

**MASTER OF PUBLIC HEALTH
ENVIRONMENTAL & OCCUPATIONAL HEALTH
Program code: 1950**

INTRODUCTION

The Department of Environmental & Occupational Health (Faculty of Public Health) offers an MPH program OF Public Health in “Environmental & Occupational Health”. The objective of the program is to be a leading program in the Gulf region, recognized for its effect on safeguarding and improving Kuwait’s environment, occupational health, worker safety and well-being of Kuwait’s population; achieving this by providing a professional degree, the graduates from which will possess the environmental health and occupational health knowledge, attitudes and skills that can effectively address the environmental and occupational health and safety challenges facing Kuwait. The program features both thesis and non-thesis options.

According to the University Council decision dated 4/2/2007, Thesis students admitted with effect from September 2007 are exempted from the comprehensive examination.

PROGRAM REQUIREMENTS(Non-thesis option in parenthesis)

45(45) TOTAL CREDITS

18(21) COMPULSORY COURSES(Credits in parenthesis)

1900-501	Public Health Biology*	(2)
1910-501	Introduction to Public Health Practice and Ethics	(3)
1920-501	Principles of Health Policy and Management	(3)
1930-501	Epidemiology & Biostatistics I	(3)
1930-502	Epidemiology & Biostatistics II	(3)
1940-501	Social and Behavioral Foundations of Public Health	(3)
1950-501	Introduction to Environmental and Occupational Health	(3)
	Equivalent to (0566-539)	
1950-593	Capstone Project (Non-thesis option)	(3)

* A compulsory course for students with bachelor’s degree in areas other than medicine, dentistry, pharmacy, allied health sciences or nursing. For those students, the course substitutes a 2-credit elective course.

9(9) CONCENTRATION COURSES (Credits in parenthesis)

1950-502	Environmental and Occupational Health Risk Assessment	(3)
1950-503	Environmental Health Management	(3)
1950-504	Worker’s Health and Safety	(3)

5(5) APPLIED COMPULSORY COURSES (credits in parenthesis)

1900-591	Research Project Design	(1)
1910-581	Public Health Practicum	(4)

4(10) ELECTIVE COURSES (credits in parenthesis)

1910-530	Issues in Global Health	(3)
1910-531	Case Studies in Public Health Communication	(3)
1920-502	Health Economics and Financing	(3)
1920-503	Human Resource Management in Healthcare	(3)
1920-504	Health Planning and Evaluation	(3)
1920-530	Advanced Health Economic Evaluation	(2)
1920-531	Casemix System for Quality and Efficiency	(3)
1920-532	Managing Quality Assurance in Health Care	(2)
1920-533	Seminar in Health Policy and Management	(2)
1930-530	Qualitative Research	(2)
1930-531	Data Management and Informatics	(3)
1940-530	Mental Health Promotion	(2)
1940-531	Understanding Stress and Health	(2)
1950-530	Health Impacts of Land Soil Water and Air Pollution	(3)
1950-531	Injury Epidemiology and Prevention	(3)
1950-532	Exposure Assessment for Environmental & Occupational Epidemiology	(3)
1950-533	Public Health Aspects of Foodborne Diseases	(3)
1950-534	Environmental and Health Impact Assessment	(3)
1950-535	Fundamentals of Industrial Hygiene	(3)
1950-536	Environmental and Occupational Epidemiology	(3)

9 COMPULSORY COURSES

1950-597	Thesis	(0)
1950-598	Thesis	(0)
2000-599	Thesis	(9)

COURSE DESCRIPTION

1900-501: PUBLIC HEALTH BIOLOGY
CR: 2

This course, designed for MPH students without a background in a health profession, will examine the concept of 'health' and how it is defined and operationalized in the public health context, and will provide students with the necessary

foundations to understand the biological basis of disease. The key issues to be examined are: What is a 'disease'? What is health and is it more than 'absence of disease'? Using a biological systems approach, the course will integrate biological concepts as they relate to public health. There is an emphasis on protecting physical and mental

function and health, especially at the interface with the environment, as well as understanding the vulnerabilities and susceptibilities that can disrupt it.

1900-591: RESEARCH PROJECT DESIGN
CR:1 PR: 1930-501, 1930-502

In this research project design course the student begins the process of identifying a public health question and development of all aspects of a research project protocol, under the supervision of faculty. By the end of this course, the student will produce a research proposal to be approved by the MPH program committee, the FOPH ethics committee, and the MOH ethics committee (as appropriate). The initial draft of the data collection instrument will be included in an appendix of the research proposal. Regardless of the format, all students are required to take the online course in Protection of Human Subjects in research, designed by US National Institutes of Health Office of Extramural research and required of all NIH grant recipients.

1910-501: INTRODUCTION TO PUBLIC HEALTH PRACTICE AND ETHICS
CR: 3

This module introduces the Master students to the field of public health practice. It provides the core concepts required of a Public Health practitioner to be able to identify issues of importance to Public Health, assess the population needs for health, plan interventions, execute the interventions, and assess the impact of the programmes. The course will focus on aspects of communication as it relates to public health practice. Issues relating to ethics in public health practice, global health, and the landmark historical achievements in public health practice will also be covered. The course will provide the conceptual framework for the incorporation and integration of the skills and knowledge presented in later modules.

1910-530: ISSUES IN GLOBAL HEALTH
CR:3 PR:1920-501

Global Health has emerged over the last 40 years as a complex configuration of governmental, non-governmental, national, international, industrial, commercial, and philanthropic institutions involved in projects with an estimated value of \$16 billion. This course will introduce the student to the organisational and ethical issues involved in this movement. These include the current structures

involved, how they are funded and the ethical issues raised by this development.

1910-531: CASE STUDIES IN PUBLIC HEALTH COMMUNICATION
CR:3 PR:1920-501

This course will extend the skills required to develop important public health communication materials, campaigns, and strategies related to a variety of topics and for diverse target populations. It will use a case-study approach for the students to critically evaluate previous interventions and create alternative visions of how they could be conducted. They will use the principles that they have learned from previous modules.

1910-581: PUBLIC HEALTH PRACTICUM
CR: 4

This course is a preceptor-guided experience in a public health organization, providing an opportunity for MPH students to bridge the gap between theory and practice. The main purpose of this practical experience is to allow the student to apply knowledge and theory to a particular area of public health practice and demonstrate capabilities to enter the profession. The Practicum consists of a minimum of 180 hours of experience in an approved public health setting, under the guidance of a qualified preceptor. The student, Program Director, and preceptor will sign an agreement that will guide the practicum experience. The student will prepare a comprehensive portfolio to describe all activities. This portfolio will include a listing of the competencies that have been demonstrated and a paragraph describing how the practicum work supports this.

1930-501: EPIDEMIOLOGY & BIostatISTICS I
CR:3

This course presents the basic epidemiological and biostatistical principles, concepts, and methods for health-related events. The areas of emphasis include applications of epidemiologic methods to the study of the distribution and determinants of health and diseases, measures of morbidity and mortality, descriptive epidemiology and descriptive data analyses, hypothesis testing, common study designs (cross-sectional, case-control, cohort, and randomized controlled trials) along with the biostatistics tools and analytical skills needed to manage, analyze and interpret data including chi-square, student t-test, ANOVA, Mann-Whitney-U test, Kruskal-Wallis tests and paired tests.

1930-502: EPIDEMIOLOGY & BIOSTATISTICS II
CR:3 PR: 1930-501

This course focuses on the application of previously-learned basics of epidemiology and biostatistics. The areas of emphasis include disease surveillance and outbreak investigation, infectious disease epidemiology, main sources of error in studies, validation of diagnostic tests, and criteria for implementation of screening programs in the population. Furthermore, the basic power and sample size calculations will be covered. Additionally, statistical skills to analyze data from the common study designs using linear, multiple and logistic regression using the statistical package STATA will be covered. Moreover, basic critical appraisal of a research publication using epidemiological study designs will be included.

1930-530: QUALITATIVE RESEARCH
CR:2 PR: 1930-501

This course will examine the basic and advanced concepts and methods of qualitative research methods and their relationship with quantitative research methods. On completion of the course, the student will be able to conduct qualitative research using the methods and forms of analysis which are relevant to public health research. They will be able to plan and undertake collection and analyses of qualitative data. Examples and application of course content to the Kuwaiti context will be emphasized. Practical exercises in qualitative research will be included.

1930-531 : DATA MANAGEMENT AND INFORMATICS
CR: 3 PR: 1930-501

This course covers basic and advanced concepts of data and information management. Students will be introduced to the dynamic field of public health informatics, the expected competencies of a public health informatics specialist, and the practical application of data management and informatics concepts in the field of public health. Students will also be introduced to the field of data mining and its application to a variety of types of healthcare data. Examples and application of course content to the Kuwaiti context will be emphasized. Practical exercises in data management and informatics will be included. Students will be required to use an anonymized dataset extracted from a health institution to identify problems, consistency issues, and data merging issues.

1940-501 : SOCIAL AND BEHAVIORAL FOUNDATIONS OF PUBLIC HEALTH
CR: 3

This module introduces MPH students to the social and behavioral factors related to human health and disease (social determinants of health) across the life course. The course covers community and individual aspects of health promotion, the principles of social epidemiology, demography and ethical issues related to the social and behavioral aspects of the human experience. It provides an introduction to the theories of behavioral and social sciences, health and illness behaviors, models of behavior change, and the social reactions to and implications of “disease.” It covers health disparities, psychosocial stress, and public health issues related to different age groups. The course will enable the students to participate in health promotion planning, especially at the community level. Finally, this course focuses on mental health, prevention of non-intentional injuries, and how to deal with violence from a public health perspective.

1940-530: MENTAL HEALTH PROMOTION
CR:2 PR:1940-501

This course will focus on the principles of mental health, its indicators and social determinants. It will cover the prevalence of common mental health problems across life span, and in different communities. The course will emphasize on the relationships between mental and physical health and illness, and why mental health promotion and prevention is considered as a public health priority. An account about strategies of mental health promotion, the evidence of effective interventions, and the development of sustainable programs in mental health promotion will be covered also. The course will discuss mental health from human rights perspective.

1940-531: UNDERSTANDING STRESS AND HEALTH
CR:2 PR:1940-501

This course introduces Master students to stress, including its causes, the body’s reactions to excessive stress, and symptoms and signs that develop following stress. The course focuses on the effects of stress on productivity, quality of life, social relationships in different situations (family, occupation, education, etc.), and health. Students will gain a perspective on the consequences of stress on cognitive, emotional and behavioral aspects of life. The course also presents different

strategies of stress management and relief and how these interventions improve overall human's efficiency and quality of life.

**1950-501: INTRODUCTION TO ENVIRONMENTAL AND OCCUPATIONAL HEALTH
CR: 3**

This course introduces students to the fundamental concepts of Environment and Occupational Health. It differs from the study of how humans affect the environment, because this course focuses on people's health. Human health depends on the surrounding environment. The course integrates basic public health concepts as they relate to disease causation and prevention including environmental and occupational health effects, water supply, water pollution control, solid waste management (hazardous wastes), air pollution control, general environmental regulations, and related ethical issues. Hazards that lead to carcinogenesis are stressed. Population and occupational health, emerging diseases and the implications of population growth are discussed. Available techniques of preventive practices, such as controlling the quality of air, water, and consumer products, are described for both the workplace and the general environment. The impact of the workplace environment on the health and well-being of workers will be discussed.

**1950-502: ENVIRONMENTAL&OCCUPATIONAL HEALTH RISK ASSESSMENT
CR:3 PR:1950-501**

The main goal of this advanced course is to explore the risk(s) to the population of exposures to harmful environmental and occupational agents and conditions; and to present the tools for assessment and management of these risks. This course involves the integration of environmental and occupational health, epidemiology, toxicology, and the chemical and biological disciplines to understand the health risks for a given level of exposure to hazardous agents. The course will present the techniques and models for estimating the risks of physical, biological, and chemical agents that can have an impact on human health and well-being, as well as lifestyle and other factors which can modify these effects. Application of these concepts to government, industry and the population will also be covered. The course also covers critical risk calculation and assessment by exploration of underlying assumptions, use of

exposure assessment models, and ascertainment of uncertainties. The relationship between risk assessment, characterization and management; and implications on public health policy are also discussed.

**1950-503: ENVIRONMENTAL HEALTH MANAGEMENT
CR: 3 PR: 1950-501**

The course explores the impact of human activities on the environment and the strategies that are used by international organizations, national and local governments in response. The course will explore the roles of the World Health Organization, United Nations Environmental Protection Agency, and the International Organization for Standardization and governments in setting regulatory frameworks, and the responsibilities of individual agencies/organizations to comply with regulations. The environmental issues surrounding climate change will be addressed. Strong emphasis is placed on the legal, political, and economic structures and systems that are used by governmental and individual organizations to combat and reduce a wide range of environmental problems. The course covers the management of environmental health aspects including quality of life, physical, chemical, biological, social and psycho-social factors in the environment. Also covered are the assessment, correction, control, and prevention of factors in the environment that can adversely affect health.

**1950-504: WORKER'S HEALTH & SAFETY
CR: 3 PR:1950-501**

This course covers occupational hazards, injuries, and diseases; and the principles of occupational safety and health (OSH). Covered topics include safety regulations and standards; models of injury and occupational disease causation; accident investigation procedures; and strategies for control of occupational injuries and diseases. The course explores the protection of workers against work-related diseases and injury, the conventions of the UN International Labor Organization, and the need to achieve sustained decent working conditions and a strong preventive safety culture in the workplace. The course also covers the principles of safety engineering, industrial hygiene, industrial ergonomics, and some aspects of occupational medicine.

**1950-530: HEALTH IMPACTS OF LAND SOIL WATER AND AIR POLLUTION
CR:3 PR:1950-501**

The course covers the health impacts of air, water and land/soil pollution which is the addition to the ecosystem of something that has a detrimental effect on it. The course will cover the important causes of air, water, and land pollution, including the high rate of energy usage by modern growing populations, and the impact pollution has on human health and public health. Sources of pollution, including industry, business, road transport, incinerators, waste disposals, agriculture and households, will be covered. The course will also cover main pollutants in the environment, such as particulate matter, PAHs, lead, ground-level ozone, heavy metals, sulphur dioxide, benzene, carbon monoxide and nitrogen dioxides. The course will discuss the range of illnesses caused by pollution (e.g., lung cancer, cardiovascular and respiratory diseases, chronic bronchitis, acute respiratory illness, and impairment of lung function).

**1950-531: INJURY EPIDEMIOLOGY AND PREVENTION
CR:3 PR:1950-501, 1930-501**

This course provides instruction on a diverse array of topics specific to injuries (both unintentional and intentional) which are clearly a major threat to the public's health and well-being. The Epidemiology of Injuries will be covered, including international and local trends, along with the Haddon Matrix and various common types of unintentional and intentional injury. The public health importance of injuries in Kuwait will be emphasized, as a leading cause of death, particularly among the young population. The role of regulation and law in the work and living spaces and environment will be covered; in addition to common risk-taking behaviors and the means for change in such behaviors using strategies such as the European Union "Zero-Accident-Vision." The course will cover the important role of health promotion in terms of the individual, the community, society, and regulatory agencies in the prevention of injuries.

**1950-532: EXPOSURE ASSESSMENT FOR ENVIRONMENTAL & OCCUPATIONAL EPIDEMIOLOGY
CR:3 PR: 1930-501, 1930-502, 1950-501**

The overall goal of this course is to familiarize students with general concepts in assessing human exposures to environmental & occupational

contaminants. The course will provide information on different sources and routes of exposures, the various methods applied to assess these exposures and the challenges faced by population-based studies that relate such exposures to health outcomes. A variety of methods of exposure assessment will be discussed, including environmental measurements, personal exposure assessment, questionnaires, and job exposure matrices. Statistical analysis and modeling of exposure assessment data including Job Exposure Matrices (JEM), Geographical Information Systems (GIS), and Source Dispersion and Micro-environment models will be introduced.

**1950-533: PUBLIC HEALTH ASPECTS OF FOODBORNE DISEASES
CR:3 PR: 1930-501, 1950-501**

The focus of this course is the surveillance of foodborne diseases designed for public health practitioners and other students interested in the safety of food. It describes how information from surveillance is used to improve public health policy and practice in ways that contribute to the safety of food. Emphasis is on the microorganisms and chemical agents responsible for foodborne diseases, analyzing their cause, the pathogenesis, clinical manifestations, reservoirs, modes of transmission, and epidemiology. The course will also address the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, and the removal and inactivation of pathogens and indicators by water and wastewater treatment processes that are closely associated with foodborne diseases. It will also examine the public health impact of quality assurance programs, such as Hazard Analysis and Critical Control Points, and regulatory agencies to control foodborne diseases.

**1950-534: ENVIRONMENTAL AND HEALTH IMPACT ASSESSMENT
CR:3 PR:1950-501, 1950-532, 1950-530**

This course describes the function of health impact assessment (HIA); its role in identifying activities and policies likely to have major impacts on the health of a population; and its function as a means of evidence based policy making for improvement in health. The course discusses the relevant combination of methods whose aim is to assess the health consequences of policies, projects, or programs in any sector of society or the environment – not just the "health" sector – with an

emphasis on “Health in All Policies” (HiAP). Examples of transportation, land use, agriculture, water, energy, and forestry projects will be examined. This course aims at developing skills in reviewing and conducting HIA within the context of fostering an integrated understanding of how public policies and decisions influence the determinants of population health.

1950-535: FUNDAMENTALS OF INDUSTRIAL HYGIENE
CR:3 PR:1950-501

This course will cover the recognition, evaluation, and control of chemical, biological, and physical agents in the workplace; application to preliminary surveys, measurements of exposure, and evaluation of control measures; understanding of occupational health and safety standard setting procedures. Environmental hazards include chemical hazards, physical hazards, biologic hazards, and ergonomic factors that cause or contribute to injury, disease, impaired function, or discomfort. Industrial hygienists apply engineering controls, improved work practices, and protective equipment to reduce or eliminate occupational exposures and the adverse health conditions associated with these exposures. In addition to their traditional roles in the recognition, evaluation, and elimination of current occupational hazards, industrial hygienists play a vital role in exposure assessment for epidemiologic investigations and medico-legal case reviews.

1950-536: ENVIRONMENTAL & OCCUPATIONAL EPIDEMIOLOGY
CR:3 PR: 1930-501, 1950-501

The overall goal of this course is to provide a background in epidemiology of diseases related to environmental and/or occupational exposures. Application of epidemiologic research methods to determine and prevent such diseases will be discussed. The class will be supplemented with specific topics and case studies from environmental and occupational epidemiology literature. Students should have a previous introductory course in epidemiology. The course specifically covers the methods and issues of occupational and environmental epidemiology such as outbreaks, case reports, case series, cluster-analysis, cross-sectional, case-control, cohort, ecological, and time series designs, surveillance programs as well as more contemporary issues such as environmental cancer and reproductive hazards, and biological

monitoring / biomarkers. Exposure assessment / pathways and environmental and occupational diseases are also covered.

1950-593: CAPSTONE PROJECT
CR: 3

The student undertakes an independent project on a research topic of theoretical and/or experimental focus under the supervision of a faculty member listed in the supervisory list of the College of Graduate Studies. The objective is to provide the student with an opportunity to integrate and apply the knowledge gained throughout the course of study in a practical problem. The student must document the project in a scientific report following standard research writing guidelines and give a public presentation to the project examination committee.

1950-597: THESIS
CR: 0

1950-598: THESIS
CR: 0

2000-599: THESIS
CR: 9