

# Inventory of Sustainability Courses

School of Public Health and Tropical Medicine

Courses Offered Fall 2013-Spring 2014

Tulane University

“Sustainability education” engages students in the work of building healthy, lasting communities. In sustainability courses, students develop the capacity to critically theorize, analyze and communicate about interconnected social, economic and environmental issues. Students learn to work in collaboration with members of the larger community and to help create solutions in the long-term public interest.

We have attempted to identify both courses in which the primary and explicit focus is on sustainability and/or on understanding or solving one or more major sustainability challenge, and courses that are primarily focused on a topic other than sustainability but incorporate sustainability as unit, module or activity.

We have included all courses with a service learning component.

Draft list of undergraduate courses compiled by Cheyenne Ligon, SPHTM – 2016, by reviewing the Tulane Course Catalog posted at <http://www.sph.tulane.edu/publichealth/bsph/bsph-courses.cfm>. Undergraduate courses including Service Learning credits added by Colleen Large, SLA – 2016, from lists obtained from Center for Public Service. Draft list of graduate courses compiled by student Molly Vaux, SPHTM Masters’ candidate, by reviewing the “Courses” pages of each department on the School of Public Health and Tropical Medicine website. The list was sent to Interim Dean LuAnn White for review in June 2014.

## *Undergraduate Courses*

- **Sustainability Courses:**
  - No sustainability courses are offered at this point.
- **Courses That Include Sustainability:**
  - **SPHU 1010 Introduction to Public Health: Epidemics, Revolutions, and Response**

Students are introduced to the concepts and practice of public health in the U.S. and internationally by tracing its historical evolution. Classic public health problems and their resolution will be discussed in the context of the broader contemporary social environment. The latter part of the course is focused on

public health practice in both the U.S. and developing countries, with a consideration of the structure, function, and financing of public health organizations. The many different roles for public health professionals in these organizations also are described. (Service Learning- Optional, Spring 2014, Fall 2013, Spring 2013, Fall 2012)

○ **SPHU 1020 The Cell, the Individual, and the Community**

This course provides a foundation of knowledge about the human body in health and disease. It gives an overview of important concepts on the biological mechanisms of disease at the cellular, individual, and population/community levels. The course will focus on a natural progression in the development of health and disease, moving from a discussion of the cell, to the individual, and finally, to specific infectious or chronic disease states and processes. The role of the community in public health will be emphasized. This course is designed to provide a good foundation in the mechanisms of health and disease. Furthermore, each lecture will offer insights into current public health topics and research trends. Each lecture will address the following: 1) specific mechanisms of health and disease; 2) topics of special public health importance, and 3) a scientific update on research in the news

○ **SPHU 3110 Local Solutions to Global Problems**

Students begin to integrate their understanding of public health science in this applied problem-solving course that brings together the elements of program development and rigorous evaluation. The course develops the concepts of problem assessment, strategic approaches to program planning, and evaluation of public health programs.(Service Learning- Optional, Spring 2014, Fall 2013)

○ **SPHU 3120 From Biology to Policy: Issues and Strategies in Public Health**

Focusing on a small number of specific health problems of global public health importance, this course traces the relationships among the biologic, sociologic, economic, and political factors involved in the identification, prevention and treatment of the health problem. The course helps students understand the dynamic tension that exists between various stakeholders involved in the disease intervention process and how these tensions play out in the public and global policy arena. The course will be transdisciplinary, emphasizing the connections between the biologic nature of disease and the social, economic and political context in which policy for dealing with disease is developed. Examples of diseases that may be addressed are AIDS, tuberculosis, heart disease, and breast cancer.

○ **SPHU 3150 Global to Local Environmental Health**

The course is designed to identify environmental issues regarding various

environmental media. Fundamental concepts addressing these issues and potential solutions will be covered. Related experiences from global to local and personal perspectives will be presented. Interrelationships between ecological and human health will be emphasized.

- **SPHU 3300 Sustainable Nutrition** (Service Learning- Optional, Spring 2014)
- **SPHU 4210 Health and Environmental Risk Assessment**  
The course covers the principles of human health and ecological risk assessment. The National Academy of Sciences model framework for risk assessment (hazard identification, dose response assessment, exposure analysis, and risk characterization) is used to explain environmental risks of long-term exposure of humans and wildlife to air pollution and chemicals in food and drinking water. The interaction of scientific methods with focus on toxicology and regulatory requirements will be reviewed. Case studies focus on current environmental pollution issues such as exposure to lead paint, mercury in fish, arsenic from smelters and petrochemical industrial emissions. Specific topics to be covered detail include: health and ecological effects toxicology and environmental epidemiology; qualitative and quantitative risk assessment methods; cancer risk models; regulatory toxicology; risk communication; reproductive risk assessment; endocrine disruption; different approaches to risk assessment by federal, state and international agencies; political and economic aspects of risk management; information resources, and field trips to state regulatory agencies.
- **SPHU 4300 Public Health Communications** (Service Learning- Optional, Spring 2014, Fall 2013)

## *Graduate Courses*

### **Department: Biostatistics and Bioinformatics**

- **Sustainability courses:** no sustainability courses offered
- **Courses that include sustainability:**

### **BIOS 6350 ENVIRONMENTAL BIOSTATISTICS**

The objective of this course is the application of statistical methods to the collection and analysis of environmental data. The course is divided into three parts. Part 1 deals with field sampling designs along with methods used to estimate the mean, total amount, sampling errors of the mean and total amount as well as sample size and power calculations for each sampling design. Part 2

deals with a broad range of statistical techniques relating to environmental data. Part 3 deals with linking environmental data to various health indices. The focus will be on numerical computation and interpretation of results of statistical application using SAS.

### **BINF 7600: NUTRITIONAL GENOMICS FOR DISEASE PREVENTION AND INTERVENTION**

The course is a comprehensive overview of nutrigenetics/nutrigenomics and their application for disease prevention and intervention. The lecture will address how the nutrigenomics and nutrigenetics knowledge may potentially lead to personalized diet to prevent and improve nutritionally related diseases, such as osteoporosis, cancer, obesity, type 2 diabetes, cardiovascular disease, and inflammation disease. Current and emerging tools for nutrigenetics/nutrigenomics research will also be introduced.

#### **Department: Epidemiology**

- **Sustainability courses:** no sustainability courses offered
- **Courses that include sustainability:**

### **EPID 6750 OUTBREAK EPIDEMIOLOGY**

This course is designed to provide students with the knowledge and skills required for the investigation, control and prevention of disease outbreaks in a variety of settings and due to a variety of infectious agents. Students will explore and practice the approaches used to investigate disease outbreaks, and examine local and global efforts to monitor, control and mitigate the effects of infectious disease outbreaks.

### **EPID 7090 EPIDEMIOLOGY OF INFECTIOUS DISEASES**

This course provides students with the knowledge and skills required for the investigation, control, and prevention of a variety of infectious diseases. Students will explore the characteristics of a range of specific disease agents, compare their impact on populations, practice approaches used to investigate disease outbreaks, and examine local and global efforts to monitor, control, and/or eradicate selected infectious diseases. Zoonotic diseases are included in the course.

**Department: Global Community Health and Behavioral Sciences**

- **Sustainability courses:** no sustainability courses offered
- **Courses that include sustainability:**

**GCHB 6030 SOCIAL AND BEHAVIORAL ASPECTS OF GLOBAL HEALTH**

This course covers the behavioral, social, and cultural aspects of health and disease. Students learn how behavioral and social theories are relevant to health promotion and disease prevention efforts, and in behavior based safety efforts. They also learn how factors that protect or erode health operate at multiple levels (including individual, community, societal, and global levels), and how interventions are developed to improve health by addressing critical factors at each of these levels. The course also addresses the roles of culture, race, and ethnicity in the conceptualization of health and illness.

**GCHB 6100 INTRODUCTION TO PUBLIC HEALTH POLICY AND PRACTICE**

This course introduces students to the broad context of public health practice, including the mission, core functions, structure, policy role, program activities, and collaborative endeavors of public health agencies, as well as the value conflicts inherent in public health. Theoretical and practical perspectives are presented to illustrate contemporary strategies for health promotion, and how public health works at the state and national levels. Critical health issues are examined from a practice perspective to stimulate classroom discussion of both the problem and the public health system's efforts directed toward the solution of the problem.

**GCHB 6110 PLANNING OF HEALTH EDUCATION PROGRAMS**

This course is designed to provide skills in planning and developing health education interventions for behavior change at the individual, family or social network levels of practice. Emphasis is placed on applying program design principles to the development of educational interventions. It is structured in a lecture-discussion format. Given its skill development focus, the course includes weekly homework assignments and the development of a health education program plan.

**GCHB 6120 MONITORING AND EVALUATION OF HEALTH EDUCATION AND**

## **COMMUNICATION PROGRAMS**

This course introduces students to the concepts and functions of evaluation and will teach them some basic skills in monitoring and evaluation as they apply to health education and communication programs specifically. This is an introductory course designed for students focusing on implementation of programs. Students are not expected to have any background in research methods or evaluation. Monitoring and evaluating programs are vital skills and steps to provide reasoning and answers of why the program failed or succeeded. A lot of the reasons why a program fails is that it is not sustainable- in this course it stresses the importance of this dimension.

## **GCHB 6140 DEVELOPING LEADERSHIP AND COMMUNICATION SKILLS IN PUBLIC HEALTH**

This course combines practical, skills-based exercises with strategic thinking approaches to personal, professional, and organizational leadership development. Leadership: The ability to create and communicate a shared vision for a changing future; champion solutions to organizational and community challenges; and energize commitment to goals. This course will aid the student to master several of the public health cross cutting competencies objectives related to leadership, communication and professionalism. In keeping with the spirit of personal development, each student will develop a unique set of goals for the course tailored to their own personal leadership development. This class is best suited for students in their first or second semester of coursework as many assignments pertain to planning active learning and advancement in their studies at Tulane.

## **GCHB 6160 INTRODUCTION TO MANAGEMENT OF COMMUNITY BASED ORGANIZATIONS**

This course introduces students to managerial aspects of community base organizations and processes to be followed in an effort to establish such an organization suitable to a targeted community. Topics and activities focus on managerial concepts and applications related to starting and developing a community organization: planning, staffing, recruiting, budgeting, strategic planning, fundraising, marketing and tax management.

## **GCHB 6220 COMMUNITY ORGANIZATION**

This course emphasizes community organization as a major educational approach to community

dynamics, social change, and community participation in addressing health problems. The course explores methods for identifying and analyzing community health problems and their causes. Participants will examine the role of individuals, community institutions, and public health practitioners in effecting solutions to community health problems. The course stresses advancement both in theoretical knowledge in areas of community organization and community change, and in the application of community organization skills such as needs assessment

### **GCHB 6230 COLLABORATIVE COMPETENCY AS A TOOL FOR CAPACITY BUILDING**

This course is designed to provide field experience at Birthing Project USA, a community-based international maternal and child health organization serving Africa, Latin America and the US, including New Orleans. Emphasis is placed on working collaboratively with local (US and International) communities, applying principles of Community Based Participatory Research and integrating concept of social entrepreneurship into health program planning, implementation and evaluation. This course also addresses the roles of culture, race and ethnicity, gender and age in the determinants of power, leadership and decision-making and their impact on health status. Students will receive experience, support and constructive feedback to develop skills in working in communities in which they are not culturally competent.

### **GCHB 6350 APPLICATIONS OF SCHOOL HEALTH PROGRAMS**

This course is designed to introduce students to the unique benefits and challenges of conducting health education/health promotion within school settings (elementary, middle and high schools). The eight components of coordinated school health will be addressed, particularly risk reduction and health promotion through assessment, policy development, environmental change, and health education.

### **GCHB 6410 CLINICAL AND CULTURAL ISSUES OF REPRODUCTIVE HEALTH**

Designed to acquaint the student with the fundamental clinical issues of obstetrics to maximize the student's potential for learning in subsequent maternal and child health courses. Public health issues will be integrated throughout the course to familiarize the student with non-clinical issues that impact the delivery of obstetrical care to women.

### **GCHB 6420 BEST PRACTICES IN WOMEN'S HEALTH**

Designed to acquaint the student with the health care of women from puberty through the elder years. It will be taught through lectures supplemented with readings and will use a discussion format. It will address health care from the clinical and delivery system perspectives, and include aspects of female biological function in health and disease, treatment and prevention, and maternity and prenatal care. A significant portion of the course will be directed to economic, political, social, and cultural aspects of women's health care, and will consider health care needs and standards of care.

### **GCHB 6500 VIOLENCE AS A PUBLIC HEALTH PROBLEM**

This course is designed to give an overview of the problem of violence as viewed from a public health perspective. We will look at the epidemiology of violence (scope, causes, risk factors, and consequences) alongside public health approaches to the problem. The course aims to balance a review of the problem with ideas and evidence for solutions. Local academic and community leaders in the field will lend their expertise to help students understand and address violence as a public health problem

### **GCHB 6610 COMMUNITY NUTRITION**

This course introduces the student to community nutrition in community agencies and to the role of the nutritionist in the delivery of nutrition services.

### **GCHB 6750 NUTRITION ASSESSMENT AND MONITORING**

This course offers a thorough review of the tools used for the assessment of nutritional status of populations. Topics include anthropometrical, biochemical, and socioeconomic indicators of nutritional status; methods for the collection, analysis, and interpretation of dietary data; measurement of household food security; and the use of data from nutrition monitoring and surveillance sources.

### **GCHB 6760 PUBLIC NUTRITION: POLICIES AND PROGRAMS**

The purpose of the course is to provide students with methods and understanding for contributing to the design of programs and supporting policies for reducing malnutrition in populations in developing countries. This means learning about experiences in specific countries, and generalizations from these, in recent successful efforts to reduce malnutrition. The student will

then be better equipped to work with governments, PVOs, and international organizations, in helping these to design and implement more effective programs in the future; and to teach others to do so.

### **GCHB 6770 FOOD AND NUTRITION POLICY**

This course surveys domestic policies and programs that affect nutrition at the population level. Subjects include: dietary policy, including the politics of the food guide pyramid; food labeling policy; food access policy, including the U.S. food assistance programs; food safety and food supply policies; the obesity epidemic, including the role of the food industry; environmental determinants of nutrition outcomes and efforts to improve them; actors and agencies involved in making policy; and nutrition advocacy.

### **GCHB 6780 THE DOUBLE BURDEN OF MALNUTRITION**

The purpose of the course is to familiarize students with the concepts of the Double Burden of Malnutrition (DBM: the co-existence of over- and under-nutrition, both contributing to disease, and acting as risk factors for each other), as well as to engaging them in understanding how to prevent it and mitigate its consequences across the life course, especially in Low and Middle Income Countries (LMICS). Students will learn the various definitions of the DBM, how to measure the problem, as well as to understand its causes and consequences from a life-course perspective. Students will also explore ways to resolve DBM problems through developing case studies on specific aspects of the DBM in selected LMICs

### **GCHB 6800 TRAINING METHODOLOGIES FOR HEALTH PROFESSIONALS IN DEVELOPING COUNTRIES**

An introductory course intended for health professionals who will be responsible for designing and carrying out short-term training courses for paramedical and village-level personnel in primary health care in developing countries. Such elements of training programs as trainee selection, needs assessment, selection of content, behavioral objectives, course design, training methodology, and processes of evaluation will be reviewed. Emphasis will be given to the use of participatory training techniques, which are especially important when trainees have limited educational backgrounds.

## **GCHB 6820 PROGRAM PLANNING, RESOURCE DEVELOPMENT, AND GRANTMANSHIP**

The course is designed to assist the student in acquiring the ability to plan and develop an educational or health promotion project. The course will provide the student with the necessary tools which will enable him/her to identify sources of funding, utilizing the Internet and other methods, and to write a successful grant proposal. Emphasis will be placed on writing goals and objectives and on the preparation of an evaluation plan and budget.

## **GCHB 7090 ADVANCED NUTRITION ANALYSIS**

Planning policies and programs to improve nutrition in populations requires appropriate assessment and analysis. This course covers the process of acquiring, handling, and analyzing data, from a conceptual through to a practical hands on approach, with particular emphasis on programmatic decisions in low and middle income countries. Outcome data (mainly for general malnutrition, with reference also to micronutrient malnutrition), program data (coverage, targeting, etc), differentials and trends, and advanced analytical techniques addressing confounding, interactions, and causality are included.

## **GCHB 7710 PUBLIC NUTRITION: ADVANCED ANALYSIS**

Planning policies and programs to improve nutrition in populations requires appropriate assessment and analysis. This course covers the process of acquiring, handling, and analyzing data, from a conceptual through to a practical hands on approach, for decisions at different levels of organization for policy and program planning, with particular emphasis on community based programs in poor countries. Outcome data (general and micronutrient malnutrition), program data (coverage, targeting, etc.), differentials and trends, and advanced analytical techniques addressing confounding, interactions, and causality are included in relation to decisions on action

## **GCHB 8750 Social Determinants of Health I: Concepts, Theory and Interventions**

The purpose of this course is to provide students with advanced conceptual knowledge of major social determinants of health. Students will gain from the course an understanding of social science theoretical models which guide investigations of the social determinants of health, the empirical etiological connections between social determinants and health outcomes, and interventions meant to affect such social determinants. Students in the course will synthesize

such knowledge and apply it to a health issue of their choice, suggesting next steps in programming to address social determinants of their chosen health issue.

**Department:** Global Environmental Health Sciences

- **Sustainability courses:**

**GEHS 6030 SURVEY OF ENVIRONMENTAL HEALTH**

This course is designed as a survey course which introduces students to basic environmental health topics and it fulfills the school's 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 6040 ENVIRONMENTAL HEALTH FOR DEVELOPING COUNTRIES**

This course is intended for students interested in understanding international environmental health problems, especially in developing countries. Global environmental health topics with a focus on developing countries are discussed. Topics include rural water supply and treatment, human waste collection and disposal, food protection, insect and rodent control, solid waste collection and disposal, and pesticide use and abuse. Specific problems in represented countries will also be presented and discussed. Selected Field Trips will compliment material discussed in class. In the Field Portion: Upon the completion of the field visits, students will be able to relate what was discussed in class to what was observed in the field.

**GEHS 6100 FUNDAMENTALS OF ENVIRONMENTAL CONTAMINANTS**

The course is designed to identify, characterize and evaluate environmental contaminants as they relate to human health. Topics include biological, chemical and physical contaminants in air, food, soil and water. The behavior of these chemicals will be discussed. Integrating appropriate methods of their control will also be addressed.

## **GEHS 6110 GLOBAL CLIMATE CHANGE ISSUES IN PUBLIC HEALTH POLICY & GOVERNANCE**

The objective of the course is to provide students with a thorough understanding of global climate change (GCC) phenomenon, the public health issues associated with GCC, and the role of policy and governance in tackling this problem. In line with this objective, the course examines the scientific, political and socio economic 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 6400 ELEMENTS OF ENVIRONMENTAL HEALTH**

This course is designed for students majoring in Global Environmental Health Sciences/Developing Countries. It covers topics in environmental practices in public health including: environmental pollution (its sources), public health significance and methods of control. Quality of food and food products, milk and dairy products, vector and rodent control, schools, housing and recreational waters are discussed in depth.

## **GEHS 6410 WATER AND SANITATION FIELD OPERATIONS**

This course is designed for students who will be working in areas, especially in developing countries, where contaminated water and improper sanitation are the cause of serious health problems. In this course, fundamental concepts will be taken from the classroom to field installations. The course will emphasize the design and construction of water systems (wells, springs, rain collection systems) and building individual of human waste disposal systems.

## **GEHS 6510 WATER QUALITY MANAGEMENT**

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; limnological aspects; eutrophication; ecotoxicology; diffuse pollution and global aspects of sustainable water quality control strategies

## **GEHS 6550 ENVIRONMENTAL HEALTH MANAGEMENT**

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 environmental health problems. The course discusses current environmental health 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 6590 AIR POLLUTION**

This course covers the following topics: structure, composition, and physical characteristics of the atmosphere and its various layers; pollutant behavior in the atmosphere; global, regional, and community air pollutants; indoor air quality; effects of air pollutants on the atmosphere, vegetation, animals, and materials; human health effects of exposure to air pollutants; standards and regulations pertaining to air pollution; atmospheric dispersion modeling techniques; and control of particulate matter and gaseous air pollutants

- **Courses that include sustainability:**

### **GEHS 6310 CANCER: CAUSES, TREATMENT, AND DISPARITIES**

This is an introductory course that covers basic aspects of biology, treatment, epidemiology, psychosocial factors, ethics, health disparities, cultural competence and population diversity issues within the framework of cancer.

### **GEHS 6470 MANAGEMENT OF NATURAL RESOURCES**

This course is designed to introduce students to the relevance of sustainable management of natural resources to public health. This is accomplished by identifying problems of natural resources use, examining a number of natural resources management policy tools and laws, and applying them to public health benefits. Ecosystem services and the management of air, water, wetland, agricultural land, forest, global climate change and ozone depletion are some of the topics covered. Students are given case-study based assignments to encourage their skill development in applied natural resources management for better public health protection.

### **GEHS 6500 TOXIC & HAZARDOUS WASTE MANAGEMENT**

This course addresses the current/future trends and background in Toxic and Hazardous Waste Management. The lecture portion of this course covers the methods for identifying, testing and managing of medical, toxic, hazardous waste, municipal sludge, manures and other waste residuals. It includes topics such as Waste Minimization, Hazardous Waste Treatment, Residuals Management, RI/FS Studies, Emergency Response, Coastal Restoration Wetlands and pertinent guest lecturers. In addition, regulations concerning classification, transportation, treatment and abandon sites will be covered, and field trips to municipal recycling center, infectious waste incinerator, landfill operational site, wetlands restoration research center and hazardous waste treatment facility. This is an introductory course which is open to non majors. It is offered during the fall of each year.

### **GEHS 6520 FUNDAMENTALS OF ENVIRONMENTAL CHEMISTRY**

Lectures cover the basic concepts of water chemistry including: concentrations, solubility, absorption, kinetics, gas law, phase relationships, and colloidal chemistry. The laboratory portion of the course includes wet chemistry for water quality analyses pertinent to environmental health sciences, such as coagulation, water softening, chlorination, biochemical oxygen demand, chemical oxygen demand, and nutrient analysis. The background provided is necessary preparation for course work in the following tracks: developing countries and resource management (water quality management, toxic and hazardous waste management and natural resource management).

### **GEHS 6540 OCCUPATIONAL HEALTH**

This course will address the most important health disorders affecting people as a result of their work: respiratory diseases, musculoskeletal disorders such as those caused by overexertion or repeated exertion, cancer, hearing loss, skin disorders and occupational stress. Focusing on identifying and preventing work-related diseases, the course will commence with an introduction to scientific method, and the application of scientific method, particularly epidemiology, to the critical evaluation of the relationship between work exposures and the occurrence of disease. General principles of toxicology will also be studied. Major occupational disorders will be introduced as examples following the scientific method section.

### **GEHS 6560: ENVIRONMENTAL MICROBIOLOGY**

This course emphasizes the significance of microbes of public health significance in the environment. Their detection, initiation of disease host response, detection of disease, will also be discussed. Finally, the biology of the organism, their epidemiology and prevention, if disease is presented. Major groups of enteric bacteria, along with RNA and DNA virus are discussed.

### **GEHS 6600 PRINCIPLES OF TOXICOLOGY**

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: 1) General principles: Route of exposure; dose response; absorption, distribution, storage, metabolism and excretion; 2) Effects on target organs: liver, kidney, blood, respiratory system and nervous system; and 3) 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 ENVIRONMENTAL AGENTS**

Prerequisite(s): ENHS 6600 The actions of toxicants are studied in detail. Mechanisms of toxicity and extension of this knowledge to general classes of toxicants is emphasized. Students are expected to use current toxicological literature in this course.

### **GEHS 6620 PHYSICAL AGENTS & ERGONOMIC HAZARDS IN THE WORKPLACE**

Problems associated with occupational exposure to temperature extremes, abnormal pressure, noise, mechanical vibration, non-ionizing radiation, and cumulative trauma/ergonomics are discussed in lecture sessions. The fundamental physics, health effects, and occurrence of these agents, along with methods for evaluating the extent of exposure and approaches to controlling them are discussed in lectures and appropriate measurement instrumentation is demonstrated. A laboratory session on noise measurement is included. Applicable exposure standards, regulations, and guidelines are covered in detail.

### **GEHS 6680 RISK COMMUNICATION**

This course is designed to improve written and oral communication skills and to provide hands on experience in the art of two-way communication of environmental issues between scientists

and managers, policy makers and the public. Discussion topics include: Principles of communication theory, message development and target audience identification, public perceptions of health risks, community perspective and listening to communities, communicating the news media and policy makers are covered. Written and oral presentation exercises include fact sheets, press releases, mock public meeting, policy briefing papers, presenting and debating environmental findings. Each student will develop, present and critique oral presentations and written materials.

### **GEHS 6720 PRINCIPLES OF INDUSTRIAL HYGIENE**

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 6760 ENVIRONMENTAL ETHICS**

This course introduces students to the ethical issues in environmental resource management and the environmental health outcomes. It debates the various ethical theories on human relationship to environmental resources, and offers critical examinations of the ethical basis of a variety of environmental management policies and approaches. Utilizing a case study approach, it examines some practical ethical failures and successes in environmental stewardship. The course discusses the APHA code of ethics and explains the benefits of the code to environmental public health professionalism and practice.

### **GEHS 6910 ENVIRONMENTAL ASPECTS OF DISASTER RESPONSE**

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 6930 POPULATIONS ISSUES IN DISASTER MANAGEMENT: SHELTER, ACUTE CARE, IMMUNIZATION, FORENSICS**

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 6940 ENVIRONMENTAL ASPECTS OF DISASTER RECOVERY**

This course addresses the process of disaster recovery as the most costly and complex phase of the disaster cycle. The content focuses on critical outcome standards guiding actions during the recovery phase of a disaster to achieve community preparedness.

### **GEHS 6960 PUBLIC HEALTH LAW**

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 law from local to global, and provides a hands-on legal tool for 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 7020 WASTEWATER MANAGEMENT AND TREATMENT**

Theory and application of wastewater treatment concepts is presented stressing holistic waste management. Focus is given to product life cycle analysis, pretreatment and biological treatment of industrial wastes. Wastewater characterization, pretreatment methods, treatment kinetics and unit operation are addressed as well as methods of toxicity reduction, nutrient removal and procedures for residuals management.

### **GEHS 7030 WATER TREATMENT AND SUPPLY**

Prerequisite(s): ENHS 6520 The course is concerned with water quality criteria and standards, hydrologic and hydraulic aspects of water supply, theory and operation of water treatment processes, analysis and design of water treatment facilities, and fundamentals of industrial water treatment (boilers, cooling systems and corrosion inhibition and scale control). Unit operations including gas transfer, sedimentation, filtration, coagulation, adsorption, disinfection, ion exchange and desalinization are also addressed

### **GEHS 7400 FIELD AND LABORATORY APPLICATIONS OF ENVIRONMENTAL HEALTH PRACTICES**

Other Prerequisite(s): ENHS 6030, ENHS 6400 This course consists of field and laboratory work dealing with the identification, assessment and isolation of environmental health problems. It is designed to provide the students an opportunity to observe and work with real-life settings of environmental health problems in the field, i.e. food establishments, jails, schools, water, sewage, etc. Students conduct environmental health exercise and make analysis of problems situations on-site. Written reports of each exercise are required. All reports will be discussed and methods of remedies for environmental health violation corrections will also be discussed.

### **GEHS 7440 ENVIRONMENTAL CANCER RISK ASSESSMENT (3)**

Prerequisite(s): ENHS 6600. The course covers the principles of risk assessment for environmental cancer. The basic model framework for risk assessment (hazard identification, dose response assessment, exposure analysis, and risk characterization) is used to determine and explain cancer risks of human body in response to environmental hazards carried by air, food and water. The interaction of scientific methods with focus on toxicology and regulatory requirements will be reviewed. Case studies focus on current environmental pollution issues such as exposures to vehicle exhaust, dust mixture, arsenic from smelters and petrochemical industrial emissions. Cellular and molecular toxicology and environmental epidemiology will be used as major tools for risk assessment process. Qualitative and quantitative risk assessment methods as well as cancer risk models will be incorporated into the case studies. Field trips to workplaces where suspected carcinogens are released will be organized and a scientific report is required to analyze cancer risks in selected workplaces.

## **GEHS 7450 BIOMONITORING OF ENVIRONMENTAL AND OCCUPATIONAL POLLUTANTS**

Prerequisite(s): ENHS 6600 Humans are continually exposed chemical compounds (e.g., pharmaceuticals, disinfectants, soaps and detergents, as well as the by-products of combustion and other pollutants). Chemicals are absorbed through eating, breathing, drinking, and through contact with our surroundings. Although scientists have long understood that our bodies absorb tiny amounts of chemical substances simply by interacting with our environment, today's technology allows researchers to detect and measure trace concentrations of many environmental substances in the body. The measurement of trace compounds in humans is referred to as biological monitoring, or biomonitoring. Biomonitoring usually involves the analysis of blood, urine or other body tissues/fluids.

## **GEHS 7500 AIR SAMPLING AND ANALYSIS**

Prerequisite(s): BIOS 6030 The principles and techniques for measuring and evaluating airborne contaminants in the work and community environments are presented in lectures and practiced in laboratory sessions. Covered topics include air flow measurements, aerosol science, particulate sampling with and without size separation, optical microscopy, active and passive sampling of gases and vapors, direct reading instruments, stack sampling, atmospheric dispersion modeling, and sampling strategy and statistical data analysis.

## **GEHS 7530 ENVIRONMENTAL UNIT OPERATIONS**

Prerequisite(s): ENHS 6520; ENHS 7020; ENHS 7030 The course is designed for environmental science and engineering application of unit processes for water and wastewater treatment. Techniques for prototype design from laboratory and pilot plant studies; wastewater characterization including toxicity screening evaluations; treatability analysis; kinetics of biological and physical chemical processes are presented.

## **GEHS 7620 HEALTH RISK ASSESSMENT**

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 is 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.

### **GEHS 7750 ENVIRONMENTAL POLICY**

This course introduces students to the concepts of public health policy with an emphasis on environmental health. The course describes the relationship among public health science, policy and practice and demonstrates the application of this relationship through a series of real cases in environmental health. The curriculum includes an analysis of the key national 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 7930 SPECIAL NEEDS IN DISASTER RESPONSE**

Prerequisite(s): ENHS 6910 This course characterizes the special needs of vulnerable populations in a crises environment as well as the special needs imposed on a population at large in the evolution of a disaster. The course also how to most effectively apply available resources to maximize community and individual survival under extraordinary circumstances

### **GEHS 7950 PSYCHOSOCIAL INTERVENTIONS IN DISASTER OR CRISIS**

Other prerequisite(s): for public health students ENHS 6950 or instructor's permission The course covers the development and application of both brief solution-focused and crisis intervention methods 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, pandemics, 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. Prerequisites for SW students: Methods I and Methods II.

**Department: Global Health Systems and Development**

- **Sustainability courses: none.**
- **Courses that include sustainability:**

### **GHSD 6010 COMPARATIVE HEALTH SYSTEMS**

Health systems around the world are facing the dual challenge of ensuring continued improvement in population health in an environment of rapidly increasing demand with limited availability of societal and consequently healthcare resources. Despite these common concerns of health systems worldwide, no two healthcare systems are identical. This course introduces an approach for comparative analysis with a focus on assessing performance of diverse health systems. Systematic comparative analysis employing quantitative information can identify concerns and policy options for the health sector in general. A set of common indicators for benchmarking among health systems will also be discussed. Health systems of seven different countries will be presented to illustrate the diversity of global systems. The case studies will be drawn from the national classification scheme developed by the World Bank; including high income developed countries (USA and UK); high income primary product exporters (Saudi Arabia); upper middle income countries (Mexico and Cuba); lower middle income countries (China); and low income countries (Rwanda). Recent health reform initiatives will also be discussed. The World Health Organization's building block approach will be used to understand the inter-linkages among different components of the system and the effects of reforms on system-wide outcomes. Performance measures of health systems will be developed by using the six building blocks of a contemporary healthcare system as identified by W.H.O.

### **GHSD 6050 HEALTH SYSTEMS CONCEPTS**

Health Systems Concepts is a graduate-level course that introduces you to the historical development, current structure and operation, and future direction of the U.S. health care system. The course serves as a foundation for understanding the characteristics and complexity of a sector of our economy that currently makes up over 17% of our Gross Domestic Product. The material in the course provides an overview of the ways in which health is produced and supplied through public health activity and health care delivery systems, the factors that determine the allocation of health care resources and the establishment of priorities, and the relationship of health care costs to measurable benefits. The course content enables you

to assess organized efforts to influence health delivery and policy formulation, the impact of these efforts on you as a manager and leader of your health care organization, and the role of societal values and individual behaviors on health system performance, reform efforts, and the health status of our population.

### **GHSD 6110 HEALTH ECONOMICS FOR DEVELOPING COUNTRIES**

This course provides an introduction to the principles of designing and evaluating health systems strengthening strategies in developing countries. The course first presents an overview of health system constraints to scaling up priority health care services in low-income and middle-income settings. The course then provides an overview of the health systems policy process, including problem definition, diagnosis, policy development, implementation and evaluation. Finally, the course provides an overview of policy options to improve health systems performance, with a focus on financial, payment, and organizational strategies. Specific tools and methods for assessing problems and evaluating the impact of reform initiatives are introduced. To illustrate the issues and approaches, case studies are used and discussed throughout the course.

### **GHSD 6140 LEADERSHIP FOR CLINICAL IMPROVEMENT**

This course is open to all students who are seeking future opportunities in executive, managerial, public health, or other health care leadership roles. The course offers students the knowledge, skills, and personal mastery tools that are a prerequisite to assuming leadership positions in the delivery of health services that improve the health status of the individuals and populations. Building on the perspective of clinical education and practice, the student begins his or her leadership journey, integrating and implementing the key structures and processes leading to clinical process improvement and the improvement of health outcomes. By grounding fundamental principles of organizational learning in experimental activities, this course enhances the student's mastery of the core competencies-visioning, dialogue, quality management and measures, systems thinking, personal and team learning, effective health care design, clinical change, and organizational transformation.

### **GHSD 6170 QUALITY MANAGEMENT IN HEALTH CARE**

This course introduces the student of health systems management to areas of continuous process improvement and healthcare quality management. The course offers the concepts and tools

required to examine, evaluate, and implement the key structures and processes of quality improvement programs in health care organizations. An integrative approach to improvement and organizational learning is taken, combining topics and methods from diverse improvement approaches in the development of an organization-wide commitment to continuous improvement. Through case analysis, the course emphasizes practical applications that prepare the participants to use the theory and techniques of quality improvement in situations with complex clinical and managerial implications. Course topics include measurement systems, quality improvement tools, and the design of programs for organizational learning.

### **GHSD 6190 ETHICAL CONCERNS OF HEALTH CARE MANAGERS**

Everyone involved in health care today, to be effective both individually and as a member of health care teams, needs to be well grounded in the ethical issues and dilemmas involved in health care delivery, the effect of these issues on policy making for health care institutions, and the ethical principles and theories available for decision making. Through their study of these subjects, students also develop better understanding of their own bases for making ethical decisions, including identification and sources of presuppositions and biases.

### **GHSD 6210 HEALTH LAW AND REGULATION**

Introduction to a wide range of topics in the area of health law and regulation including a number of relevant statutes. Students learn to recognize potential legal problems in various health care settings, identify the issues and rights that are implicated, and propose solutions or plans of action. They also learn to differentiate between legal problems and problems which can more appropriately be solved in other ways. There is an emphasis on formulating analyses clearly, both orally and in writing. Among the subject areas covered in the first two-thirds of the course are licensing, professional liability, confidentiality, informed consent, professional relationships, access issues, and antitrust. The last third of the course covers the legal aspects of a variety of bioethical issues.

### **GHSD 6220 PROGRAM SKILLS IN CRISIS AND TRANSITION SETTINGS**

This course is designed to equip students with a set of skills related to the assessment and analysis of the social, economic, and policy aspects of complex political emergencies, as well as post-conflict/transitional settings. The course covers selected topics in preparedness, response,

and transition in complex political emergencies, and their effects upon the civilian populations and the agencies that seek to assist them. Students develop skills in the following areas: information management, program operations management, and policy and context analysis. In terms of information management, students develop the capacity to adapt surveys to conflict-affected settings and utilize a series of rapid assessment approaches and participatory rural appraisal techniques for data collection. Students also learn to identify and utilize the principal components of crisis prevention and early warning information systems. In terms of program operations management, students develop skills in the construction of a logistics management system appropriate for emergency settings, and learn how to develop key programs of particular importance in post-conflict and transitional settings. In terms of policy and context analysis, students are equipped with analytical skills related to assessing potential harmful effects of humanitarian assistance, international political aspects of humanitarian work, international humanitarian law, and opportunities for promoting conflict resolution, capacity building, and development through humanitarian assistance.

### **GHSD 6250 DESIGN AND IMPLEMENTATION OF GLOBAL HEALTH INTERVENTIONS**

This course focuses on fundamental programming skills that can be applied to a variety of global health interventions focused on specific topics such as: disaster and emergency response, nutrition, child wellbeing, HIV/AIDS, infectious disease/malaria, reproductive health, etc... Students will acquire conceptual and practical tools to conduct situation analysis, conceptualize program/project frameworks, identify and manage human and financial resources required to successfully implement programs, and identify and develop necessary operational plans and procedures for Global Health interventions. Partnering and community-based approaches are the cornerstones of successful interventions. Therefore this course emphasizes participation, teamwork, and collaboration as essential programming skills.

### **GHSD 6280 EVALUATION OF PROGRAM INTERVENTIONS IN GLOBAL HEALTH**

This course provides students with basic concepts, principles, and practices for the evaluation of public health programs. This course focuses on the evaluation of important public health topics including malaria, HIV/AIDS, Tb, and Reproductive health programs. The course is intended to 1) provide an introduction to program evaluation, 2) provide basic professional skills for

developing evaluation plans, and 3) provide a foundation for more specialized classes offered in the areas of data analysis, sampling, epidemiology, and operations research.

### **GHSD 6450 HEALTH ECONOMICS**

This course introduces the student to the basic economic concepts and analytical methods used to address issues concerning the efficient and effective production of health and health services in a market economy, with an emphasis on the U.S. health system. The course applies tools of analysis to the behavior of the consumer/patient as well as to physician, hospital, health insurance, pharmaceutical, and long term care organizations and industries. The role of government in the production of health and the economic aspects of health reform are also explored.

### **GHSD 6760 HEALTH SYSTEMS STRENGTHENING: INTERNATIONAL FAMILY PLANNING**

The concept of health systems strengthening is fundamental to the delivery of health services in the developing world. The WHO framework outlines six building blocks for health systems; governance, health financing, service delivery, human resources, commodities management, and health information systems. Through this course, students will master these concepts as they apply to the "re-emerging area" of international family planning. Whereas the concepts of health systems strengthening generalize to other health topics, the focus on family planning will allow students to gain in-depth knowledge and experience in using key tools relevant to this field. This course will be especially useful to students interested in managing social development programs in the international context, especially in the area of reproductive health.

### **GHSD 6850 POPULATION AND ENVIRONMENT THEORY**

This course entails a critical examination of major social science approaches (demography, anthropology, economics) to the understanding of relationships between population dynamics, environmental change, and development policies; and a broad survey of global environmental concerns (and their relationship to population dynamics) and proposed solutions. The main approaches which influence social science research and policy today are surveyed: Malthusian theories, Boserupian population-induced intensification, and mediated modes such as policies, structural constraints, and environmental change. Students survey conceptual models and seek

evidence from empirical research on major concerns: food, forests, and biological diversity, urban and industrial issues, and climate change. Projects which integrate reproductive health and conservation concerns into practical, community-based interventions are examined. Techniques and data needs for researching population-environment interactions are briefly surveyed. A final segment focuses on Guatemala and the interrelated impacts on land, forests, biological diversity, and urban infrastructure of population dynamics, development policies, and historical inequities. GHSD 6850 is recommended for students interested in working in developing countries in reproductive health, environmental health, population policy, or development.

### **GHSD 7020 COMMUNICATIONS RESEARCH FOR HIV/AIDS FAMILY PLANNING AND HEALTH**

Prerequisites: BIOS 6240 or a working knowledge of SPSS. This course constitutes a practical introduction to the research methodologies used in planning a communication program for promoting desirable health behaviors, designing appropriate messages, pre-testing communications and evaluating program effectiveness. Most examples and data sets will involve international family planning and sexual risk behaviors, but will be applicable to other areas of public health. Lectures will be combined with exercises in which students carry out communication pretests, conduct and analyze the results of focus groups and do secondary analysis of existing communication data sets using statistical software. These skills are basic to the systematic approach in designing, implementing, and evaluating a health communication program.

### **GHSD 7120 MONITORING AND EVALUATING MATERNAL AND CHILD HEALTH PROGRAMS IN DEVELOPING COUNTRIES**

This course is designed to serve the purpose of (1) providing students with an understanding of the context and design of the main interventions to improve maternal and child health in developing countries, (2) developing professional skills in the use of quantitative analytical tools and technologies to appropriately monitor and evaluate maternal and child health programs in developing countries, and (3) increasing students' abilities to use monitoring and evaluation results to improve the planning and delivery of maternal and child health services in developing countries.

## **GHSD 7140 MONITORING AND EVALUATION OF HIV/AIDS PROGRAMS**

This course focuses on the monitoring and evaluation of HIV/AIDS programs. The course is intended to (1) provide an introduction to HIV/AIDS prevention, care, and treatment programs; (2) strengthen skills in the application of tools for global and national level monitoring of the HIV epidemic and response; (3) provide a foundation for monitoring and evaluating specific HIV/AIDS programmatic areas (prevention, testing and counseling, treatment, community and home-based care, tuberculosis/HIV integration, orphans and vulnerable children, most-at-risk populations, and behavior change communication); and (4) demonstrate how M&E findings are used to prioritize options for improving the national HIV/AIDS response.

## **GHSD 7200 DEVELOPING ISSUES: THEORY AND MEASUREMENT**

Prerequisite: GHSD 6040 or equivalent introduction to international development

This course critically reviews major theories, concepts and debates about social, human and economic development in the developing world. These concepts are useful to public health researchers and practitioners aiming to advance human well-being. We compare and contrast major development theories: economic growth, modernization, dependency, neoliberalism, sustainable development, human development, and human rights approaches. Then we address contemporary, critical perspectives that are reshaping development practice: the Capabilities Approach, Human Rights, and Post-Development thought. These challenge notions of: poverty, participation, gender, culture, technology, globalization, sustainability, foreign aid, and development actors/institutions. Insights from critical research on development agencies and projects show how theories, worldviews and assumptions translate into real "development" programs and projects that have often unexpected, unintended outcomes. The course is required for all doctoral students. It will be helpful for the reflective public health student who wants a broad, interdisciplinary, critical overview of current trends in development theory and its implications for practice.

## **GHSD 7210 SURVEY DATA ANALYSIS IN FAMILY PLANNING AND REPRODUCTIVE HEALTH RESEARCH**

Prerequisite: BIOS 6030 Introductory Biostatistics, EPI 6030 Epidemiological Methods I, GHSD 6270 and 6280 Monitoring and Evaluation of Program Interventions in Global Health (can be taken concurrently); no previous experience with Stata is required. This course is intended for

advanced Masters students and doctoral students. The course will introduce students to a number of key concepts and measures used in the monitoring and evaluation of family planning and reproductive health programs. Students will gain an understanding of a variety of reproductive health and health service indicators, data sources and their strengths and limitations. This course also provides basic hands-on quantitative skills that are essential in conducting monitoring and evaluation exercises in family planning and reproductive health programs. Students will learn how to use the Stata statistical software package to manage and analyze survey data and to construct reproductive health indicators. Students will also learn to interpret and present quantitative data, using graphs and tables, in ways that are suitable for scientific manuscripts.

### **GHSD 7960 APPLIED INTERDISCIPLINARY THEORY FOR GLOBAL HEALTH RESEARCH**

Through readings and discussion of theory, students explore the nature of health, human behavior and social and behavioral change. This exploration is intended to assist students in the process of developing their doctoral dissertation proposal, with emphasis on the theoretical basis and conceptual model for their chosen area of investigation. The course will take a critical and multidisciplinary perspective to the task of integrating and applying interdisciplinary theoretical frameworks to address research questions. The course will emphasize how theories, worldviews and assumptions are used to develop and support research projects that will guide: 1) empirical research approaches (quantitative, qualitative and mixed methods approaches) and 2) the design and assessment of public health programs, policies, and other interventions. This course critically reviews several major theoretical frameworks applied to global health such as the determinants of health outcomes, the structure and performance of health related organizations, and the causes of health-seeking behaviors. GHSD 8020 is a required course for doctoral students in this department. Good academic standing and permission of the instructors are prerequisites for this doctoral level course.

#### **Department: Tropical Medicine**

- **Sustainability courses:** no sustainability courses offered
- **Courses that include sustainability:**

### **TRMD 6010 BIOLOGICAL BASIS OF DISEASE**

*Offered in Fall, Spring, and Summer.* This course provides a foundation of knowledge about the human body in health and disease. It gives an overview of important concepts of the biological mechanisms of disease at the cellular, individual, and societal levels. At the cellular level, the course summarizes DNA and cellular function, genomics, immunology, and vaccination. At the individual and societal levels, the course addresses the most important infectious and non-infectious causes of death worldwide, providing background on their pathophysiology, clinical aspects, patterns of disease occurrence, risk factors, and methods of prevention.

### **TRMD 6100 HEALTH AND HUMAN RIGHTS**

*Offered in Spring and Summer.* This course is designed to provide a forum for discussion of pertinent issues in global health and human rights and to motivate students to become active advocates for their resolution. Students will participate in daily discussions with local and national experts in public health, clinical medicine, and health sciences research who are also strong advocates for human rights. The speakers will stress the importance of addressing the underlying social, political, and economic factors influencing health. Speakers will give examples from their background and the motivations for their career choices and discuss the skills and strategies necessary to become effective advocates for health and human rights.

### **TRMD 6350 DISEASE PREVENTION AND CONTROL IN DEVELOPING COUNTRIES**

*Offered in Fall and Spring.* This course is designed to prepare students to recognize and contribute effectively to the public health needs of communities in developing countries. It includes four broad content areas: (1) concepts of disease prevention and control with special reference to developing countries, including types of surveillance, monitoring and control strategies, (2) analysis of community needs, and provision of basic preventative services; (3) prevention and control of important endemic diseases such as malaria, tuberculosis, vaccine-preventable diseases; and (4) other topics such as special needs populations, disaster/refugee health programs, sources of information, and local and international organizations and programs. The course will emphasize practical rather than theoretical considerations based on the needs of the practitioner working under relatively resource-poor conditions.

### **TRMD 6420 TROPICAL VIROLOGY**

*Offered in Spring.* This course covers the broad area of virology with an emphasis on viruses of public health concern in developing and tropical countries. Both historically problematic and emerging viruses are covered. Topics include the molecular biology, epidemiology, and pathology of selected viruses. Focus is placed on developing an understanding of the molecular aspects of the viral life cycle that give rise to transmission and pathogenic characteristics, especially in the context of the co-evolution of the virus and host. Additional topics include the interactions between the virus and host immune response, as well as viral control and the development of vaccines and anti-viral pharmaceuticals.

### **TRMD 6450 TUBERCULOSIS: GLOBAL TRENDS AND INTERACTIONS WITH HIV**

*Offered in Spring.* This course is designed as an overview of tuberculosis and the challenges posed by the dual epidemics of TB and HIV. The course comprises a series of lectures and case studies. Guest faculty are recognized experts in this area and bring extensive experience and case study material to the course. Field activities including a visit to the Wetmore Tuberculosis Clinic at Charity Hospital and a visit to the Tuberculosis Control Program at the Office of Public Health are offered. The course includes three broad content areas – basic concepts of tuberculosis disease and epidemiology, clinical manifestations and management; challenges posed by the interactions of Tuberculosis and HIV infection and global initiatives to integrate TB and HIV control programs; and issues in tuberculosis control with special reference to multidrug resistance, social aspects, and program strategies. The biological, clinical and programmatic perspectives gained from this course will assist students in interpretation and critique of programs and policies related to tuberculosis control.

### **TRMD 7800 ADVANCED MEDICAL ENTOMOLOGY**

*Offered in Spring. Prerequisite: TRMD 606.* This is an advanced level course that emphasizes relationships between arthropods and the pathogens they transmit. Lectures and weekly readings from the primary literature will focus on aspects of vector-pathogen interactions and ideas at the forefront of research to better understand the ecology and epidemiology of pathogen transmission. Designed for biologists and health professionals who will be involved with U.S. and international agencies responsible for tropical medicine research and disease control. A \$50.00 lab fee is assessed for this course.

**TRMD 7820 MALARIA**

*Offered in Spring.* This is an advanced course which provides a rigorous approach to the basic and applied issues related to malaria. Areas covered in detail include malaria epidemiology and control strategies, parasite-vector relationships, vector control, cell biology, and biochemistry of the parasite red cell interaction, drug action and resistance mechanisms, parasite genetics and cell biology, and the immunologic aspects of malaria, including asexual and sexual stage candidate vaccine antigens. At the conclusion of the semester, students are expected to critically review current strategies and suggest and defend appropriate alternatives.