The Harvard MPH in Epidemiology
Online/On Campus/In the Field

Two-Year, Part-Time Program

Curriculum Guide
2016-2018

For more information about the program, please visit:

For inquiries, please feel free to contact Stephanie Greguoli Lemoine, Academic Program Manager, at mphepi@hsph.harvard.edu or 617-432-1558.
Program Description:

Launched in the summer of 2015, the Master of Public Health in Epidemiology will prepare you for new levels of leadership and investigation in your career while fitting around your busy schedule. As an MPH in Epidemiology student, you will study with one of the world’s most accomplished epidemiology faculties. The Harvard Chan School Department of Epidemiology was rated the most prolific research department in the world by the National Research Council in its most recent assessment of the field and 18 of the most highly cited researchers listed by Thompson Reuters in 2014 are members of the Harvard Chan School’s faculty.

By combining the best of online, in-person, and in-the-field learning, this rigorous part-time, two-year degree program will provide you with the advanced research and epidemiological skills you need to pursue senior positions in academia, hospitals, public health agencies, nongovernmental organizations, and the private sector.

The Format: Maximum Flexibility, Indelible Experience

The MPH in Epidemiology’s unique part-time format—a blend of on campus, online, and field learning—combines the best of what the Harvard Chan School has to offer and is designed to fit the lives of busy professionals.

- On Campus: The program includes three intensive on campus sessions, one each at the beginning, middle, and end of the program.
- Online: You will earn roughly two-thirds of your credits via interactive exercises, modular video sessions, and case-based studies, all conducted online.
- In the Field: Mentored by Harvard faculty, you will complete a self-designed, year-long practicum culminating in a capstone project and presentation.

Program Policies:

Academic Standing:

In addition to meeting course load requirements and distributions, Harvard Chan School students must remain in good academic standing, must complete program requirements within the designated time to degree, and must meet the following academic conditions:

- All MPH-EPI students must maintain a cumulative GPA of 2.7 (B-average) or above in order to graduate from the program.
- All students enrolled in an MPH program at the school are required to have at least 32.5 ordinal graded credits from courses. Students in the MPH-EPI program are required to take the first year and half of their program (June 2016 through August 2017) as ordinal graded credits. During the second fall and spring semesters of the program, MPH-EPI students have the option of taking three of the four elective courses for a pass/fail grade rather than an ordinal grade. The practicum component of the program is required to be graded as pass/fail.
Leave of Absence:

Students in the MPH in Epidemiology do have the option of taking a leave of absence from the program; however the first year of the program must be taking in sequence. The program recommends that if students are planning to take a leave of absence, they take a leave for at least the entire semester (summer, fall, spring). Students who wish to take a leave of absence for part of semester may be charged a continuation fee.

Add/Drop Deadline:

MPH in Epidemiology students are held to the same add/drop deadlines as other Harvard Chan School students. Usually these deadlines occur at the end of the second week of the course. The exact deadline can be obtained from the Academic Calendar Summary on the Registrar’s Office website: https://www.hsph.harvard.edu/registrar. It is strongly recommended that students not join courses after they begin so as to not miss any required assignments during the first two weeks of the course and also not miss any group assignments for course projects.

Elective Courses:

During their second year, students in the MPH in Epidemiology program will take two elective courses during the fall semester and two other elective courses during the spring semester. Each elective course is for 2.5 credits. The current list of elective courses can be found beginning on page 8. Students are eligible to take up to three elective courses as pass/fail credits.

Student Handbook:

For further information on the Harvard Chan School’s policies, please consult the student handbook at: https://www.hsph.harvard.edu/student-handbook/academic-support.

Tuition:

Students are billed a flat rate at the beginning of each semester (summer, fall and spring). A continuation fee is charged for any students who have paid their financial requirements, but still have academic requirements to finish.

International Students:

International students will be required to attend the two, three-week on campus sessions in June 2016 and June 2017 on a student visa. This includes students from Canada. The Harvard Chan School is unable to extend the student visa past year June session since the remainder of the program is completed online.
# MPH-EPI Course Overview

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<th>Course Name</th>
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<th>Credit</th>
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<td>Introduction to Epidemiology &amp; Biostatistics</td>
<td>ID 207</td>
<td>7.5</td>
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<tr>
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<td>ID 208</td>
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<td>Analytic Methods for Epidemiology</td>
<td>EPI 522</td>
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<td>Confounding Control: A Component of Causal Inference</td>
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<td>Ethical and Regulatory Issues in Human Research</td>
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<td><strong>Fall Electives</strong></td>
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<td>Analysis of Publicly Available Databases for Epidemiologic and Health Services Research</td>
<td>EPI 526</td>
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<td>Design and Conduct of Trials in Preventive Medicine</td>
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<td>Systematic Review and Meta-analysis</td>
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<td><strong>Total Credits:</strong> 5</td>
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<td><strong>Spring Electives</strong></td>
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<td>Linear and Longitudinal Regression</td>
<td>TBD</td>
<td>2.5</td>
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<td>Decision Analysis for Health and Medical Practices</td>
<td>TBD</td>
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<td>Introduction to Data Mining and Risk Prediction</td>
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<td><strong>Total Credits:</strong> 5</td>
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<td><strong>May Practicum Presentation</strong></td>
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<td>MPH Capstone Project</td>
<td>TBD</td>
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<td><strong>Total Credits:</strong> 45</td>
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ID 207 – Introduction to Epidemiology and Biostatistics  7.5 credits
On-campus, Three-weeks, June 2016

At the conclusion of this course, students will have gained a solid understanding of basic principles and methods of epidemiology and biostatistics; learned how to apply these principles and methods to the evaluation of relevant public health questions; and developed the ability to critically analyze the epidemiologic and public health literature. Methods of instruction will include lectures, videos, seminars, exercises, and a group project. This is part of a 10 credits intensive course, and has two components: 3-weeks on campus in June, and a 6-week online component in July and August.

ID 208 – Introduction to Epidemiology and Biostatistics  2.5 credits
This is an online extension of ID 207, taught by the same faculty
Online, Six-weeks, July through August 2016

At the conclusion of this course, students will have gained a solid understanding of basic principles and methods of epidemiology and biostatistics; learned how to apply these principles and methods to the evaluation of relevant public health questions; and developed the ability to critically analyze the epidemiologic and public health literature. Methods of instruction will include lectures, videos, seminars, exercises, and a group project. This is part of a 10 credits intensive course, and has two components: 3-weeks on campus in June, and a 6-week online component in July and August.

EPI 522 – Analytic Methods for Epidemiology  5.0 credits
Online, September through December 2016

The goal of this course is to familiarize you with many of the common analytic methods used by epidemiologists to obtain valid measures of the effect of a risk factor on an outcome. It will cover the basic principles of causal inference and confounding and review stratification as a method to control for confounding. This will provide a basis for introducing regression-based methods to control for confounding, including logistic regression and its extensions (ordinal logistic regression, multinomial logistic regression, and conditional logistic regression), as well as propensity score analysis. The course also will cover survival analysis and Cox proportional hazards regression for time-to-event data. Finally, the course will discuss methods for handling missing data. You will learn to implement these analytic methods using the Stata statistical software package.
EPI 524 – Confounding Control: A Component of Causal Inference

2.5 credits

Online, Seven-weeks, January through March 2017.

Controlling for confounding is a fundamental component of epidemiologic research. EPI524 describes models for confounding control (or adjustment), their application to epidemiologic data and the assumptions required to endow the parameter estimates with a causal interpretation. The course introduces students to two broad sets of methods for confounding control: methods that require measuring and appropriately adjusting for confounders, and methods that do not require measuring the confounders. Specifically, the course introduces outcome regression, propensity core methods, the parametric g-formula, inverse probability weighting of marginal structural models, and instrumental variable methods as means for confounding control.

EPI524 is designed to be taken after EPI522. The models described in EPI524 are for time-fixed dichotomous exposures and dichotomous, continuous, and failure time (e.g., survival) outcomes.

EPI 525 – Study Designs for Epidemiologists

2.5 credits

Online, Eight-weeks, March through May 2017

The course reviews the main study designs currently used to describe, predict and understand the causes of adverse health outcomes in humans. The course discusses the principles and interpretation of ecological, cross-sectional, cohort, case-control and case-only designs in a number of different settings. Strengths and limitations of the study designs that are commonly used for research will be considered. Issues related to study population identification and ascertainment; exposure and disease definition, misclassification, confounding and generalizability are considered in the light of data sources typically available. Ideas from several fields, from infectious disease to occupational epidemiology, and their relevance to study design and to public health are discussed. The course offers formal presentations where main methodological concepts are reviewed. The theory will be followed by an active discussion of publications covering a variety of topics. Students will critically evaluate published studies and prepare a proposal to study a specific research question.
The curriculum for Year 2 of the program is still developing. An estimated curriculum is as follows:

**ID 216 – Critical Thinking and Action for Public Health Professionals**  
5.0 credits

On-campus, Three-weeks, June 2017

Successful public health practitioners need the knowledge, skills, and leadership traits to address challenging public health issues in an increasingly complex and interconnected world. Whether in government, non-profits, hospitals and health systems, or other organizations, public health professionals are called upon to think analytically and creatively, engage and communicate effectively with multiple constituencies, develop sustainable strategies, and lead teams to implement workable solutions.

This interdisciplinary course is an introduction to the field of public health, incorporating ways of thinking and approaches from environmental health, social and behavioral science, life science, health policy and management, global health, ethics, communication and many other critical disciplines. The objective is to enable students to gain fundamental, crosscutting public health content knowledge and skills in order to begin approaching and solving public health problems in a thoughtful, systematic and comprehensive manner, i.e. to think and act like public health professionals.

Using an active learning approach, students are engaged through case studies, debates, team projects and real world experiences to expand their capabilities in effective, ethical decision making while immersed in complex situations. Fields of study are investigated through the lens of current, and very real, public health issues taught by experts in those areas.

**HPM 549 – Ethical and Regulatory Issues in Human Research**  
2.5 credits

On-campus, Three-weeks, June 2017

This course introduces ethical and regulatory requirements for review, conduct and oversight of research involving humans. Topics include public health ethics; ethical issues in biomedical and public health research; regulations and guidelines governing human subjects research; financial and non-financial conflict of interest; international research and research misconduct. The course offers formal presentations/lectures, combined with active classroom discussion of case studies covering a variety of topics. Students will also have the opportunity to obtain hands-on experiences such as participating in mock IRB meetings a mock study site audit.
HPM 260 – Health Economics with Applications to Global Health Policy  
2.5 credits

Online, Six-weeks, July through August 2017

Students will learn how to analyze current health policy issues through the application of basic economic principles. No previous economics training is required. The course will begin with an introduction to health economics. The concepts we will be learning are widely generalizable to both industrialized and developing country contexts and students are encouraged to learn from and teach each other about the different health systems of which participants have experience. Among the topics we will discuss are health insurance coverage, physician payment incentives, consumer decision making, and competition.

Diversity and inclusiveness are fundamental to public health education and practice. It is a requirement that you have an open mind and respect differences of all kinds. I share responsibility with you for creating a learning climate that is hospitable to all perspectives and cultures; please contact me if you have concerns or suggestions.

Fall 2017– Electives (Students must choose two.)  
Total: 5 credits

EPI 526 – Analysis of Publicly Available Databases for Epidemiologic and Health Services Research  
2.5 credits

This course addresses the use of existing public use databases to study important questions related to clinical risk factors, treatment, outcomes, and health policy. Special attention will be devoted to publicly available U.S. databases that are commonly used for epidemiologic and health services research and are readily available to new investigators. Such databases offer several advantages including their representative sampling time frames allowing generalizability to larger populations, timeliness, and ability to evaluate trends, geographic variation, or rare conditions. Strengths and limitations of data sources will be considered. Practical issues in obtaining, linking, and analyzing larges databases will be emphasized throughout the course, and key statistical issues will be addressed, including survey sampling and risk-adjustment. Students will complete programming exercises with STATA statistical software, prepare a proposal to analyze a specific research question using a public use database, and conduct analyses to address their research questions.
EPI 527 – Design and Conduct of Trials in Preventative Medicine  
2.5 credits

This course is designed for students interested in the design, conduct, analysis, and interpretation of trials in preventative medicine. This course will balance current knowledge and concepts in clinical trial methodology alongside the operationalization of how to effectively conduct a trial. Students will learn the components of a trial protocol and manual of operations, and gain insights on the pragmatic aspects of trial design, management, analysis, and interpretation. We will also have students gain first-hand experience both in the design and conduct of a small-scale, short-term clinical trial, and perspective as a participant in a trial. This course will enable students to apply their knowledge to published trial findings to understand their place in clinical practice and guidelines.

EPI 528 – Systematic Review and Meta-Analysis  
2.5 credits

This course provides an introduction to the rationale, methods, and implications for conducting a synthesis of research findings. You will receive step-by-step guidance on how to conduct and evaluate systematic reviews that may also include a meta-analysis. The course will introduce research databases, reference management software, pooled estimates and sources of heterogeneity, bias, and practical applications.

Spring 2018 – Electives (Students must choose two.)  
Total: 5.0 credits
Online, January through May 2018

BIO XXX – Linear and Longitudinal Regression  
2.5 credits

The course will cover methods for building and interpreting linear regression models, including statistical assumptions and diagnostics, estimation and testing, and model building techniques. These models will be extended to handle data arising from longitudinal studies employing repeated measurement of subjects over time.

HPM XXX – Decision Analysis for Health and Medical Practices  
2.5 credits

This course is designed to introduce the student to the methods and growing range of applications of decision analysis and cost-effectiveness analysis in health technology assessment, medical and public health decision making, and health resource allocation. The objectives of the course are: (1) to provide a basic technical understanding of the methods used, (2) to give the student an appreciation of the practical problems in applying these methods to the evaluation of clinical interventions and public health policies, and (3) to give the student an appreciation of the uses and limitations of these methods in decision making at the individual, organizational, and policy level both in developed and developing countries.
EPI XXX – Introduction to Data Mining and Risk Prediction

2.5 credits

This course will present an introduction to the methods of data mining and predictive modeling, with applications to both genetic and clinical data. Basic concepts and philosophy of supervised and unsupervised data mining as well as appropriate applications will be discussed. Topics covered will include multiple comparisons adjustment, cluster analysis, principal component analysis, and predictive model building through logistic regression, classification and regression trees (CART), multivariate adaptive splines (MARS), neural networks, random forests, and bagging and boosting.

May 2018 – MPH Capstone Project

5.0 credits

On-campus; Two-weeks, May 2018

Each student will complete a mentored MPH Capstone Project as their MPH practicum. Practicum work is performed throughout the degree period, but students will return to campus at the end of May to present their Practicum projects and participate in the Harvard Commencement.

Total Number of Credits: 45 credits
**Details on the MPH Capstone Project**

A highlight of the Harvard MPH in Epidemiology is the student-initiated and faculty-mentored Practicum, giving students the opportunity to apply the skills learned from classes taken on campus and online. Under the personalized mentorship and oversight of a faculty member from the Department of Epidemiology or other Harvard Departments, each student develops and initiates a practicum proposal. The culmination of the degree program is a forty-five minute PowerPoint presentation to the faculty and students in this program as part of a symposium during the final on campus session of the program, three days prior to graduation. This culminating experience will provide the opportunity for students to showcase their mastery of program competencies to the Harvard community.

Students will be divided into group for presentations during the Symposium. Multiple simultaneous presentations will be scheduled during the mornings of the symposium, which will allow students to choose which presentation they wish to attend as at a scientific conference. The afternoon sessions of the symposium will involve workshops and invited presentations by Harvard faculty of their current work.

The process by which students complete the MPH-EPI practicum involves group mentoring during the first year of the program and individual mentoring during the second year. In the fall semester of the first year of the program, students are sent a survey asking about initial thoughts for a practicum. This is followed by an individual contact by a member of the MPH-EPI Practicum Committee, to discuss the student’s thoughts for a Practicum topic. The MPH-EPI Practicum Committee meets at the end of the fall semester to discuss each student’s ideas for a practicum and recruit the Practicum mentor for any project that is approved by the committee as appropriate for a practicum and ready to be initiated.

This process is repeated in the spring semester with the goal of approving a project for a practicum and identifying the Practicum mentor, before the student returns in June for their second on campus session.

Students who do not have a clear developed project for a practicum by the June session meet with a member of the Practicum Committee and the instructor of the fall elective course on Analysis of Publicly Available Databases for Epidemiologic and Health Services Research. This course describes multiple data bases that are available for public use, and provide the basis for a capstone project chosen by the student using one of these data bases. Once the student selects the topic and data base for a Practicum, a mentor is assigned to work with that student.

Students earn 5.0 credits for completing the practicum. Practicum credits are graded pass/fail. Students also have the option to earn an addition 2.5 pass/fail credits for completing the Practicum if the workload associated with the Practicum makes it difficult to take two elective courses at the same time. In this case the student takes only three elective courses, rather than four, during their second year.
Academic Calendar for the MPH in Epidemiology Program
2016-2018

On Campus
June 2016: June 6 – June 24th

Online
Summer 2016: July 7 – August 19

Fall 2016: August 29 – December 16

Spring 2017: January 23 – May 12
   Spring 1: January 23 – March 10
   Spring 2: March 20 – May 12

On Campus
June 2017: June 5 – June 23

Online
Summer 2017: July 6 – August 18

Fall 2017: August 28 – December 15

Spring 2018: January 22 – May 11

On Campus
MPH-EPI Symposium 2018: May 21 – May 23

Commencement: May 24, 2018

Please check the academic calendar online for a complete listing, including School holiday, add/drop and pass/fail deadlines:
https://www.hsph.harvard.edu/registrar/academic-calendar

Students are expected to observe all deadlines.