

## GLOBAL ENVIRONMENTAL HLTH SCI (GEHS)

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### **GEHS 6030 Survey of Environ Hlth (3 Credit Hours)**

This course is designed as a survey course which introduces students to basic environmental health topics and it fulfills the school core requirement. The course focuses on environmental factors impacting human health and the environment. Sources of these factors, methods of identification, recognition, evaluation and regulatory framework control are discussed. Factors might include health hazards associated with contaminated water, food and air, vectors of disease, exposure to toxic chemicals, environmental justice, regulations, and safety in the work place.

### **GEHS 6110 Glob Clim Chg Iss Ph Pol (3 Credit Hours)**

The objective of the course is to provide students with a thorough understanding of global climate change phenomenon, the public health issues associated with it, and the role of policy and governance in tackling this problem. In line with this objective, the course examines the scientific, political and socioeconomic factors influencing public health policy development, adaptation and compliance in response to the global climate change problem. The course also analyzes the current policy and governance intervention models, and sheds light on direction for the future.

### **GEHS 6150 Occupational Health Services (2 Credit Hours)**

#### **GEHS 6220 Elem Hlth Safety & Trn Ev (2 Credit Hours)**

This course addresses a systems approach to developing and evaluating health and safety training programs. Principles and techniques are presented for effectively assessing training needs, developing learning objectives, designing training programs, identifying and developing training evaluation measures and designing evaluation studies. Practical experience with the topics is encouraged by case studies and class exercises involving health and safety training program development and evaluation. Computer-based training issues are emphasized.

#### **GEHS 6300 Radiological Health (3 Credit Hours)**

This course is an introductory course in health physics, medical uses and university uses of ionizing radiation. The course includes radiation protection for both workers and general public. The course is designed to meet the needs Industrial Hygienists. Topics include nuclear reaction terminology, the interaction of alpha particles, electrons, and photons with matter, basic instrumentation for radiation protection, and the use of Poisson counting statistics, radiation medicine issues including radiation epidemiology, internal dissymmetry, use of the LLNL code Hotspot for dispersion calculations, and various advanced topics, including nuclear weapons effects.

#### **GEHS 6320 Workplace Wellness (3 Credit Hours)**

Health, as it relates to the workplace, is created by two major forces; what employees bring with them into the workplace (e.g. personal resources, health practices, beliefs and attitudes) and the impact of the workplace on employees (e.g. organization of work in both a physical and psychological sense). Health promotion focuses on the elements that make up a healthy workplace and includes the physical environment, health practices and social environment & personal resources. This course focuses on the total well-being of individuals and groups within a corporate and community context. It emphasizes a holistic approach to achieving workplace, community, and personal wellness.

#### **GEHS 6420 Global Food Safety and PH (3 Credit Hours)**

This course is designed for students who are interested in local, national, and international food safety. Food resources, production, biological, chemical and radiological contaminants are discussed. Focus will be on health effects resulting from exposure to contaminated food. Sanitary regulations/codes addressing food safety including inspection of food establishments, investigation of food outbreak diseases will also be discussed. Genetically modified foods will also be addressed. Site visit(s) to food establishments could be arranged (when possible) with Louisiana Sanitarian Services.

#### **GEHS 6430 Disaster and Emer Communicatio (3 Credit Hours)**

The course is a fast-paced, interactive course that focuses on the essential knowledge and tools needed to navigate the harsh realities of communicating to the public, media, and stakeholders during an intense public emergency, including terrorism. The course content will meet the crisis communication training needs of distinct groups (e.g., public health professionals, medical and health professionals, emergency response officials, community and civic leaders, the private business sector and volunteer organizations) at the community, regional and national level.

#### **GEHS 6510 Water Quality Management (3 Credit Hours)**

The course presents the basic concepts concerning policy, evaluation, and implementation of pertinent water quality management issues. Topics of focus include: water quality standards and criteria; principles of water quality management; regulatory considerations; immunological aspects; eutrophication; ecotoxicology; diffuse pollution and global aspects of sustainable water quality control strategies.

#### **GEHS 6540 Occupational Health (3 Credit Hours)**

This course targets mid-career professionals who work in occupational health and safety programs. The course addresses the occupational medicine aspects of health and safety programs including the leading occupational disease hazards, their evaluation and control. Concepts of exposure in the workplace and related evaluation and control by engineering and physical health hazards such as noise, heat, and radiation are included. The course uses an interactive format and case studies.

**GEHS 6550 Envir Health Management (3 Credit Hours)**

This course explains the fundamentals of environmental health and how they fit into the larger context of public health security. It highlights the elementary science of environmental exposure of humans to toxic chemicals and microbes, and in this way provides a context and basis for preventative policy and management responses to issues, policy development processes, policy tools and environmental laws-their weaknesses and strengths. It also introduces students to environmental management systems and practices. Students are given case-study based assignments to encourage their skill development in applied environmental health management

**GEHS 6560 Env Health Microbiology (3 Credit Hours)**

This course is designed to provide understanding about microbial pathogens of public health concern and the role of the environment, including water, waste, air and food, in the transmission of infectious diseases. We will explore specific pathogens that cause environmentally transmitted diseases, their detection using both conventional and advanced molecular methods, their prevention and control by technological and other measures, and how the health risks posed by these pathogens are assessed. This course focuses on emerging issues of pathogens in the environment at both local and global levels.

**Prerequisite(s):** GEHS 6030.

**GEHS 6590 Air Pollution I (3 Credit Hours)****GEHS 6600 Principles of Toxicology (3 Credit Hours)**

This course focuses on the fundamentals of toxicology and the mechanisms by which environmental and occupational chemical agents affect human health. The principles and mechanisms will be approached in three areas: General principles: Route of exposure; dose response; absorption, distribution, storage, metabolism and excretion; Effects on target organs: liver, kidney, blood, respiratory system and nervous system; and Application of the principles of toxicology using: solvents, pesticides and metals. At the end of this course, the student will be able to apply the principles of toxicology for compounds found in the environment and workplace

**GEHS 6610 Toxicology of Envir Agnt (3 Credit Hours)**

The classes of toxicants and their actions are studied in detail in Toxicology of Environmental Agents. Mechanisms and targets of the general classes of toxicants are emphasized. Students are expected to demonstrate ability to use and interpret the current toxicological literature in this course

**Prerequisite(s):** (GEHS 6600 or ENHS 6600).

**GEHS 6620 Phy Agents & Erg Haz/Workplace (3 Credit Hours)**

This courses addresses occupational exposures and health effects of physical agents. The course covers methods for evaluation and control of exposure to ultraviolet, infra-red, laser, microwave irradiation, noise, heat, and abnormal pressures in detail

**Prerequisite(s):** (GEHS 6720 or ENHS 6720).

**GEHS 6700 Principles of Safety (2 Credit Hours)**

This course is designed to give the student an introduction in the field of safety and prevention management. Broad areas and topics that are covered are management and accountability, policy development and evaluation, hazard identification, job safety analysis, safety training, applied engineering principles (slips, falls, cuts, electrocution, material handling, excavations, confined spaces crane use), emergency operations planning and social-behavioral aspects of safety.

**GEHS 6720 Principles Indus Hygiene (3 Credit Hours)**

This course provides the student with an introduction into the field of Industrial Hygiene. Topics covered include an overview and historical perspective of Industrial Hygiene, anatomy and physiology of the skin and lungs, occupational diseases and inhalation toxicology, chemical agents, biohazards, ergonomics, indoor air quality, ventilation systems, lab safety, personal protective equipment, Hazard Communication and other OSHA standards. Examples from case studies work experience will be discussed. The course also allows for discussion of topics of interest to the class.

**GEHS 6900 Pub Hlth Threat Suriname (3 Credit Hours)**

The course examines key public health issues affecting the health of Suriname's ecosystem and its population. Through a series of lectures and fieldtrips, students will learn about the role of the ecosystem as a vital component of community health. Special area of focus will be the medicinal characteristics of plants. The course examines the risks posed by environmental contamination, specifically those risks related to mercury released from some small-scale gold mining operations. Students will employ community-based participatory research strategies to assess, manage, and communicate those risks. The course will also examine the leading causes of morbidity and mortality in Suriname.

**GEHS 6910 Environmental Asp of Dis (3 Credit Hours)**

This course examines the fundamentals of the environmental health and consequence management infrastructure through the lens of a disaster situation. Environmental health challenges that arise during emergencies are explored and operational models unique to disasters are developed.

**GEHS 6920 Env Mon/Samp & Analy in a Disa (3 Credit Hours)**

This course is deigned to provide students with necessary knowledge and tools for sampling and monitoring of the environment following a disaster such as floods, hurricanes, earth quakes, explosions etc.. During this course, students will also be exposed to field sampling and become familiar with laboratory instruments used for chemical, biological and physical sample analysis.

**GEHS 6930 Pop Issues During Disast (3 Credit Hours)**

The United States is among other global communities that attempt to prepare its citizens for potential mass casualty events such as natural disasters, terrorism, or a pandemic flu outbreak. This course introduces disaster theory and overviews the United States' National Response Framework. Core population health issues that present during the management of disasters are examined. Developing preparedness at the local level is emphasized. Fundamental concepts of emergency management and leadership are discussed.

**GEHS 6950 Psych/Soc Asp Disaster (3 Credit Hours)**

The course covers the theoretical development, history, and empirical studies of the psychosocial dynamics and sequelae of disasters. Characteristics of environmental health disasters, reactions and risk factors, as well as trends in disaster mental health are examined. Emphasis is placed on inclusion of psychosocial considerations in the planning, preparation, and very early intervention phases of a disaster. Vulnerable populations are of particular interest in highly interactive case-based learning through reflection labs for application in situations such as natural disaster, environmental health crises, pandemic illness, or threats to national security. Baseline resilience planning is required of all students planning to work in disaster or emergency response fields.

**GEHS 6960 Public Health Law (3 Credit Hours)**

Population-based preventative health intervention is a major focus of public health. Public health law speaks to the legal aspects of delivering this intervention to the society. This course introduces students to the functions and outcomes of public health protection and practice. It covers a variety of topics such as the public health powers of the federal, state and local governments; civil liberties in matters such as quarantine, isolation and mandated medical testing; access to healthcare; liability of healthcare workers; and international law on the duties and rights of countries to control the spread of infectious diseases.

**GEHS 7100 Community Resilience PH Discrse (3 Credit Hours)**

This course examines community resilience (CR) in terms of a community's ability to absorb, recover from, and adapt to natural, technological, and man-made disasters. Community resilience is analyzed across four major dimensions of environmental, social, political, and economic factors. Students are expected to integrate and discuss the intersecting nature of the four dimensions in articulating and writing about their knowledge of CR. The primary focus is that of being able to locate and analyze CR indicators in collaboration with EM personnel, community citizens, and other leaders in emergency planning, preparedness, response and recovery efforts.

**Prerequisite(s):** GEHS 6030\*.

\* May be taken concurrently.

**GEHS 7110 Industrial Ven & Chem Haz Cont (3 Credit Hours)**

Fundamentals of design and operation of ventilation systems as a means for controlling airborne toxic materials in the workplace are discussed. Basic air flow, dilution ventilation, hood design, duct design, and balancing, fans, air cleaners, and testing of ventilation systems are discussed in detail. Emphasis is on design principles for local exhaust systems. Students are expected to complete a design project.

**Prerequisite(s):** (GEHS 6720 or ENHS 6720).

**GEHS 7230 Fundmntls of Prjt Mgmt for ES&H (3 Credit Hours)**

This course focuses on management of environmental health and safety risks, as well as measurement and evaluation of industrial hygiene and safety performance. Specific course topics include environmental and hazardous materials management, emergency planning and response, crisis communication, accident investigation, the development and interpretation of risk assessments, risk perception and communication, economics and risk/benefit analysis, comparative risk assessment, laws and regulations pertaining to risk assessment, and management and the design of risk management plans. Report writing and interpretation are emphasized.

**GEHS 7240 Applyng Systms Thnking to EH&S (3 Credit Hours)**

This course complements and supplements GEHS 7230, Fundamentals of Project Management for EH&S. It is an introduction to methods of systematically integrating health and safety programs into standard management systems used by organizations. Topics emphasized include leadership, strategic planning, project management, management of multidisciplinary teams, regulatory affairs management, voluntary standards systems, professional ethics, labor relations, and "selling" health and safety initiatives to all levels of the organization and the public. Systems thinking is emphasized throughout the course. No prerequisites required.

**GEHS 7260 Fin Aspects Env Hlth Saf (3 Credit Hours)****GEHS 7270 Practicl Applctns in EHS Rsrh (3 Credit Hours)**

This course is designed to provide students an approach to the conceptualization, design, and operational logistics for planning and implementing studies and responses to environmental health problems and field studies. The course will focus on applied public health problems and situations that may challenge an environmental health professional in determining studies that can be implemented. The course is applicable to environmental health students focusing on epidemiology, health education, environmental sciences, or other field application of environmental public health practice. Students are expected to develop and present a study proposal applicable to their specific area of environmental health. The methods described are the conceptual approach to problem solving in environmental health practice. Problems discussed will apply to many environmental health issues including environmental assessment and health studies.

**Prerequisite(s):** EPID 6030\*, BIOS 6030\* and GEHS 6030\*.

\* May be taken concurrently.

**GEHS 7310 Occ Laws and Compliance (2 Credit Hours)**

This course is designed to introduce the most important EHS management systems for multinational companies from the US and other countries. The course introduces students to ISO-harmonized management systems. Students gain skills in making the transition from traditional numeric specifications of governmental command-and-control regulations to ISO-harmonizing auditing systems, involving root cause analyses of system requirements.

**GEHS 7430 Survey of Methods in EHS (3 Credit Hours)**

Utilizing a practice-oriented case-study approach, students will apply public health skills and techniques such as environmental mapping, sampling, and analysis to investigate, evaluate, analyze, and resolve realistic environmental public health issues.

**Prerequisite(s):** GEHS 6030 and 6600 and (BIOS 6030 or SPHL 6050).

**GEHS 7431 Srvy of Mthds in EHS Prac LAB (1 Credit Hour)**

**Prerequisite(s):** GEHS 6030 and 6600 and (BIOS 6030 or SPHL 6050) and GEHS 7430\*.

\* May be taken concurrently.

**GEHS 7500 Air Samp & Analysis (3 Credit Hours)**

Principles and techniques for evaluating exposure to airborne contaminants are presented in lectures, and practiced in two-hour laboratory sessions per week. Topics covered include air flow measurement, generation of controlled test atmospheres, total and respirable dust sampling, determination of particle size distribution, optical and electron microscopy, sampling of gases and vapors, and chemicals.

**Prerequisite(s):** (BIOS 6030\* or SPHL 6050\*).

\* May be taken concurrently.

**GEHS 7620 Health Risk Assessment (3 Credit Hours)**

Principles of quantitative human health risk assessment. This course develops the qualitative and quantitative skills necessary to evaluate the probability of health effects from exposure to environmental contaminants. Basic concepts of qualitative and quantitative risk assessment are demonstrated with practical case studies. Emphasis placed on hazard identification, dose-response evaluation, exposure assessment, and risk characterization. Integration of risk assessment with risk management and communicating risks to the public are discussed. Regulatory aspects of risk assessment in the promulgation of environmental standards are presented.

**Prerequisite(s):** (GEHS 6600 or ENHS 6600).

**GEHS 7750 Environmental Policy (3 Credit Hours)**

GEHS 7750 introduces students to the concepts of public health policy with an emphasis on environmental health. The course describes the relationship among public science, policy, and practice and demonstrates the application of this relationship through a series of real cases in environmental health laws, policies, regulations and statutes in the context of public health. Through "hands-on" experience, students examine the policy implications of contemporary environmental public health problems.

**GEHS 7910 Env. Dis Resp Plan & Imp (3 Credit Hours)**

This is an elective course that teaches students how to identify the critical public health system infrastructure that is likely to be affected during and following a natural and human made disaster. Environmental health issues can arise in the wake of a disaster. Systematic planning and post disaster implementation of the plan can be effective in mitigating the problems that arose in the face of these disasters. This is an advanced course designed to be the culminating course in the Disaster Management Track integrating previous courses within the track. The course is aimed at advancing the student's knowledge of disaster management gained through 600 level courses to the actual application of those principles using real life, frontline scenarios.

**Prerequisite(s):** (GEHS 6030 or ENHS 6030 and GEHS 6600 or ENHS 6600).

**GEHS 7950 Psych/Soc Intrv Dis or Crisis (3 Credit Hours)**

The course covers the history, development, and application of both brief solution-focused and crisis intervention within the context of biopsychosocial resolution in healthy human development and social functioning. Emphasis is placed on practical application of techniques in situations such as natural disaster, death, traumatic injury or illness, PTSD, ATSD, violent crime, terrorism, suicide, chronic physical and mental conditions, and severe family dysfunction. The clinical-community approach is demonstrated through case-based learning and simulations.

**Prerequisite(s):** (GEHS 6950, SOWK 7070 or ENHS 6950).

**GEHS 7990 Master's Independent Study (1-3 Credit Hours)**

Masters students and advisor select a topic for independent study and develop learning objectives and the expected written final product.

**GEHS 8850 Meth in Toxicological Research (3 Credit Hours)**

This course is made available for students pursuing doctoral studies. A suitable research problem is identified by the student after consultation with the mentor. This should be done prior to starting the course. Modern experimental techniques are used. Research methods are discussed, demonstrated, and then carried out by the student. The student prepares a research project report to successfully complete the course. Ideally this report will be published as a manuscript.

**Prerequisite(s):** GEHS 6600, 6610 and 7620.

**GEHS 8860 Genetic Molecular Toxicology (3 Credit Hours)**

Genetic and Molecular Toxicology is a doctoral level course that addresses the causes and effects of alterations to the hereditary material and the elucidation of fundamental mechanisms of toxicity. Spontaneous and chemically induced mutations are covered in depth in this course. The roles of cellular and genetic regulation in the induction of responses to DNA damage are explored. Merits of various experimental systems for the detection and analysis of DNA damage and mutations are examined. Effects of mutations, polymorphisms, and epigenetic factors on human disease (cancers, aging, and other chronic diseases) and health maintenance are discussed in this course.

**Prerequisite(s):** GEHS 6600, 6610 and 7620.

**GEHS 8990 Doctoral Independent Study (1-3 Credit Hours)**

Doctoral students and advisor select a topic for independent study and develop learning objectives and the expected final written product.

**GEHS 9970 Dissertation (0 Credit Hours)**

Doctoral candidates who have defended their prospectus and are engaged in research.

**GEHS 9990 Dissertation Research (2 Credit Hours)**

Doctoral students who have completed course work but not defended their prospectus.