Department of Epidemiology and Population Health

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The Department of Epidemiology and Population Health offers courses in epidemiology, biostatistics, and population health to graduate students in the Faculty of Health Sciences and the Faculty of Medicine. The course offerings to students in the Master of Public Health (MPH) program, the Master of Science (MS) in Epidemiology program, and the Master of Science (MS) in Population Health program are given as core, required, and elective courses. In addition, members of the department offer courses in statistics and epidemiology to students in the Medical Degree program and coordinate and participate in teaching courses in preventive medicine and public health programs in the Faculty of Medicine.

**EPHD 300**
**Principles of Epidemiology**
A course in principles, concepts and applications of epidemiology in the public health field. The course consists of lectures, assigned readings and complementary practical sessions that provide students with basic epidemiological knowledge and tools relevant to public health practice. Students are given the opportunity to acquire an understanding of the vocabulary of epidemiology and methods of epidemiological research, investigation and control. Topics covered include rubrics of epidemiology, morbidity and mortality measures, sources of epidemiological data, outbreak investigation, epidemiological study designs, causal inference, and causation in epidemiology. This course also covers an overview of the major biological agents and the ecology and dynamics of communicable diseases.

**EPHD 301**
**Principles of Epidemiology for Health Care Professionals**
This course is intended for students with health background (such as nursing or medicine) and with an understanding of the biology of disease and dynamics of disease transmission. The course introduces the students to the principles, concepts and application of epidemiology in the field of Public Health. The course consists of lectures, assigned readings and complimentary practical sessions that provide students with basic epidemiological knowledge and tools relevant to public health practice. Students will acquire an understanding of the basic principles of epidemiology, disease and effect measures, different epidemiological study designs, and applied epidemiologic knowledge of inferences and biases.

**EPHD 300** and **EPHD 310** are equivalent to SHARP 300 and SHARP 310 respectively.

**EPHD 310**
**Basic Biostatistics**
2.2; 3 cr.
An introductory Biostatistics course that covers basic concepts in statistical methods. The course demonstrates methods of exploring, organizing, and presenting data. The course presents the foundation of statistical inference from estimation, to confidence interval and testing of hypothesis. Applications include comparing population means or proportions via data obtained from paired or independent samples, one-way ANOVA. Also, it introduces simple linear regression, correlations, logistic regression and nonparametric methods for data analysis.

**EPHD 312**
**Analysis of Continuous Data**
2.2; 3 cr.
A course that deals with concepts and methods for the analysis of continuous outcomes. Main focus is on multiple linear regression. Analytical means to control for confounding and effect modification while maximizing precision is explored. The methods of regression diagnostics are explained. Basic theory is considered; however, the emphasis is on application. Applications of the statistical techniques are carried out using the statistical package STATA. Prerequisite: EPHD 310 or consent of instructor.

**EPHD 313**
**Analysis of Categorical Data**
2.2; 3 cr.
A course that covers univariate and multivariate statistical techniques for categorical data. Topics include distributions, measures of association and inference for categorical data, log-linear models for multi-contingency tables, and logistic regression for binary, polytomous, and ordinal responses. In addition, the concept of maximum likelihood estimation is introduced. Applications of the statistical techniques are carried out using the statistical package STATA. Prerequisite: EPHD 310 or consent of instructor.

**EPHD 314**
**Data Management and Manipulation**
1.2; 2 cr.
The data management course is an introduction to data manipulation and management using Stata, SPSS and Epi-data. The course covers data structure design including data checking as well as data manipulation, data imputation and basic statistical programming. The course is offered at the computer lab where students can have hands-on experience in dealing with real data sets. In case an enrolled student has a project specific data, she/he has the chance to directly apply the acquired course material on the dataset. Weekly assignments are given to allow the students to explore advanced and customized application of the material offered in the classroom. Prerequisite: EPHD 310, undergraduate or graduate basic Biostatistics course, or consent of instructor.

**EPHD 315**
**Nonparametric Data Analysis**
1.2; 2 cr.
Nonparametric tests are often used in place of their parametric counterparts when certain assumptions about the underlying population are questionable. This course introduces the students to the theory and applications of nonparametric statistics. Methods include estimation and testing of hypotheses for the one sample location problem, two sample location problem, multi-sample location problem, correlation, regression and tests for proportions. Prerequisite: EPHD 310 or graduate basic Biostatistics course.

**EPHD 316**
**Epidemiology, Prevention and Control of Communicable Diseases**
2.0; 2 cr.
This course explores the epidemiology, prevention and control of specific communicable diseases with major public health importance locally, regionally and globally. For each disease or group of similar diseases, the course will cover the epidemiological evidence, etiology and associated risk factors, and prevention and control strategies. The list of diseases included in
the course will be modified according to changes in the dynamics of communicable diseases worldwide. Prerequisite: EPHD 300 or consent of course instructor.

EPHD 317 Epidemiology of Non-communicable Diseases and Mental Health Disorders 1.5-1; 2 cr.
This course examines selected non-communicable diseases (NCDs) and mental health disorders (MHDs), particularly their morbidity and mortality estimates, burden, social and behavioral and other determinants, as well as evidence-based and effective prevention strategies and interventions. For each disease/disorder, the course will provide an overview of the public health importance of the topic/its burden, morbidity and mortality estimates at the local, regional and global level, associated risks and protective factors, public health strategies for the prevention/control, as well as main methodological issues in the measurement, control/prevention of the condition. Pre-requisite: EPHD 300 or consent of course instructor.

EPHD 320 Design and Analysis of Epidemiological Studies 2.2; 3 cr.
This is a blended course offered to graduate students who have already been exposed to basic epidemiological and biostatistical concepts. It covers in detail methodological issues concerning the design and analysis of epidemiological studies with particular emphasis on case control and cohort studies, and the interpretation of results. Prerequisites: EPHD 300 and EPHD 310, or consent of instructor.

EPHD 321 Design and Analysis of Clinical Trials 1.2; 2 cr.
A course that focuses on issues in the design and organization of randomized controlled clinical trials: ethical and legal issues, patient selection, masking and randomization, endpoint definition, protocol development, and statistical analysis. Designs such as crossover designs, factorial-designs, and meta-analysis are discussed. Prerequisites: EPHD 300 and EPHD 310, or consent of instructor.

EPHD 322 Special Topics in Epidemiology 1-3 cr.
A course that covers selected topics of special interest to trainees in epidemiology. Examples include assessment of disease burden using epidemiological studies, occupational epidemiology, epidemiology of aging, epidemiology of maternal-child problems, or nutritional epidemiology. Prerequisites: EPHD 300 or consent of instructor.

EPHD 324 Special Topics in Biostatistics 1–3 cr.
A course that covers selected topics in biostatistics of special interest to researchers and trainees in epidemiology and population health. Prerequisite: EPHD 310 or consent of instructor.

EPHD 327 Field Epidemiology 0.2; 1 cr.
The field epidemiology course is an introduction to the concepts of epidemiology as it relates to applied field epidemiology. This course covers the key steps of an outbreak investigation and introduces main concepts of surveillance, its analysis and importance. This course focuses on problem-based, interactive methods: students can have a hands-on experience in dealing with basic outbreak investigation steps and surveillance data through real life case-studies which are discussed in group-work in class. Prerequisite: EPHD 300 or any undergraduate or graduate basic epidemiology course.

EPHD 328 Systematic Review and Meta-Analysis 2.2; 3 cr.
The course is structured around the steps of executing a systematic review of trials of interventions: specifying the Population Intervention Comparison Outcomes (PICO) question, searching for potentially relevant articles; selecting eligible studies; abstracting data; assessing risk of bias, conducting a meta-analysis; grading the quality of evidence; and interpreting results. PICO is an acronym referring to the components of the question forming the basis for a research study, a systematic review in this case: Population, Intervention, Comparison, Outcomes. Weekly assignments are designed to guide students in the production of a systematic review. The final paper consists of a report of the systematic review suitable for publishing in a peer-reviewed journal. This is a relatively intensive course and students need to allocate adequate time and effort. Prerequisites: EPHD 310/EPHD 325 and EPHD 300/EPHD 326 or their equivalent courses, or consent of instructor.

EPHD 331 Population Change and Health 3.0; 3 cr.
Population change is central to public health. This course provides a broad introduction to the field of population. It identifies core topics in population, discusses their relation to development and health, and emphasizes measurement issues. Topics covered include population size and growth as they relate to resources and to population health; components of population change including fertility and mortality, their links to development and consequences for health; population composition by age and gender and by socioeconomic status, and related inequalities; and population movements including forced, internal and international migration as factors of population change and health. Special focus is given to the Arab World and the Middle East Region.

EPHD 332 Population and Health Policy 3.0; 3 cr.
A course designed to explore the links between population, health, and development issues, with a focus on population policies and programs in the Middle East and North Africa. Topics include demographic trends and their implications for health policies; family planning programs and policies; the reproductive health paradigm; HIV/AIDS; gender and population policy; special health needs posed by the youth 'bulge' and population aging; political dimensions of population policies; and debates between the policy objectives of reducing population growth at the macro level and promoting individual well-being.

EPHD 333 Special Topics in Population Health 1-3 cr.
An examination of specific topics in population health such as aging, burden of disease, reproductive health, fertility of adolescents, social determinants of population health, and the demography of refugee populations.

EPHD 334 Reproductive Health 3.0; 3 cr.
A course that examines selected issues in reproductive health with a focus on developing countries. Topics covered include pregnancy and childbirth, unintended pregnancy, maternal mortality, infertility, gynecological morbidity including sexually transmitted infections, sexuality, birth spacing and family planning, and reproductive rights. Particular emphasis is placed on conceptual issues and recent debates about reproductive health within the context of the international agenda on reproductive rights established at the 1994 Cairo Conference on Population and Development.
EPHD 336  Tutorial in Epidemiology  1–3 cr.
EPHD 337  Tutorial in Biostatistics  1–3 cr.
EPHD 338  Tutorial in Population Health  1–3 cr.
EPHD 340  Seminar  1.0; cr.
A seminar that provides students with an opportunity to review, critique, and orally present their evaluation of either peer-reviewed articles or other literature in epidemiology or population health, and/or their research projects/theses that are in progress for feedback. Major methodological and conceptual issues in epidemiology are highlighted and discussed. Prerequisites: EPHD 300 and EPHD 310, or consent of instructor.

EPHD 345A  Research Project 1  0.2; 1 cr.
The course involves the development of a complete research proposal that is relevant to the student’s area of concentration or interest, as an individual or as part of a group. The research proposal may focus on one or more of the qualitative and quantitative methodologies introduced in Research Design, Principles of Epidemiology and Basic Biostatistics. In this course, students develop the research idea, complete the literature review, develop the proposal for the research they want to conduct, and submit a completed application for IRB approval to conduct the research. Corequisites: PBHL 310, EPHD 300, and EPHD 310. Prerequisite: completion of all, or all but one, of the concentration courses.

EPHD 345B  Research Project 2  0.2; 1 cr.
The course involves the implementation of the research that was developed in the Research Project 1 and analyzing and writing up its findings as an individual or as part of a group. It gives the student the chance to apply background knowledge and master research skills in an area of interest. Prerequisites: Research Project 1 (EPHD 345A).

EPHD 365  Practicum in Epidemiology and Biostatistics  0.30; 2 cr.
The practicum offers students the opportunity to practice their obtained knowledge and gain research experience in epidemiology and biostatistics mainly through the design of epidemiological studies or data collection and analyses of various types of data. Students are advised internally by a faculty member and externally by an outside preceptor in the practicum site. Practicum sites may include the Ministry of Public Health, Ministry of Social Affairs, non-governmental agencies, UN agencies (UNICEF, ESCWA, UNFPA), and health services organizations. Prerequisites: PBHL 355 and completion of all, or all but one, of the core and/or concentration courses.

EPHD 395  Comprehensive Exam  0 cr.
EPHD 399  Thesis  6 cr.