

# PHEO - PUBLIC HLTH ENVIRO OCCU

## PHEO 600 Principles of Environmental and Occupational Health

**Credits 3. 3 Lecture Hours.** Overview of nature and magnitude of environmental and occupational disease; sources of exposure, methods of monitoring and modeling exposure; review of target organs and potential effects of specific chemicals; discussion of workplace hazards and monitoring programs.

## PHEO 603 Introduction to Environmental and Occupational Health for Military Personnel II

**Credits 3. 3 Lecture Hours.** The goal of the course is for the student to be able, given a scenario and pertinent information, make sound management decisions and effectively employ public health policy among military public health specialties.

## PHEO 605 Chemical Hazard Exposure

**Credits 3. 3 Lecture Hours.** Methods for sampling hazardous chemicals in various environmental media; planning the sample collection; analytical process to ensure that data quality is sufficient to meet project objectives; Data Quality Objectives; development of a QAPP and QA/QC protocols including data validation. May be taken two times for credit. **Prerequisite:** Graduate classification.

## PHEO 606 Applied Health Risk Assessment: Humanitarian Settings for Military Personnel

**Credits 3. 3 Lecture Hours.** The overall goal of the course is for the student to be able, given a scenario and pertinent information, make sound management decisions and effectively employ public health policy.

## PHEO 607 Applied Health Risk Assessment: Operational Risk Assessment and Management for Military Personnel

**Credits 3. 3 Lecture Hours.** The overall goal of the course is for the student to be able, given a scenario and pertinent information, make sound management decisions and effectively employ public health policy.

## PHEO 610 Toxicology in Public Health

**Credits 3. 3 Lecture Hours.** Concepts of toxicology in public health; emphasis on environmental and occupation exposures; distribution, absorption, metabolism and elimination of toxicants; mechanisms of injury at the cellular, organ and systemic level following exposure to toxic chemicals; exposure assessment/risk assessment for non-toxicologists and the use of toxicology in decision-making. May be taken two times for credit. **Prerequisite:** PHEO 630.

## PHEO 611 Environmental Health Assessment

**Credits 3. 3 Lecture Hours.** This course will review methods to evaluate the public health implications of exposures to environmental contamination. These methods are used to determine whether people have been, are being, or may be exposed to hazardous substances and if so, whether that exposure is harmful, or potentially harmful, and should therefore be stopped or reduced. Students will gain insight into the variety of tasks associated with the environmental health assessment process. **Prerequisite:** PHEO 600 and PHEB 600.

## PHEO 612 Global Environmental Health

**Credits 3. 3 Lecture Hours.** Review of the globalization and transformation of local problems into international issues; environmental problems that developing and underdeveloped countries face due to overpopulation, lack of natural resources and lack of proper ways or technologies to dispose of hazardous wastes. **Prerequisite:** Graduate classification.

## PHEO 613 Introduction to Environmental Health Disparities

**Credits 3. 3 Lecture Hours.** Disproportionate burdens of environmental contamination, whether urban or rural, and the environmental health inequalities affecting communities of color; history and politics of environmental justice movements in the U.S., and other parts of the world with a focus on the methods and materials used in the study of environmental racism, environmental risk, and sustainable development; empirical evidence on distributions of environmental quality and health, enforcement of regulations, access to resources to respond to urban, rural, and industrial problems, and the broader political economy of decision-making around environmental and health issues.

## PHEO 614/SCSC 614 Biodegradation and Bioremediation

**Credits 3. 3 Lecture Hours.** Processes affecting the biodegradation of organic chemicals in the environment; assessment of the utility of various remedial procedures, including biodegradation and bioremediation in site specific situations; methods of site assessment and quantitative risk characterization. **Prerequisite:** Organic chemistry or approval of instructor. **Cross Listing:** SCSC 614.

## PHEO 615 Environmental Measurement

**Credits 3. 3 Lecture Hours.** Theory and practice of analytical methods used in the study of environmental sciences; data quality of objectives, instrumental and wet chemical techniques used in measurement of environmental quality parameters and contaminants. **Prerequisite:** College-level chemistry or approval of instructor.

## PHEO 617 Occupational Assessment

**Credits 3. 3 Lecture Hours.** This course is designed to provide students with an understanding of occupational exposure assessment. Students will gain experience in, sample collection for occupational settings and occupational exposure analysis.

## PHEO 618 Occupational Safety

**Credits 3. 3 Lecture Hours.** This course is designed to provide students with an understanding of occupational safety and health topics they will encounter as safety professionals. Students will gain experience and knowledge in the areas of construction safety, fall protection systems, aerial lift safety, emergency response communication, hazard identification, accident investigation techniques, OSHA regulations, their role as a safety professional during an OSHA inspection, workers compensation, safety in rural and developing areas and ethics in safety.

## PHEO 621 Transport and Persistence of Contaminants in the Environment

**Credits 3. 3 Lecture Hours.** Fundamental concepts for understanding fate, transport and persistence of contaminants in the environment; models used to estimate environmental concentrations of chemicals of human health concern; contaminant concentration and duration that affect human exposure and ecosystem health; short and long term impact of accidents of environmental and public health concern. **Prerequisite:** Graduate classification.

## PHEO 625 Environmental and Occupational Health Survey Methods

**Credits 3. 3 Lecture Hours.** Examination of discipline specific concepts, principles and methodologies that govern environmental and occupational survey methodology. **Prerequisite:** PHEO 600.

## PHEO 630 Environmental/Occupational Diseases

**Credits 3. 3 Lecture Hours.** Identification, evaluation and quantification of risk factors for environmental and occupational diseases, using classic and current examples of exposures involving chemical, physical and biologic agents; selection of appropriate design and groups; exposure assessment, including biomarkers and molecular dosimetry; genetics, gender, age, socioeconomic and other factors affecting susceptibility. May be taken two times for credit. **Prerequisite:** College-level mathematics.

## PHEO 639 Hazardous Materials Management and Compliance

**Credits 3. 3 Lecture Hours.** Types of hazardous materials; system of environmental laws governing management of hazardous materials as well as contaminants in air, water and solid waste; appropriate management and regulatory compliance; hazardous materials spills and response; hazard communication and right-to-know regulations; hazard communication benchmarking and performance criteria.

## PHEO 640 Industrial Hygiene

**Credits 3. 3 Lecture Hours.** Considers methods to measure and reduce workplace hazards; evaluation of engineering controls and personal protective equipment; includes potential chemical, physical, ergonomic and biological exposures. Review of major legislation affecting workplace environment.

## PHEO 645 Health and Safety at Hazardous Waste Sites

**Credits 3. 3 Lecture Hours.** Course covers OSHA compliance issues related to the protection of personnel engaged in on-site remediation activities. Students who satisfactorily complete the course meet the requirements for initial training under 20 CFR 1910.120 (HAZWOPER) and receive a certificate. Hands-on activities/workshops in the areas of personal protective equipment selection and use, sources of chemical information, decontamination procedures, air monitoring equipment, materials handling, and health and safety planning. Lab fee required.

## PHEO 650 Risk Assessment I

**Credits 3. 3 Lecture Hours.** Introduction to the general methodology of Quantitative Risk Assessment; introduction to methods of modeling exposure and selection of toxicity values, as well as risk characterization; utilization of case studies to learn the general methods of risk assessment; reviews the importance of and methods for risk communication and management. May be taken two times for credit. **Prerequisite:** Graduate classification.

## PHEO 655 Human Factors

**Credits 3. 3 Lecture Hours.** Basic understanding of the theory and practice of human factors as well as application of these to an industry project; topics presented within the framework of humans being part of a functioning systems.

## PHEO 670 Professional Perspectives in Environmental Health

**Credits 1 to 3. 1 to 3 Lecture Hours.** The purpose of this course is to study the ethics and values of environmental public health. From a practice standpoint, we will study the 10 essential services of environmental health. We will also discuss three critical varieties of environmental ethics: conservation ethics, environmental justice, and sustainability ethics. In regards to policy, we will explore, Brownfields redevelopment, cleanup, and development and restoration policies.

## PHEO 671 Environmental and Occupational Health Communication

**Credits 3. 3 Lecture Hours.** Topics in environmental and occupational health communication, including risk communication, messages, key audiences, channels, communication plans and assessment of communication interventions; includes case studies of U.S. and global environmental and occupational health communication issues. **Prerequisite:** Doctoral classification or approval of instructor.

## PHEO 674 Environmental and Occupational Health Research Methods

**Credits 3. 3 Lecture Hours.** Topics in occupational and environmental health research methods including research design, sampling, data collection, exposure assessment and measurement. **Prerequisite:** PHEO 600.

## PHEO 675 Water and Environmental Public Health

**Credits 0 to 3. 0 to 3 Lecture Hours.** Broad understanding of the elements of water and environmental public health and how these major environmental issues affect our society; examination of water-related health issues, scientific understanding and causes and associations, and possible future approaches to understanding the major environmental health problems in developed and developing countries.

## PHEO 676 Environmental Sustainability and Public Health

**Credits 3. 3 Lecture Hours.** Fundamental understanding of the relationship between environmental sustainability and population. Examples include: nexus between water, energy, and food nexus influence on environmental sustainability and subsequently effect on public health. **Prerequisite:** Graduate classification.

## PHEO 678 Occupational Biomechanics

**Credits 3. 3 Lecture Hours.** This course will focus on research methods in occupational biomechanics to understand and identify/analyze underlying risks associated with the development of work-related musculoskeletal disorders. Topics will include assessing injury risk, balance and posture control, human motion analysis, muscle activity, fatigue, and ergonomics for special populations such as the aging and obese. Students will become familiar with the use of laboratory experimental methods and existing field-friendly ergonomic evaluation techniques.

## PHEO 679 Ergonomics of the Upper Extremities

**Credits 3. 3 Lecture Hours.** Fundamental topics upon which models for the prevention and control of distal upper extremity disorders are constructed. Focus is on topics including human anatomy, neurophysiology, electrophysiology and worker capacity evaluation.

## PHEO 681 Seminar in Environmental and Occupational Health

**Credit 1. 1 Lecture Hour.** This course reviews the foundational literature on environmental and occupational health (EOH). The course will begin with an introductory look at the literature from broad topics followed by specific reviews of current departmental research topics and those found in industry. The course will also examine the application of EOH in public health research and its application to public health practice and commercialization of ideas for supporting efforts to improve environmental and occupational health.

## PHEO 682 Industrial and System Safety

**Credits 3. 3 Lecture Hours.** Course covers general concepts and techniques of safety upon which more detailed and advanced applications may be based. In addition, concepts will include current system safety analysis techniques, failure mode and effect and fault tree analysis, as well as economic analysis for presentation of alternative solutions for problem solving. **Prerequisite:** Approval of instructor.

## PHEO 683 Advanced Research Methods in Environmental and Occupational Health

**Credits 3. 3 Lecture Hours.** . Advanced topics in occupational and environmental health research methods including community randomized trials, intervention development, environmental audit tools and systematic observations. **Prerequisite:** PHEO 674 or equivalent.

## PHEO 684 Practicum

**Credits 1 to 15. 1 to 15 Other Hours.** Field placement experience in which students work closely with a departmental faculty member and appropriate field professional(s), applying skills and techniques acquired through course work. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Approval of academic advisor.

## PHEO 685 Directed Study

**Credits 1 to 3. 0 Lecture Hours. 1 to 3 Other Hours.** Student investigation of a topic not covered by other formal courses. May be repeated for credit. **Prerequisite:** Approval of student's academic advisor.

## PHEO 686 Directed Research

**Credits 1 to 3. 0 Lecture Hours. 1 to 3 Other Hours.** Student research initiative not within the scope of a thesis or dissertation. May be repeated for credit. **Prerequisite:** Approval of student's academic advisor.

## PHEO 689 Special Topics In Environmental And Occupational Health

**Credits 1 to 4. 1 to 4 Other Hours.** Revolving topics seminar in an area of specialization within the department. May be repeated for credit.

## PHEO 691 Research

**Credits 1 to 6. 0 Lecture Hours. 1 to 6 Other Hours.** Research for thesis or project. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Approval of the student's academic advisor and department head.

## PHEO 791 Doctoral Capstone

**Credits 1 to 9. 0 Lecture Hours. 1 to 9 Other Hours.** Research for doctoral dissertation. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Approval of student's academic advisor and department head.