

**Master of Public Health in Epidemiology**  
**Program code: 051012**

**INTRODUCTION**

The Department of Community Medicine and Behavioural Sciences (Faculty of Medicine) offers a "Master of Science" program in **Public Health**. English is the Language of instruction and research. The program is designed to produce academically qualified Public Health professionals: equipping them with the knowledge and skills base needed for a career that effectively addresses Public Health challenges both nationally and internationally. The program offers 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.*

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**PROGRAM REQUIREMENTS** (Non-thesis option in parenthesis)

**45 (45) TOTAL CREDITS (COURSES)**

**23 (26) COMPULSORY COURSES** (Credits in parenthesis)

0566-531	Public Health	(3)
0566-539	Introduction to Occupational and Environmental Health	(3)
	<b>Equivalent to (1950-501)</b>	
0566-540	Epidemiology I	(3)
0566-550	Biostatistics I	(3)
0566-562	Ethics in Public Health Practice & Research	(1)
0566-576	Research Protocol Design	(2)
0566-579	MPH Practicum	(3)
0566-593	Capstone Project (project option only)	(3)
2000-501	Scientific Writing and Communication Skills	(3)
2000-503	Ethics and Professionalism	(2)

**10 (10) CONCENTRATION COURSES**

0566-553	Biostatistics II	(3)
0566-554	Epidemiology II	(3)
0566-559	Sampling Survey Methods	(2)
0566-591	Clinical Epidemiology	(2)

**3 (9) ELECTIVE COURSES** (credits in parenthesis)

0566-545	Global Health	(2)
0566-546	Epidemiology of Infectious Disease	(1)
0566-547	Genetic and Epigenetic Epidemiology	(2)
0566-548	Nutritional Epidemiology	(1)
0566-549	Public Health Informatics	(3)
0566-555	Risk Assessment for Environmental Health Hazards	(1)
0566-556	Health Economics	(2)

0566-557	Fundamentals of occupational and Environmental Hygiene	(2)
0566-566	Reproductive Health and Child Survival	(1)
0566-567	Race, Ethnicity, and Health: Examining Health Inequalities	(1)
0566-568	National and International Health Regulations	(1)
0566-569	Ethics, History and Controversies in Public Health	(1)
0566-586	Concepts and Methods in Health Promotion	(3)
0566-592	Research Seminar	(1)
0566-594	Epidemiology of chronic Disease	(3)
0566-595	Research Interviewing, Focus Groups, and Analysis of Qualitative Data	(1)

Other elective courses can be chosen from the (400) and (500) level courses relevant to Public Health available at Kuwait University with approval of the Program Director.

## 9 **COMPULSORY COURSES**

0566-597	Thesis	(0)
0566-598	Thesis	(0)
2000-599	Thesis	(9)

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## ***COURSE DESCRIPTION***

### **0566-531: PUBLIC HEALTH CR: 3**

This course introduces the key concepts and principles of public health, the social, demographic, and behavioral factors underlying health and disease in a country, community or family; with a focus on the basic concepts and principles of demography, and the socio-demographic context of health and disease.

Moreover, this course provides contextual overviews for methods of public health research, policy development, program planning, intervention, and evaluation. The course also introduces the concepts of healthcare systems, the importance of “Healthy Public Policy”, emergency and disaster preparedness, the healthcare workforce, quality assurance, cost considerations, human resource management, and healthcare administration systems.

### **0566-539: INTRODUCTION TO OCCUPATIONAL AND ENVIRONMENTAL HEALTH CR: 3**

This course is a survey of major topic areas of occupational and environmental health. Topics will include occupational and environmental factors

which may pose a risk to the health of human populations, risk assessment and management methods for evaluating and controlling such risks, diseases associated with exposure to common occupational and environmental factors, workplace safety regulations, and historical, legislative and administrative aspects of occupational and environmental health. Moreover, this course will cover topics on measurement approaches for environmental exposure and dose, accounting of critical periods for exposure, estimating dose uncertainties, measuring outcome of environmental exposures, biologic effect markers and other early indicators of disease.

### **0566-540: EPIDEMIOLOGY I CR: 3**

Introduction to the principles and basic methods of Epidemiology for public health and clinical practice, including study designs (ecologic, cross-sectional, case-control, cohort, and randomized controlled trials), measures of disease frequency and association, sources of error (bias, confounding, and random error), diagnostic test validation, causation, disease prevention, and outbreak investigation.

**0566-545: GLOBAL HEALTH**  
**CR: 2**

This course will enhance understanding of the global context of public health. Millions of people die each year in developing and developed countries from diseases that are preventable and treatable. The focus of this course is to demonstrate how the world can become healthier through improved information sharing, and what health professionals can do to improve health in their community and the world. The course seeks to alert students to existing, emerging and likely factors underlying global health patterns, and how international health organizations have attempted to address global health issues in different countries.

**0566-546: EPIDEMIOLOGY OF  
INFECTION DISEASE**  
**CR: 1**

This course introduces the basic definitions and nomenclatures, dynamics of infection transmission, infectious disease surveillance, outbreak investigation, evaluation of factors leading to infection with an organism, factors affecting the transmission of an organism and those associated with clinically recognizable disease, assessment of vaccines field effectiveness using various epidemiologic study designs and case studies in selected groups of infectious diseases.

**0566-547: GENETIC AND EPIGENETIC  
EPIDEMIOLOGY**  
**CR: 2**

This introductory course aims to introduce students to principles, concepts, and epidemiologic as well as analytical methods and approaches used in the field of genetic and epigenetic epidemiology (GEE). A special focus will be given to concepts and methods related to both family-based and population-based approaches in GEE. In addition to understanding different issues and study design in GEE, students, through specific examples, will gain insights on the role of genetic and epigenetic factors and how such factors interact with environmental factors in causing complex diseases. The overarching goal of this course is to provide students with fundamental knowledge that will enable them to understand, interpret, and critically appraise GEE literature.

**0566-548: NUTRITIONAL EPIDEMIOLOGY**  
**CR: 1**

This course covers topics on standard methods of nutritional assessment and their related strengths and weaknesses; energy balance, macro- and micro-nutrient supplementation during illness and in health; dietary factors in relation to cardiovascular disease, cancer, and other chronic diseases; and country-specific data on nutritional epidemiology.

**0566-549: PUBLIC HEALTH INFORMATICS**  
**CR: 3 PR: 0566-540**

This course describes and discusses the role of informatics and information technology in this rapidly changing field of public health. In addition, it addresses key issues around contribution of information systems at local, national, and international level. Furthermore, this course provides the students with the knowledge to design, develop, implement, and evaluate of public health information systems, including web-based technologies.

**0566-550: BIOSTATISTICS I**  
**CR: 3**

This course aims to provide students with an introduction to statistical concepts and their use and relevance in public health. It covers descriptive analyses to summarize and display data; concepts underlying statistical inference (estimation and testing) for one and two samples; one-way analysis of variance and some nonparametric tests; basic statistical methods for the analysis of continuous and categorical data including testing for association correlation, simple and multiple linear regression. Students will gain hands-on experience to perform sound statistical analyses using SPSS software and other freely available sample size and power calculations software.

**0566-553: BIOSTATISTICS II**  
**CR: 3 PR: 0566-550**

This course will build on the skills developed in the previous course to enhance students' ability to understand and interpret an output from advanced statistical methods in a public health setting. This include multiple linear regression modelling of continuous and categorical covariates, stepwise procedures and diagnostics; two-way analysis of variance, multiple logistic regression and

diagnostics, conditional logistic regression, and basic error estimation and comparison for different sampling designs will be introduced. Methods for analysis and weighting including PPS using R or STATA software are presented.

**0566-554: EPIDEMIOLOGY II**  
**CR: 3 PR: 0566-540**

This course expands on the concepts, principles and epidemiologic methods taught in Epidemiology I. The course presents more advanced epidemiologic concepts such as the cohort effect, advanced study designs (e.g., nested case-control studies, case-cohort, case-cross-over studies, factorial trial designs, and cross-over trials), differential and non-differential bias, advanced issues in confounding, interaction, quality assurance in research protocols, and causal inferences.

**0566- 555: RISK ASSESSMENT FOR ENVIRONMENTAL HEALTH HAZARDS**

**CR: 1 PR: 0566-539**

Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Scans current topics in risk assessment and risk communication with a focus on issues in environmental health.

**0566- 556: HEALTH ECONOMICS**  
**CR: 2**

An introduction to healthcare finance and a description of the current financial environment in which healthcare organizations function. Basics of financial and managerial accounting, and presenting concepts that are critical to making sound financial decisions and cost-effectiveness of the program. Application of financial management principles to health care organization for health care administrations. Financial analysis to financial and operating decisions in the health care industry.

**0566- 557: Fundamentals of Occupational & Environmental Hygiene**  
**CR: 2 PR: 0566-539**

Introduction to the principles and scientific foundation of occupational and environmental

hygiene. Examines the anticipation, recognition, evaluation, and control of work place hazards to health and safety. Discussion of the basic concepts of hygiene; the human environment; control hierarchies, strategies and technologies; personal protection; the international dimension. The course provides basic underpinnings of the nature of theory and practice in occupational and environmental hygiene, and thus provides a structural framework for thinking about the field.

**0566-559: SAMPLING SURVEY METHODS**

**CR: 2 PR: 0566-540, 0566-550**

This course introduces the basic principles of sampling survey design, standards of questionnaire design and types of data collection like interview, telephone and mail-based are compared with emphasis on sources of error. Techniques of complex sampling methods (including simple random, stratified, systematic, and one/ multi-stage cluster sampling) and weighting are introduced. Power and sample size estimation for complex designs, bound of error estimation and comparison for different sampling design will be introduced. Methods for analysis and weighting including PPS using R or STATA software are presented.

**0566-562: ETHICS IN PUBLIC HEALTH PRACTICE AND RESEARCH**  
**CR: 1**

This course presents the philosophical basis and best practices for conducting ethical research involving human participants. It focuses on the concepts of moral reasoning, informed consent, confidentiality, the role of the Institutional Review Board, conflicts of interest, intellectual property, studies of vulnerable populations, genetics, and cross-cultural research. The course also presents ethical perspectives on Public Health practice, with special attention to health inequity, hidden populations, and scarce resources.

**0566-566: REPRODUCTIVE HEALTH AND CHILD SURVIVAL**  
**CR: 1**

This course will cover various aspects of reproductive health including birth defects, low birth weight, preterm birth, reduced fertility, impotence, and menstrual disorders. It will focus on the exposures- environmental or otherwise- that may pose threat to reproductive health and the health of offspring. Theories that explain the link

between child health and the health of mothers before and during pregnancy as well as after birth, will be discussed. It will also cover the importance of antenatal care; and how the wellbeing of the fetus can affect child health. The importance of major preventive measures in childhood such as vaccination in addition to breastfeeding in child growth and survival will be discussed.

**0566-567: RACE, ETHNICITY, AND HEALTH:  
EXAMINING HEALTH  
INEQUALITIES  
CR: 1**

Racial and ethnic background may exert wide ranging and major impacts on health and health-care of a population. In addition to Kuwaiti nationals, the Kuwaiti population consists of many different ethnic/nationality groups originating from more than one hundred different countries. This course will focus on the health perceptions, beliefs and values of major ethnic and nationality groupings, with special reference to Kuwait. Ethnic differences may be related to variations in health seeking behavior as well as compliance with the prescribed medical regimens. Ethnic background may also affect the accessibility of various groups to health care facilities. The course will orient the student to the multicultural settings within Kuwait and the world and discuss the possible impacts on health.

**0566-568: NATIONAL AND INTERNATIONAL  
HEALTH REGULATIONS  
CR: 1**

International Health Regulations (IHR) aim to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide. This course covers topics on specific national health regulations, and discusses issues relevant to prevent, protect against, control and provide a public health response to the international spread of disease.

**0566-569: ETHICS, HISTORY AND  
CONTROVERSIES IN PUBLIC HEALTH  
CR: 1**

This course describes the values and beliefs essential to a public health perspective and the ethical principles that govern its practice within historical case studies in Kuwait and abroad.

**0566-576: RESEARCH PROTOCOL DESIGN  
CR: 2 PR: 0566-540, 0566-550**

In this course, the student begins the process of identifying a research question and development of the thesis (or capstone) research protocol, under the supervision of the Thesis (or capstone) Advisor. By the end of the course, the student will produce a research proposal to be approved by the MPH Program Committee and the Joint HSC/MOH Ethics Committee. The initial draft of the data collection instrument will be included in an Appendix of the research proposal.

**0566-579: MPH PRACTICUM  
CR: 3**

The MPH Practicum is intended to provide students the opportunity for a hands-on experience in the field of public health. Students will develop the knowledge and skills acquired in their academic program and apply them to real-life public health problems in their chosen community-based health care delivery site. Most sites will be part of the Ministry of Health facilities but may also include other governmental ministries or non-governmental organizations. At the site, the practicum preceptor, a practicing professional in the area of public health will supervise and mentor students during their practicum activities and will help them define, plan, and implement the practicum. As part of the evaluation process, students are expected to submit a written project report and do a project presentation.

**0566-586: CONCEPTS AND METHODS IN  
HEALTH PROMOTION  
CR: 3 PR: 0566-531**

This course builds on the introductory concepts of Public Health presented in the first semester of the MPH program, providing a more detailed treatment of the concepts of planning, implementing, and evaluating Health Promotion interventions, in addition to the concepts, methods, and challenges surrounding behavior change. The student will apply these principles to a specific health problem in Kuwait, and submit a proposal for a multi-dimensional Health Promotion program to address this problem.

**0566-591: CLINICAL EPIDEMIOLOGY  
CR: 2 PR: 0566-540**

This course introduces the application of Epidemiologic principals to clinical research and practice. The content of the course focuses on measurement and evaluation of disease states,

diagnostic tests, prognosis, and treatment. The course also will develop and refine critical appraisal skills for case-control and cohort studies, randomized controlled trials, clinical guidelines, and meta-analysis. In addition, searching the literature using the PICO framework, EBM-based search strategies, methodological challenges in clinical research and selected applied topics in clinical epidemiology will be presented and discussed.

**0566-592: RESEARCH SEMINAR**

**CR: 1 PR: Preliminary Research Results**

In this course, all MPH students will present the preliminary findings of their research to all MPH faculty and other students. The purposes of this course are to create a sounding board early in the data analysis and presentation phase of the study and to provide external input into the Thesis project results and write-up.

**0566-593: 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.

**0566-594: EPIDEMIOLOGY OF CHRONIC DISEASE**

**CR: 3 PR: 0566-540**

This course presents the epidemiology of a range of chronic diseases of public health importance, and the concepts related to prevention of these disease. The conditions addressed in this course include cardiovascular diseases, hypertension, obesity, diabetes, hyperlipidemia, asthma, various cancers, and health- and disease- related behaviors including tobacco use, diet, and physical activity. Application of general population health concepts such as the life-course perspective, Rose theorem, the prevention paradox, population attributable risk, health disparities, prevention, screening, and

other public health concepts will be applied to chronic disease throughout the course.

**0566-595: RESEARCH INTERVIEWING, FOCUS GROUPS, AND ANALYSIS OF QUALITATIVE DATA**

**CR: 1**

This course introduces the interview techniques in qualitative framework for collecting data in an unstructured format. Students learn process of conducting focus groups. This includes introducing focus group participants a series of questions, engaging them in specific discussion in search for themes around phenomena of interest. Methods of analyzing focus group data using qualitative data analysis techniques such as constant comparison analysis, classical content analysis, keywords-in-context, and discourse analysis etc., are covered. Students learn how to draw inferences from qualitative data analysis results.

**0566-597: THESIS**

**CR: 0**

**0566-598: THESIS**

**CR: 0**

**2000-599: THESIS**

**CR: 9**