variety of frameworks and models of risk with respect to regulation, policy, and decision-making.

**PB AF 589 Risk Assessment for Environmental Health Hazards (3/4)**

Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEE 560/ENV H 577; A.

**PB AF 590 Environmental Policy Processes (3-4)**

Presents background to establish the need for environmental policy. Explores in a comparative manner, examining both successes and failures, various strategies that have been used or proposed to protect the environment. Offered: jointly with SEFS 592.

**PB AF 593 Climate Change and Energy Policy (3-4)**

Energy policy formulation and implementation with emphasis on post-1973 developments. Energy conservation programs; changing roles of oil, coal, gas, nuclear, and solar energy; institutional, environmental, and equity considerations; government research and development programs.

**PB AF 594 Economic Approaches to Environmental Management (3/4) *Layton***

Examines the economic tools relevant to natural resource and environmental management. Tools are developed in the context of a series of resource problems, with an eye towards building intuition useful for addressing complex policy problems that do not fit neatly into textbook examples.

**PB AF 596 Ethics and Values in Environmental and Natural Resource Policy (3)**

Explores environmental values and ethics and their relationship to the policy process. Includes content on value foundation of economic efficiency and its relationship to fairness, legal entitlements, duty to other creatures, and incommensurabilities in valuing goods. Current policy controversies are addressed.

**PB AF 597 Role of Scientific Information in Environmental Decisions (3/4) Cullen**

Examines how science contributes to decisions that involve the natural environment; how science and scientists help frame debates and decisions; how scientific findings are incorporated into decision-making processes; how scientists and non-scientists deal with uncertainty about scientific questions.

---

**CAPSTONE EXPERIENCE**

Students will also complete a capstone experience of 3 or more credits involving mentored research or a clinical experience that is negotiated between the student and his/her certificate faculty advisor. Students will register for NMETH 600 if it is a mentored research or NCLIN 599 if it is a mentored clinical experience. Students will work with the certificate faculty advisor to complete the NMETH 600 form or NCLIN 599 form to detail the plan.