

# ENVH - Environmental Health

## **ENVH 301 Principles of Environmental Health Science (3 Credit Hours)**

An introduction to the chemical, physical and biological factors affecting human health and well-being. The emphasis is on application of controls to prevent disease and maximize environmental quality.

**Prerequisites:** A grade of C or better in ENGL 110C

## **ENVH 395 Topics in Environmental Health (1-3 Credit Hours)**

Advanced study of selected topics.

**Prerequisites:** permission of the instructor

## **ENVH 401/501 Occupational Health (3 Credit Hours)**

An introduction to the industrial environment relative to health problems and the etiologically related agents.

**Prerequisites:** junior standing

## **ENVH 402W/502 Environmental and Occupational Health Administration and Law (3 Credit Hours)**

A review of the concepts and practice of administering environmental and occupational health control programs within agencies at the federal, state and local levels. The principles of administration and leadership of programs in the private sector are also discussed. The constitutional, statutory and administrative law bases for organizing and conducting such programs and developing environmental and occupational policies as well as the legal implications of enforcement will be addressed. A review of all major statutes and their agencies that enforce them will be addressed. This is a writing intensive course.

**Prerequisites:** junior standing and a grade of C or better in ENGL 110C and ENGL 211C or ENGL 221C or ENGL 231C

## **ENVH 403 Environmental and Occupational Health Internship I (3 Credit Hours)**

Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor.

**Prerequisites:** ENVH 301, a minimum of 12 semester hours of ENVH courses, and permission of program director

## **ENVH 404 Environmental Health Internship II (3 Credit Hours)**

Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor.

**Prerequisites:** ENVH 301, a minimum of 12 semester hours of ENVH courses, and permission of program director

## **ENVH 405 Environmental Health Internship III (6 Credit Hours)**

Includes placement in a health-related facility or industrial setting, prearranged with faculty instructor.

**Prerequisites:** ENVH 301, a minimum of 12 semester hours of ENVH courses, and permission of program director

## **ENVH 406/506 Principles of Occupational Safety and Health (3 Credit Hours)**

A broad overview of the field of safety. A study of the factors influencing the occurrence of accidents and incidents is set in the context of safety legislation, current issues in the practice of safety and the ethical and professional responsibilities of the safety practitioner. The course also includes discussions of product safety, fire prevention and protection systems safety and human elements in loss prevention.

**Prerequisites:** junior standing

## **ENVH 407/507 Occupational Safety Standards, Laws and Regulations (3 Credit Hours)**

A review of the important Occupational Safety and Health Standards and Codes with particular emphasis on application of these codes to typical work situations. Governmental enforcement methodologies are also discussed.

**Prerequisites:** junior standing

## **ENVH 420/520 Communicable Diseases (3 Credit Hours)**

An in-depth study of the communicable disease processes as they pertain to environmental sources. A detailed discussion of specific communicable diseases that are manifested by various environmental etiologic agents. Various environmental control measures to prevent the incidence of communicable diseases are presented.

**Prerequisites:** BIOL 110N or BIOL 121N, BIOL 117N or BIOL 123N, BIOL 150, or permission of the instructor

## **ENVH 421/521 Food Safety (3 Credit Hours)**

A comprehensive study of food and milk production, processing and preservation and controls exercised for the prevention of foodborne illnesses and spoilage.

**Prerequisites:** BIOL 110N or BIOL 121N, BIOL 117N or BIOL 123N, BIOL 150, or permission of instructor

## **ENVH 422/522 Water and Wastewater Technology (3 Credit Hours)**

Introduction to water quality management and wastewater treatment technology. Topics include the effect of organic, inorganic and thermal pollutants in water quality streams, waterborne diseases, monitoring concepts, methods of water quality management, regulatory considerations, theory and application of wastewater treatment concepts, wastewater characterization, and treatment methods and disposal methods.

**Prerequisites:** BIOL 150 or permission of instructor

## **ENVH 423/523 Vector-Borne Diseases and Their Control (3 Credit Hours)**

Vector-borne diseases affect the health and well-being of humans and other animals in a wide variety of ways. Arthropod vectors (e.g., mosquitoes, filth flies, ticks and related groups) transmit numerous debilitating infectious diseases that oftentimes impose significant burden on healthcare systems. This course provides insight on the ways in which arthropods impact global health and economic growth through the diseases they transmit.

**Prerequisites:** BIOL 110N or BIOL 121N, BIOL 117N or BIOL 123N, BIOL 150, or permission of instructor

## **ENVH 424/524 Residential and Institutional Environments (3 Credit Hours)**

A study of the physical aspects of housing and institutions as they relate to human health and well-being. Coverage is also given to infection control in health-care facilities.

**Prerequisites:** junior standing

## **ENVH 425/525 Occupational Safety and Health Program Management (3 Credit Hours)**

The establishment, implementation and maintenance of occupational safety and health programs. Paradigms of safety, techniques for safety training and creation of value for safety among business managers and employees are emphasized.

**Prerequisites:** ENVH 406 or permission of instructor

## **ENVH 426/526 Physical Hazards and Their Control (3 Credit Hours)**

An in-depth examination of the varied types of physical hazards in the work environment and the methods of prevention, recognition and control.

**Prerequisites:** junior standing

## **ENVH 438/538 Environmental Emergencies and Disasters (3 Credit Hours)**

This course uses a multi-disciplinary approach and draws on theory, case studies, research, and field experience to examine the global problem of environmental emergencies and disasters. Particular attention is devoted to the public health challenges posed by chemical and radiological contamination situations. Students discuss contemporary issues and controversies, and spend time working in teams to craft solutions to key emergency preparedness problems.

**Prerequisites:** Junior standing

## **ENVH 440/540 Principles of Ergonomics (3 Credit Hours)**

An introduction to the terminology, concepts and applications of physiology, anthropometry, biomechanics and engineering to workplace and work methods design. Emphasis will be given to workplace design and work methods for job safety and health.

**Prerequisites:** junior standing

**ENVH 441/541 Industrial Hygiene (3 Credit Hours)**

An in-depth study of the chemical and physical agents responsible for occupational illness and the methods used for their measurement, evaluation and control.

**Prerequisites:** CHEM 121N, CHEM 123N, CHEM 211, BIOL 240 or BIOL 250, or permission of instructor

**ENVH 442/542 Industrial Hygiene Sampling Methods (3 Credit Hours)**

An introduction to the detection and sampling alternatives used for estimating worker exposure to hazardous chemical, physical and biological agents in the occupational environment. Field and class activities are intended to simulate select occupational exposure situations and provide a basis for selection of the best evaluation techniques. Emphasis is on quantitative and qualitative methods typically used when estimating employee exposure to hazardous agents and the subjective decision making process.

**Pre- or corequisite:** ENVH 441 or permission of instructor

**ENVH 443 Principles of Toxicology (3 Credit Hours)**

An introduction to the fundamentals of toxicology with emphasis on the interaction of environmental and industrial chemicals with humans are studied. Exposure, dose response, kinetics and distribution of toxicants, metabolism of toxic agents, factors that affect toxicity and introductory chemical carcinogenesis are discussed.

**Prerequisites:** BIOL 110N or BIOL 121N, BIOL 117N or BIOL 123N, BIOL 240 or BIOL 250, CHEM 121N, CHEM 123N, or permission of the instructor

**ENVH 445/545 Air Pollution and Its Control (3 Credit Hours)**

The study of air pollution in relation to air quality criteria, pollutant production, atmospheric evolution, measurement and control techniques.

**Prerequisites:** PHYS 101N or PHYS 111N, CHEM 121N, CHEM 123N, MATH 162M, or permission of instructor

**ENVH 446/546 Physical Hazards Laboratory (2 Credit Hours)**

Use and application of sampling methods and equipment for measurement of physical hazards in the work environment. Includes aspects such as ergonomics, noise, vibration and radiation.

**Pre- or corequisite:** ENVH 426 or permission of instructor

**ENVH 448/548 Epidemiology and Biostatistics (3 Credit Hours)**

An introductory course in the principles and practices of epidemiology and the application of statistical and mathematical design and analysis of health research studies for the understanding and control of population health and disease with emphasis on environmental applications.

**Prerequisites:** STAT 130M, MATH 162M or permission of instructor

**ENVH 461/561 Hazardous Waste Management (3 Credit Hours)**

Description of the hazardous waste problem, the fundamentals of the chemistry involved with hazardous waste transport, methods of identification, assessment, control, and disposal of toxic and hazardous waste are discussed. In addition the relevant legal statutes, risk assessment emergency response and case studies are presented. Introduction to the toxicological effects of exposure to hazardous waste is discussed.

**Prerequisites:** junior standing

**ENVH 465/565 Hazardous Materials Management (3 Credit Hours)**

The management of hazardous materials includes a wide array of interlocking regulations addressing use, manufacturing, exposure, storage, shipping and disposal. A life cycle review of hazardous materials highlighting best practices and legislation is presented. Useful in preparation for CHMM examination.

**Prerequisites:** junior standing

**ENVH 466 Environmental and Occupational Risk Assessment and Decision Analysis (3 Credit Hours)**

The principles of quantitative health risk assessment of toxicants are presented. Qualitative and quantitative skills necessary to evaluate the probability of injury, disease, or death in the general population from exposure to environmental and occupational contaminants are discussed. Hazardous identification, exposure assessment, dose-response evaluation and risk characterization are emphasized. Risk management group projects assessing some real environmental risks are an important segment of the class.

**Prerequisites:** junior standing

**ENVH 470/570 Industrial Environmental Management (3 Credit Hours)**

Course addresses day-to-day technical and management aspects of environmental compliance, as well as regulatory issues faced in industrial applications. Includes audits and inspections, air and water pollution and hazardous waste.

**Prerequisites:** junior standing

**ENVH 495/595 Topics in Environmental Health (1-3 Credit Hours)**

Advanced study of selected topics.

**Prerequisites:** junior standing

**ENVH 498/598 Independent Study in Environmental Health (1-3 Credit Hours)**

An opportunity is afforded students to undertake independent study under the direction of a faculty member.

**Prerequisites:** permission of the Program Director

**ENVH 499 Environmental and Occupational Health Senior Seminar (1 Credit Hour)**

Advanced seminar.

**Prerequisites:** second semester senior standing and permission of the program director

**ENVH 501 Occupational Health (3 Credit Hours)**

An introduction to the industrial environment relative to health problems and the etiologically related agents.

**ENVH 502 Environmental Health Administration and Law (3 Credit Hours)**

A review of the concepts and practice of administering environmental health control programs within agencies at the federal, state and local levels. The principles of administration and leadership of programs in the private sector are also discussed. The constitutional, statutory and administrative law bases for organizing and conducting such programs and developing environmental policy as well as the legal implications of enforcement will be addressed. A review of all major environmental statutes and their agencies that enforce them will be addressed.

**ENVH 506 Principles of Occupational Safety and Health (3 Credit Hours)**

A broad overview of the field of safety. A study of the factors influencing the occurrence of accidents and incidents is set in the context of safety legislation, current issues in the practice of safety and the ethical and professional responsibilities of the safety practitioner. The course also includes discussions of product safety, fire prevention and protection systems safety and human elements in loss prevention.

**ENVH 507 Occupational Safety Standards, Laws and Regulations (3 Credit Hours)**

A review of the important Occupational Safety and Health Standards and Codes with particular emphasis on application of these codes to typical work situations. Governmental enforcement methodologies are also discussed.

**ENVH 520 Communicable Diseases (3 Credit Hours)**

An in-depth study of the communicable disease processes as they pertain to environmental sources. A detailed discussion of specific communicable diseases that are manifested by various environmental etiologic agents. Various environmental control measures to prevent the incidence of communicable diseases are presented.

**ENVH 521 Food Safety (3 Credit Hours)**

A comprehensive study of food and milk production, processing and preservation and controls exercised for the prevention of foodborne illnesses and spoilage.

**ENVH 522 Water and Wastewater Technology (3 Credit Hours)**

Introduction to water quality management and wastewater treatment technology. Topics include the effect of organic, inorganic and thermal pollutants in water quality streams, waterborne diseases, monitoring concepts, methods of water quality management, regulatory considerations, theory and application of wastewater treatment concepts, wastewater characterization, and treatment methods and disposal methods.

**ENVH 523 Vector-Borne Diseases and Their Control (3 Credit Hours)**

Vector-borne diseases affect the health and well-being of humans and other animals in a wide variety of ways. Arthropod vectors (e.g., mosquitoes, filth flies, ticks and related groups) transmit numerous debilitating infectious diseases that oftentimes impose significant burden on healthcare systems. This course provides insight on the ways in which arthropods impact global health and economic growth through the diseases they transmit.

**ENVH 524 Residential and Institutional Environments (3 Credit Hours)**

A study of the physical aspects of housing and institutions as they relate to human health and well-being. Coverage is also given to infection control in health-care facilities.

**ENVH 525 Occupational Safety and Health Program Management (3 Credit Hours)**

The establishment, implementation and maintenance of occupational safety and health programs. Paradigms of safety, techniques for safety training and creation of value for safety among business managers and employees are emphasized.

**ENVH 526 Physical Hazards and Their Control (3 Credit Hours)**

An in-depth examination of the varied types of physical hazards in the work environment and the methods of prevention, recognition and control.

**ENVH 538 Environmental Emergencies and Disasters (3 Credit Hours)**

This course uses a multi-disciplinary approach and draws on theory, case studies, research, and field experience to examine the global problem of environmental emergencies and disasters. Particular attention is devoted to the public health challenges posed by chemical and radiological contamination situations. Students discuss contemporary issues and controversies, complete a paper exploring current issues in the field, and spend time working in teams to craft solutions to key emergency preparedness problems.

**ENVH 540 Principles of Ergonomics (3 Credit Hours)**

An introduction to the terminology, concepts and applications of physiology, anthropometry, biomechanics and engineering to workplace and work methods design. Emphasis will be given to workplace design and work methods for job safety and health.

**ENVH 541 Industrial Hygiene (3 Credit Hours)**

An in-depth study of the chemical and physical agents responsible for occupational illness and the methods used for their measurement, evaluation and control.

**ENVH 542 Industrial Hygiene Sampling Methods (3 Credit Hours)**

An introduction to the detection and sampling alternatives used for estimating worker exposure to hazardous chemical, physical and biological agents in the occupational environment. Field and class activities are intended to simulate select occupational exposure situations and provide a basis for selection of the best evaluation techniques. Emphasis is on quantitative and qualitative methods typically used when estimating employee exposure to hazardous agents and the subjective decision making process.

**Pre- or corequisite:** ENVH 541 or permission of the instructor

**ENVH 545 Air Pollution and Its Control (3 Credit Hours)**

The study of air pollution in relation to air quality criteria, pollutant production, atmospheric evolution, measurement and control techniques.

**ENVH 546 Physical Hazards Laboratory (2 Credit Hours)**

Use and application of sampling methods and equipment for measurement of physical hazards in the work environment. Includes aspects such as ergonomics, noise, vibration and radiation.

**Prerequisites:** ENVH 541 or permission of the instructor

**ENVH 548 Epidemiology and Biostatistics (1-3 Credit Hours)**

An introductory course in the principles and practices of epidemiology and the application of statistical and mathematical design and analysis of health research studies for the understanding and control of population health and disease with emphasis on environmental applications.

**ENVH 561 Hazardous Waste Management (3 Credit Hours)**

Description of the hazardous waste problem, the fundamentals of the chemistry involved with hazardous waste transport, methods of identification, assessment, control, and disposal of toxic and hazardous waste are discussed. In addition the relevant legal statutes, risk assessment emergency response and case studies are presented. Introduction to the toxicological effects of exposure to hazardous waste is discussed.

**ENVH 565 Hazardous Materials Management (3 Credit Hours)**

The management of hazardous materials includes a wide array of interlocking regulations addressing use, manufacturing, exposure, storage, shipping and disposal. A life cycle review of hazardous materials highlighting best practices and legislation is presented. Useful in preparation for CHMM examination.

**ENVH 570 Industrial Environmental Management (3 Credit Hours)**

Course addresses day-to-day technical and management aspects of environmental compliance, as well as regulatory issues faced in industrial applications. Includes audits and inspections, air and water pollution and hazardous waste.

**ENVH 595 Topics in Environmental Health (1-3 Credit Hours)**

Advanced study of selected topics.

**ENVH 598 Independent Study in Environmental Health (1-3 Credit Hours)**

An opportunity is afforded students to undertake independent study under the direction of a faculty member.

**Prerequisites:** permission of the Program Director

**ENVH 600 Principles of Environmental Health Science and Protection (3 Credit Hours)**

An introduction to the chemical, physical and biological factors affecting human health and well being. The emphasis is on the application of controls to prevent disease and maximize environmental quality. (Cross-listed with CHP 602)

**ENVH 603 Environmental Epidemiology (3 Credit Hours)**

Collection methods, analysis and interpretation of epidemiologic data with environmental and occupational disease emphasis.

**ENVH 610 Food Microbiology (4 Credit Hours)**

An in-depth examination of requirements for growth of food borne disease organisms. Includes hazard analysis and critical control point methodology.

**ENVH 611 Water Pollution Control (4 Credit Hours)**

A study of the chemical, physical and biological causes of surface and groundwater pollution. Emphasis is given to onsite wastewater systems and protection of groundwater supplies.

**ENVH 621 Advanced Toxicology I (4 Credit Hours)**

An in-depth study of the adverse interaction of environmental and occupational chemical agents with humans. Students critically review articles from the current toxicology literature with regard to scientific content, methods and conclusions. Each student presents at least two reviews during the semester.

**Prerequisites:** ENVH 543

**ENVH 632 Environmental and Occupational Health Risk Assessment (3 Credit Hours)**

This course is an introduction to quantitative and qualitative risk analysis and examines the fundamental aspects of risk, focusing on environmental, occupational, and public health risks. Hazard identification, exposure assessment, dose-response evaluation, risk characterization, and risk communication are emphasized.

**ENVH 643 Principles of Toxicology (3 Credit Hours)**

An introduction to the fundamentals of toxicology with emphasis on the interaction of environmental and industrial chemicals with humans are studied. Exposure, dose response, kinetics and distribution of toxicants, metabolism of toxic agents, factors that affect toxicity and introductory chemical carcinogenesis are discussed.

**ENVH 695 Selected Topics in Environmental Health (1-3 Credit Hours)**

The study of selected topics that may not offered regularly. Special topics will appear in the schedule of classes each semester.

**ENVH 722 Control of Hazards in the Workplace (3 Credit Hours)**

Advanced methods for evaluation and control of hazards in the workplace.

**ENVH 795 Selected Topics in Environmental Health (1-3 Credit Hours)**

The study of selected topics that may not be offered regularly. Special topics will appear in the schedule of classes each semester.

**Prerequisites:** permission of the instructor

**ENVH 822 Control of Hazards in the Workplace (3 Credit Hours)**

Advanced methods for evaluation and control of hazards in the workplace.

**ENVH 895 Selected Topics in Environmental Health (1-3 Credit Hours)**

The study of selected topics that may not be offered regularly. Special topics will appear in the schedule of classes each semester.

**Prerequisites:** permission of the instructor

**ENVH 998 Master's Graduate Credit (1 Credit Hour)**

This course is a pass/fail course for master's students in their final semester. It may be taken to fulfill the registration requirement necessary for graduation. All master's students are required to be registered for at least one graduate credit hour in the semester of their graduation.