ENH-Environmental Health

ENH 600. Fundamentals of Environmental Health Science. 3 Hours.
We live inextricably with our surroundings, including both the natural and man-made components. These interactions can impact health and 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 601. Environmental Chemistry. 3 Hours.
The course examines the chemical processes that are responsible for the natural characteristics of the environment (air, water, soil) as well as those impacted by man-made activities. The overall objective is to introduce basic chemistry principles, apply them to understand atmospheric, water and soil environmental systems, and study the fate and impacts of ubiquitous chemical species introduced by man-made activities. The course is structured to analyze the following thematic domains: i) aquatic chemistry and microbial chemistry; ii) atmospheric chemistry; iii) soil chemistry; iv) soil chemistry; v) wastes chemistry and vi) special long-lasting and emerging environmental chemistry issues including climate change, carbon cycling, water quality and resource management, ozone hole, wastes management and recycling.

ENH 602. Environmental Management. 3 Hours.
Comprehensive introduction to environmental management, with emphasis on environmental health issues. Cases from both U.S. and international settings. Key topics include air and water contamination, hazardous materials, ozone depletion, climate change, risk perception, risk management, environmental communication, environmental regulation, and recent strategies for environmental management.

ENH 605. Remote Sensing and Public Health. 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 range 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 608. Real World Remote Sensing. 3 Hours.
This course will give students the chance to learn about a wide range of advanced remote sensing applications in both classroom and lab settings. This course will start out with an overview of article publication preparation and the importance of combining GIS and remote sensing data. This course will progress to students learning GIS applications and analytical techniques and how to input their remote sensing data into their own GIS for additional analysis.

ENH 610. Environmental Disasters. 3 Hours.
Examines the worldwide problem of toxic disasters, particularly those involving invisible agents (chemical, 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 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.

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 681. 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. Masters Level Seminar. 1-3 Hour.
Weekly seminar series of Environmental Health Sciences faculty, postdoctoral fellows, and invited guest lecturers. All PhD candidates in Environmental Health Sciences are required to attend all of the seminars.

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. ENH 697 is a 3-credit hour course requirement of all MPH-seeking students. 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]) and (HBO 600 [Min Grade: C] or HCO 600Q [Min Grade: C] or PUH 601 [Min Grade: C] or HCO 600 [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.

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 thoroughly 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 advanced 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 710. Grant Proposal Writing in Biomedical Sciences. 1 Hour.
This course will train second-year graduate students in the intricacies of writing research proposals in the biomedical sciences.

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 780. Seminars in Free Radical Biology and Medicine. 1 Hour.
This course will consist of research seminars presented primarily by leading national and international scientists working in free radical biology and medicine. These seminars are interactive with questions being asked throughout the presentation. Preq: Requires permission of instructor.

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 791. Advanced Environmental Health and Toxicology Seminar. 1 Hour.
Facilitates critical review of recent referred publications in toxicology and presentations of research data. Students exposed to advanced knowledge and diversified subjects. Preq: ENH 650, ENH 651 or ENH 750 or permission of instructor.
Prerequisites: ENH 650 [Min Grade: C] and ENH 651 [Min Grade: C] or ENH 750 [Min Grade: C]

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.

Research for dissertation under the direction of the dissertation committee. Preq: Must be admitted to candidacy before registering for this course. 
Prerequisites: GAC Z