ENH-Environmental Health

ENH 600. Fundamentals of Environmental Health Science. 3 Hours.
We live inextricably with our surroundings, including both the natural and built environments. And in these surroundings both natural and man-made components can impact how we live because they impact our health and our safety. This course will critically examine major factors found around us in our everyday lives and investigate how human health is impacted. Regulatory controls, risk, and preparedness will be discussed with respect to decreasing the negative environmental impacts on public health.Prerequisite: Admission into an MPH program, School of Public Health or special permission from the course director.

ENH 604. Introduction to GIS in Public Health. 3 Hours.
This course is designed to examine human-environment interactions and their influence on public health in today's data-driven health care systems. Spatial data and information from spatiotemporal data can advance our knowledge on answering the where, when, and why questions related to various health outcomes. We will utilize a Geographical Information System (GIS) to visualize, analyze, manage, and present our data in this course. By implementing GIS tools and methods, healthcare providers, public health practitioners, and government agencies can gain a detailed perspective on large-scale and trending health issues such as the COVID-19 pandemic and climate change. Topics will be taught in the context of public health, with lectures and examples focused on determinants of health, health care access, infectious disease epidemiology, climate-related health impacts, environmental exposures, and more. The course will be supplemented with public health-related journal articles to integrate the topics discussed with real-world applications.

ENH 605. Remote Sensing and Public Hlth. 3 Hours.
Observing global patterns via satellites can help with research endeavors, this course will focus on the applications of remote sensing to both health and the social sciences. Hands on experience using satellite remote sensing will enrich the experience. This course will give students the chance to learn about a wide rande of remote sensing applications in both classrooms and lab settings. The course will progress from basic remote sensing analysis techniques to the point where the students are responsible for their own research projects.

ENH 607. Fundamentals of Climate Change and Health. 3 Hours.
This course explores the intersection of climate change and public health, focusing on the scientific basis of climate change and its profound impacts on human health. It examines both acute and chronic health effects resulting from climate change, discusses strategies for mitigation and adaptation, and evaluates policies aimed at addressing these challenges. Marginalized and at-risk communities will be a primary focus of attention.

ENH 609. Climate, Water Resources, and Public Health. 3 Hours.
This course explores the intricate relationships between climate, water resources, and public health. Students will examine the scientific evidence of natural and anthropogenic climate change, its impact on water resources, and the subsequent effects on public health. The course will also cover mitigation and adaptation strategies, policies, and case studies from various regions.

ENH 610. Environmental Disasters. 3 Hours.
Examines the worldwide problem of toxic disasters, particularly those involving invisible agents (chemicals, infectious disease agents, radiation). Theory, case studies, field experience, and current scientific research are reviewed, and the public health, environmental, human services and public policy implications of toxic disasters are discussed.

ENH 611. Environmental & Occupational Exposure Assessment. 3 Hours.
This course is intended to develop an understanding and appreciation of environmental exposure assessment and its role in providing the tools and information for toxicology, epidemiology, and risk management. The course material introduces the general concepts of first recognizing environmental exposures to chemicals in human populations, and then using sampling techniques to assess exposures. This is a designated service learning course.

ENH 612. Assessing & Managing Environmental Risks. 3 Hours.
The purpose of this course is to provide students with an overview of environmental policy, with a focus on demonstrating how toxicology and exposure measurements are used in environmental risk assessment and management. Students are presented with the basic elements of a quantitative risk assessment including hazard identification, exposure assessment, dose-response assessment, and risk characterization. This course is designed to instill critical thinking regarding the often conflicting economic, social, and environmental tradeoffs inherent in environmental policy and management.
Prerequisites: ENH 650 [Min Grade: C](Can be taken Concurrently) or ENH 650Q [Min Grade: C]

ENH 615. Environmental Justice and Ethics. 3 Hours.
This course will critically examine one of the fastest growing social movements in the United States, the movement for environmental justice, and will explore the relationships among environmentalism and ethics. We will discuss the ethical considerations underlying the placement of hazardous waste sites and toxic industries in poor communities and communities of color, as well as the economic and social issues that resulted from these actions. The course will also focus on Native American communities in the west, colonialism and global justice/human rights.

ENH 617. Sustainability and Public Health. 3 Hours.
Starting from a foundation of sustainability framed by the UN sustainable development goals, this course examines placed-based examples of successes and challenges in sustainability and public health. Students will critically evaluate the intersecting factors contributing to and scientific/policy evidence underpinning socially, environmentally, and economically unsustainable elements of our local community, and how these situations impact human health and well-being. Particular areas of emphasis include the built environment, transportation, waste, food, supply chain, energy, and climate change. Course presentation will include lectures, readings, field experiences, community engagement, and videos/film.

ENH 621. Fundamentals of Industrial Hygiene. 3 Hours.
Chemical, physical and other hazards and stresses found in the work environment. Recognizing potential hazards by understanding industrial processes, toxicity of environmental contaminants and occupational disease processes. Study design and preparation for field evaluation, conduct of industrial hygiene surveys, and interpretation of survey results.

ENH 624. Control of Occupational Hazards. 2 Hours.
Importance of engineering controls in reducing occupational health hazards. Substitution of less toxic substances, modification of work processes, and design of local exhaust ventilation systems; proper selections and use of personal protective equipment, especially respirators, also considered.

ENH 625. Industrial Hygiene Case Studies. 2 Hours.
Integrates students' basic knowledge through consideration of real work-place situations. Step-by-Step analysis of case reports covering occupational health problems in representative industrial situations. Sequential presentation of overview of working conditions, survey strategies, interpretation of results, and recommendations.

ENH 626. Physical Agents. 2 Hours.
Sources, effects, and control of occupational and environmental noise, ionizing and non-ionizing radiation, and temperature extremes. Review of exposure standards and introduction of measurement equipment and techniques.

ENH 635. Foodborne and Waterborne Diseases: Causes and Prevention. 3 Hours.
This course provides a broad overview of the major foodborne and waterborne diseases. The course describes how information from surveillance is used to improve public health policy and practice in ways that contribute to the safety of our food and water. We focus on the pathogens responsible for food- and water-transmitted diseases, discussing the diseases they cause, their prevalence and relevance to public health in developed and developing nations; disease pathogenesis and clinical manifestations; reservoirs, modes of transmission, and strategies for detection and prevention.

ENH 650. Essentials of Environmental and Occupational Toxicology and Diseases. 3 Hours.
Serves as introductory graduate level course that focuses on multiple aspects of toxicology and disease processes associated with environmental and occupational exposures. Students learn basic terminology and concepts of environmental and occupational toxicology as well as occupational and environmental disease recognition, management and prevention. Emphasis is on scientific foundations rather than on addressing topical issues. The general course orientation is towards basic principles, organ system physiology, diseases and prevention. This is a designated service learning course.
Prerequisites: ENH 600 [Min Grade: C]

ENH 660. Fundamentals of Air and Water Pollution. 3 Hours.
The course is an integrated introduction to air and water pollution, including its sources, transport and effects. The course focuses on the measurement and characterization of air pollutants and the assessment of water quality. Emphasis will also be given to the regulatory control of pollutants and to the technical aspects of engineering controls. The potential impact of air pollutants on the climate change will also be emphasized.

ENH 661L. Environmental Sampling and Analysis Laboratory. 3 Hours.
This course is designed to provide the students with a thorough understanding of the principles and practice of air and water sampling and familiarize them with the analytical methods used for air and water pollutant analysis. The course will focus on contaminant gases, vapors, suspended particulate material and dissolved chemicals in water. A basic understanding of chemistry and physics is a prerequisite.

ENH 670. Fundamentals of Occupational Safety. 3 Hours.
Basic principles of safety and loss control; emphasis on prevention of losses of people, property, and products in the work place. Developing competence in human-factors engineering, fire prevention, physical and behavioral science, product safety, and science of accident prevention.

ENH 680. Interdisciplinary Field Studies. 1 Hour.
In this course, students will be organized into interdisciplinary teams to include at least one representative of each occupational safety and health academic discipline and participate in team building activities to facilitate group interactions for the interdisciplinary course ENH 681 in the spring. Students will be exposed to basic concepts of occupational hygiene, learn to recognize different types of hazards (i.e. chemical, biological, physical agents) in the workplace and their health outcomes, conduct a walkthrough survey of an occupational setting, attend OHS seminars and meetings, work collaboratively with other OHS students and professionals on projects, and learn how collaborations with other health professionals with complementary skills can help them achieve a comprehensive occupational health and safety goal. Students enrolled in this course must be admitted to one of the academic programs of the Deep South Education and Research Center. This class is a requirement for all NIOSH trainees.

ENH 681. Interdisciplinary Worksite Evaluations. 2 Hours.
To assist students in developing critical thinking and analytical skills, provide them with experience in applying discipline-specific knowledge in a broad occupational health and safety context, and provide experience in working in interdisciplinary teams. The course consists of an overview of survey methodology and information sources, with emphasis on job safety analysis, a review of the occupational site or process to be evaluated and a report of the identified hazards and recommended controls.
Prerequisites: ENH 680 [Min Grade: C](Can be taken Concurrently) or ENH 680Q [Min Grade: C]

ENH 689. Environmental Health Sciences Integrative Learning Experience. 2 Hours.
The ENH ILE or capstone course represents a culminating experience that allows students to demonstrate synthesis of foundational and concentration competencies. This course will provide students with the opportunity to use skills gained during your MPH program to assess different aspects of a community’s assets, environment, or health. This course will offer insights on current research and practice, how policies influence health and allow students to identify root causes of public health issues. All MPH students must complete this capstone course to graduate during the final term of enrollment.
Prerequisites: PUH 688 [Min Grade: C]

ENH 690. Environmental Health Perspectives. 1 Hour.
ENH 690 represents a broad overview of Environmental Health from a variety of perspectives. All MPH students in the SOPH, regardless of departmental or program affiliation, must complete this course to graduate. This course provides all MPH students the opportunity to consider how the various disciplines in public health intersect with environmental health. The course will offer insights on current research and practice, how policies influence health, and give students the opportunity to identify root causes of public health issues within the context of environmental health.
Prerequisites: PUH 601 [Min Grade: C] and PUH 602 [Min Grade: C] and PUH 603 [Min Grade: C] and PUH 604 [Min Grade: C] and PUH 605 [Min Grade: C] and PUH 606 [Min Grade: C]

ENH 691. Current Topics in Environmental Health and Occupational Health and Safety. 1-3 Hour.
Development of communication skills through objectively reviewing scientific literature; presentations and summaries of research or professional activities.

ENH 695. Seminar on Selected Environmental Health Topics. 1-9 Hour.
This course will be used as faculty design and craft course topics based on specific interests. These courses will be taught on a masters level.

ENH 697. Internship. 3 Hours.
The internship provides an opportunity for each student to work in a public health setting in a position that carries responsibility and is of particular interest. In order to register for the internship course, students must have completed all public health core coursework. Usually, this means that students must wait until their 3rd semester to complete the internship. Students must complete a minimum of 180 contact hours with the organization during the semester in which they register for the internship.
Prerequisites: (BST 601 [Min Grade: C] or BST 601Q [Min Grade: C] or PUH 601 [Min Grade: C]) and (ENH 600 [Min Grade: C] or ENH 600Q [Min Grade: C] or PUH 602 [Min Grade: C]) and (EPI 600 [Min Grade: C] or EPI 600Q [Min Grade: C] or PUH 603 [Min Grade: C]) and (HB 600 [Min Grade: C] or HB 600Q [Min Grade: C] or PUH 604 [Min Grade: C]) and (HCO 600 [Min Grade: C] or (PUH 605 [Min Grade: C] and PUH 606 [Min Grade: C]) or HCO 600Q [Min Grade: C])

ENH 698. Masters Directed Research. 1-9 Hour.
Independent study with guidance of appropriate faculty.

ENH 699. Masters Level Project Research. 1-9 Hour.
Research for project under direction of research project committee.
Prerequisites: GAC M

ENH 700. Scientific Basis of Environmental Health. 3 Hours.
This is an overview course that is intended to provide doctoral students with a broad understanding of the scientific principles on which environmental health is based within the context of the interaction of human activities and ecosystems, and the reciprocal impact of those interactions on human health and global ecology.

ENH 701. Advanced Environmental Chemistry. 3 Hours.
The course will describe the underlying physicochemical and mathematical formulations governing environmental physico-chemical processes including the coupling with biological media. Specific attention will be paid in understanding the physical basis of the processes and critical variables rather than memorizing the mathematical equations. The kinetics and thermodynamics of chemical transformations including redox and photolysis reactions will be introduced. Subsequently, specific environmental cases involving aquatic and atmospheric environments will be thorough investigated. Students are strongly recommended to have: (1) understanding of organic chemistry and basic thermodynamics; (2) comfort with math.

ENH 705. Special Topics in Environmental and Occupational Health Occupational Hygiene Research - Journal Club. 1-9 Hour.
This course is designed to provide advanced (doctoral) students in Environmental Health Sciences in general, and Industrial hygiene in particular an overview of the research literature and introduction in advance topics such as nanomaterials, control banding, quantitative occupational exposure assessment, etc. Students will have the opportunity to present their own research, learn about the research conducted by their peers and conduct critical review of published research.

ENH 752. Biochemical and Molecular Toxicology. 3 Hours.
This advanced course serves to equip students to understand at the molecular and cellular levels how environmental and occupational agents exert their toxic properties against specific genetic backgrounds. This course assumes a strong foundational knowledge of cell biology, RNA and DNA metabolism, and gene function, structure and regulation. This course will prepare students to apply advanced toxicology principles to agents of disease in order to understand the molecular mechanism and where interventions may be appropriate. Prerequisite: Admission into a public health or biomedical PhD program or permission of the instructor.

ENH 763. Aerosol Technology. 3 Hours.
Defines properties and behavior of aerosols from industrial hygiene and environmental perspectives. Reviews fundamental particle descriptions and critical fluid properties affecting particle behavior. Methods of defining particle size and particle behavior. Methods of defining particle size and size distribution and theories of particle kinetics and their application to particle disposition and collection This multidisciplinary course covers the fundamental principles that govern the formation, growth, measurement and modeling of particles behavior (both ambient and nanoparticles) with direct application to health sciences and engineering specialties. The course explores the quantitative evaluation of aerosol behavior including the physical and chemical parameters that govern it. Specific applications of atmospheric and occupational aerosol, bioaerosol and nanoparticles are included to link fundamental knowledge to practical implications in industrial hygiene, national security and materials technology.

ENH 770. Advanced Topics in Environmental Disasters in PUH. 3 Hours.
Examines emerging public health challenges posed by incidents involving chemicals, radiation and biological agents. Students are provided with the opportunity to undertake guided research on current topics in the field and discuss their findings with graduate students and faculty members. Course will be graded by letter. Prerequisites: ENH 610 [Min Grade: C] NOTE: If course prerequisite of ENH 610 is not met, permission of instructor is required.
Prerequisites: ENH 610 [Min Grade: C](Can be taken Concurrently)

ENH 781. Journal Club. 1 Hour.
The purpose of this course is to provide a forum in which students become comfortable critically reviewing recent refereed publications in the fields of environmental health, toxicology, occupational health, and industrial hygiene. Students will also be expected to become comfortable answering and asking questions in a scientific setting.

ENH 790. Seminar: Current Topics in ENH Sciences Research. 1 Hour.
Interactive forum in which graduate students and faculty discuss dissertation research projects and topics related to the field of Environmental Health Sciences Research through presentation of journal articles. Course is designed to develop oral communication skills for presenting scientific material to peer groups. Presentations by graduate students are followed by discussion and questions. Preq: Permission of instructor required.

ENH 796. Environmental Toxicology Laboratory Rotations. 3 Hours.
Doctoral laboratory rotations in Environmental Health Sciences. Required for First and Second year PhD students in the Industrial Hygiene and Environmental Management and Policy foci. Preq: Permission of instructor required.

ENH 798. Doctoral Level Directed Res. 1-9 Hour.
Independent study with guidance of appropriate faculty.

ENH 799. Dissertation Research. 1-9 Hour.
Research for dissertation under the direction of the dissertation committee. Preq: Must be admitted to candidacy before registering for this course.
Prerequisites: GAC Z