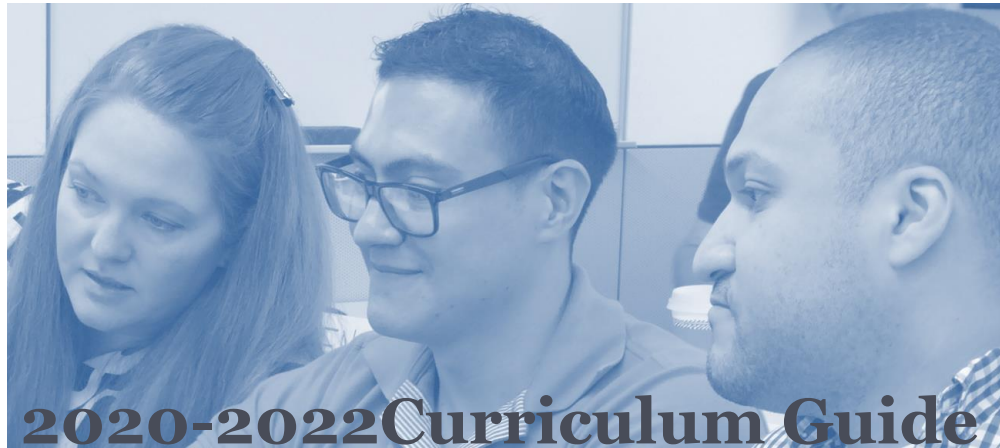
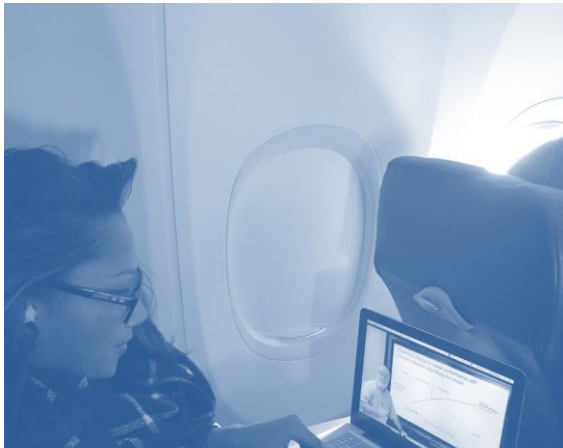




**HARVARD**  
**T.H. CHAN**

**SCHOOL OF PUBLIC HEALTH**



**2020-2022 Curriculum Guide**

## **Master of Public Health in Epidemiology**

**Online/On Campus/In the Field: Two-Year, Part-Time Program**

For more information about the program, please visit [hsph.me/mphepi](https://hsph.me/mphepi)

For inquiries, please feel free to contact Stephanie Lemoine, Assistant Director of the MPH in Epidemiology program, at [mphepi@hsph.harvard.edu](mailto:mphepi@hsph.harvard.edu) or 617-432-1558.

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Every effort is made to ensure the information contained in this guide is accurate at the time of posting. However, the curriculum, including degree requirements, courses, faculty, and program policies are subject to modification as deemed necessary by the Harvard T.H. Chan School of Public Health to provide students with the most meaningful educational experience and to remain current with professional standards and guidelines. This version of the MPH-EPI Curriculum Guide only pertains to students matriculating in June 2020.

# HARVARD CHAN ESSENTIAL RESOURCES FOR STUDENTS

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## **MPH IN EPIDEMIOLOGY PROGRAM OFFICE – OFFICE OF EDUCATIONAL PROGRAMS**

677 Huntington Avenue, Kresge G-29  
Boston, MA 02115

[mphepi@hsph.harvard.edu](mailto:mphepi@hsph.harvard.edu)  
617-432-1558

## **REGISTRAR'S OFFICE**

Kresge G-4 Suite

[hsph.me/registrar](https://hsph.me/registrar)  
[registrar@hsph.harvard.edu](mailto:registrar@hsph.harvard.edu)  
617-432-1032

- **Academic Calendar:** [hsph.me/academic-calendar](https://hsph.me/academic-calendar)
- **Harvard Course Catalog:** [my.harvard.edu](https://my.harvard.edu)
- **Student Handbook:** [hsph.me/student-handbook](https://hsph.me/student-handbook)
- **Student Knowledge Center:** [hsph.me/knowledge-center](https://hsph.me/knowledge-center)

## **OFFICE FOR ALUMNI AFFAIRS**

[hsph.me/alumni-office](https://hsph.me/alumni-office)  
[alumni@hsph.harvard.edu](mailto:alumni@hsph.harvard.edu)

## **OFFICE OF CAREER AND PROFESSIONAL DEVELOPMENT**

[hsph.me/career-services](https://hsph.me/career-services)  
[careers@hsph.harvard.edu](mailto:careers@hsph.harvard.edu)

## **OFFICE OF DIVERSITY AND INCLUSION**

[hsph.me/diversity](https://hsph.me/diversity)  
[odi@hsph.harvard.edu](mailto:odi@hsph.harvard.edu)

## **OFFICE OF FINANCIAL AID**

[hsph.me/fin-aid-office](https://hsph.me/fin-aid-office)  
[financialaid@hsph.harvard.edu](mailto:financialaid@hsph.harvard.edu)

## **OFFICE OF REGULATORY AFFAIRS AND RESEARCH COMPLIANCE**

Contact for Institutional Research Board (IRB) approval

[hsph.me/orarc](https://hsph.me/orarc)

## **OFFICE FOR STUDENT AFFAIRS**

[hsph.me/student-affairs](https://hsph.me/student-affairs)  
[studentaffairs@hsph.harvard.edu](mailto:studentaffairs@hsph.harvard.edu)

- **Student Support Services:** [hsph.me/support-services](https://hsph.me/support-services)

## PROGRAM DESCRIPTION AND OVERVIEW

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The Master of Public Health (MPH) 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 (MPH-EPI) student, you will study with some of the world's most accomplished faculty. Through a combination 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 needed to pursue senior positions in academia, hospitals, public health agencies, nongovernmental organizations, and the private sector. The MPH in Epidemiology is designed for individuals seeking specialization in advanced quantitative methods of epidemiology and its applications to clinical and population health research, policy, and programs.

### 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 two three-week intensive on-campus sessions in June 2020 and June 2021 (conducted remotely due to COVID-19)
- **ONLINE:** You will earn roughly two-thirds of your credits online through mostly asynchronous courses that include interactive exercises, modular video sessions, and case-based studies.
- **IN THE FIELD:** Mentored by Harvard faculty, you will complete a self-designed, year-long practicum project culminating in a final presentation before graduation.

### PROGRAM COMPETENCIES

- 1.) Develop comprehensive knowledge of the study design principles of epidemiology to provide a quantitative approach for addressing health problems.
- 2.) Develop comprehensive knowledge of the quantitative methods of epidemiology and biostatistics to provide a quantitative approach for addressing health problems.
- 3.) Critically evaluate published clinical and public health articles and grant proposals.
- 4.) Execute a literature review and summarize knowledge about health issues of interest.
- 5.) Implement and interpret the results of a study to address a clinical or public health issue.

# PROGRAM POLICIES FOR MPH IN EPIDEMIOLOGY STUDENTS

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## **DEGREE REQUIREMENTS:**

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

- Must have 45 credits
- Maintain a cumulative GPA of 2.7 (B- average) or above in order to graduate from the program
- Successful completion of all required courses
- Applied Practice Experience
- Integrative Learning Experience

## **PASS/FAIL GRADING POLICIES:**

Students enrolled in an MPH program at the School can take a maximum of 12.5 pass/fail credits during the degree program. Therefore, MPH in Epidemiology students are required to have at least 32.5 ordinal graded credits from courses.

However, in response to the Covid-19 pandemic, the School has added a pass/fail option for all Harvard Chan courses starting in June 2020 through Summer 2021. MPH-EPI students who matriculated in June 2020 can take any course during the first year of the program and Summer 2021 as pass/fail. Those credits will not count toward the pass/fail credit limit.

We are in the process of confirming the pass/fail policy for Fall 2021 and Spring 2022. We will have further guidance and clarification for students in June.

## **CREDITS PER SEMESTER:**

The MPH in Epidemiology program is a part-time degree program. In order to remain part-time, students cannot take more than 14.75 credits per semester.

It may be difficult for MPH-EPI students to reach 14.75 in a given semester since the program does not recommend students to take online MPH-EPI electives in the first year of the program and MPH-EPI students are ineligible to enroll in on-campus courses (with the exception of WinterSession).

## **ACADEMIC DEADLINES:**

MPH in Epidemiology students should follow the same last date to enroll/last date to drop deadlines as other Harvard Chan School students. The deadlines for each term can be found in the [Academic Calendar Summary](#)

on the [Registrar's Office website](#).

It is strongly recommended that students not join courses after they begin, to avoid missing any required assignments or group project work during the first two weeks of the course.

### **HARVARD EMAIL:**

MPH in Epidemiology students must check their Harvard email regularly for all communications from the School. The School will not communicate with students via their personal or work email accounts.

### **LEAVE OF ABSENCE:**

Students in the MPH in Epidemiology have the option of taking a leave of absence from the program; however, the MPH-EPI core curriculum in the first year of the program **must be** taken in sequence. This does not include the MPH public health core (MPH 101-105). The program recommends students who plan to take a leave of absence do so for at least an entire semester (Summer, Fall, Spring). Students who wish to take a leave of absence for part of a semester will be charged a continuation fee.

### **ELECTIVE COURSES:**

It is not recommended that MPH-EPI students take elective courses during the first year in the program. However, due to COVID-19, MPH-EPI students in their first year may register for one course during the Fall 2020 and Spring 2021 semesters. MPH-EPI students will be allowed to register for any Fall or Spring course that typically would be on campus, but is now being offered online, without submitting a petition (assuming they have met any pre-requisites).

Students who wish to take one of the online electives that are part of the MPH-EPI program (described on page 11 of this guide) during the first year are required to submit a petition, along with a detailed explanation of why the course is essential to their study in the first year. Petitions should focus on a specific course and not be a general request for any elective that is available. Decisions will be made on a case-by-case basis, depending on the specific situation and whether there is space available in the class. Priority in the online elective courses is given to students in their second year of the program (see below).

During their second year of the program, students can choose from a variety of online MPH-EPI electives in the Fall and Spring semesters. Elective course credits vary from 1.25 to 2.5 credits. The current list of elective courses can be found beginning on page 11.

### **CROSS REGISTRATION AND ON CAMPUS COURSES:**

Students enrolled in the MPH in Epidemiology are unable to take courses on campus during the academic year

(except during WinterSession, see page 10) or cross-register for other courses within Harvard University due to their non-resident student status.

### **INTERNATIONAL STUDENTS:**

The School cannot issue visas for MPH in Epidemiology students since June 2020 and June 2021 are remote due to COVID-19. MPH in Epidemiology students are also ineligible for OPT status. For visa information regarding WinterSession 2022 (January term), please view Page 10.

### **TUITION:**

Students are billed a flat rate at the beginning of each semester (Summer, Fall and Spring). A continuation fee is charged for any student who has paid their financial requirements, but still has academic requirements to finish.

### **PRACTICUM PROJECT AND INTEGRATIVE LEARNING EXPERIENCE:**

All students in the MPH in Epidemiology program are required to make an oral presentation as the final product of their practicum project. The MPH in Epidemiology does not have an option to write a thesis. The presentation is initially done online, during the virtual component of the Symposium. In addition, it is strongly recommended (but not required) that students attend the in-person component of the Symposium in May during the week of Harvard Commencement.

### **PRACTICUM REGISTRATION:**

Students are required to register for the practicum course (EPI 945) in June (1.25 credits), Fall (1.25 credits), and Spring (2.5 or 5 credits) semesters during the second year of the program. During the Spring semester, students can count EPI 945S for either 2.5 or 5 credits. Counting the practicum for 5 credits during the Spring semester will allow students to take one less elective during the second year of the program. Students who opt to take at least 10 credits of elective coursework throughout the MPH-EPI program should count their practicum in the Spring 2022 semester for 2.5 credits.

### ***Additional Resources Available for MPH in Epidemiology Students:***

#### **MPH IN EPIDEMIOLOGY iLIBRARY**

Students who enroll in the program will have access to the MPH in Epidemiology iLibrary in Canvas. The iLibrary is a repository that has a variety of useful information including podcasts, videos, data analysis tutorials, lecture notes, external epidemiology resources, and career resources.

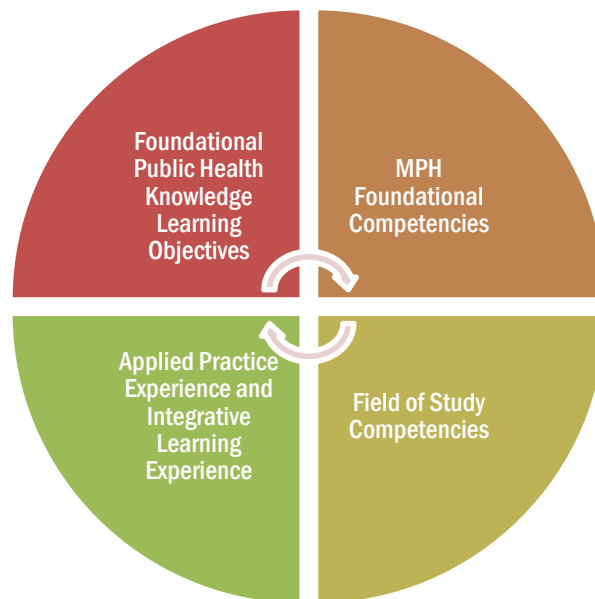
# HARVARD CHAN'S COMPETENCY AND APPLICATION-BASED MPH CURRICULUM

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The MPH public health core curriculum is developed in accordance with the Council on Education for Public Health's 12 Foundational Public Health Knowledge Learning Objectives and 22 MPH Foundational Competencies required of all students receiving an MPH degree at accredited institutions. To learn more, visit [hsph.me/mph-competencies](https://hsph.me/mph-competencies).

The Foundational Public Health Knowledge Learning Objectives and the MPH Foundational Competencies are primarily met through the Harvard Chan MPH public health core curriculum, the Applied Practice Experience, and the Integrative Learning Experience.

## The Harvard Chan MPH Degree





# MPH PUBLIC HEALTH CORE CURRICULUM



All MPH students at Harvard Chan are required to complete a common curriculum consisting of a school-wide online course, ID 100: Foundations for Public Health; the biostatistics and epidemiology core (ID 207 & ID 208); and five courses in the MPH public health core areas (MPH 101-MPH 105).

## BIostatISTICS AND EPIDEMIOLOGY CORE

Course Number	Title	Semester	Credits
ID 207/ID 208	Introduction to Epidemiology and Biostatistics	Summer 2020	10

## SCHOOL-WIDE FOUNDATIONAL COURSE

Course Number	Title	Semester	Credits
ID 100	Foundations for Public Health	Fall 2020	1 (P/F Only)

## MPH PUBLIC HEALTH CORE

Course Number	Title	Semester	Credits
MPH 101	MPH Qualitative Methods for Public Health	Fall 2020	0 (P/F Only)
MPH 102	Health Systems	Summer, Fall or January (2021/2022)	1.25
MPH 103	Leadership and Communication	Fall or January (2021/2022)	1.25
MPH 104	Social, Behavioral, and Structural Determinants of Health	Summer, Fall or January (2021/2022)	1.25
MPH 105	Public Health Policy and Politics	June 2021	1.25

## ID 100: FOUNDATIONS FOR PUBLIC HEALTH

All MPH students are required to complete a school-wide online course, ID 100: Foundations for Public Health. Students will be automatically given access in Summer (sometime in July or August) to the first portion of the course materials via [Canvas](#), and can complete this part of the course at their own pace.

## **MPH 101 – 105: MPH PUBLIC HEALTH CORE**

MPH-EPI students have the option to take the MPH public health core at various times throughout the two-year program. (See semester offerings in grid above.) The MPH public health core courses do not have to be taken in sequence and each course is conducted asynchronously. It is the student's responsibility to fulfill the MPH public health core throughout the two-year MPH in Epidemiology. Students should be sure to plan their schedules accordingly.

## **WINTERSESSION: JANUARY TERM (2020/2021) – OPTIONAL ELECTIVES**

MPH in Epidemiology students are eligible to attend on-campus courses during the School's WinterSession (January term). To view the WinterSession course offerings, please visit the School's [course catalog](#). The majority of WinterSession courses are 1.25 credits.

International students must request a student visa in order to take on-campus WinterSession courses. In order to be eligible for visa status, an international student will be required to take five credits of on-campus courses. WinterSession courses may be offered at conflicting times. It is important to plan your schedule accordingly if you need to obtain a visa to take courses.

The Harvard Chan School Department of Global Health also offers a variety of field trips during the WinterSession term. These field trips usually require an application, and information will be sent to students via email. Both domestic and international MPH in Epidemiology students are eligible to apply for the Global Health field trips.

## MPH IN EPIDEMIOLOGY CORE CURRICULUM

Course Title	Course ID	Term	Credits
<b>Year 1 Required Courses</b>			
EPI 522	Analytic Methods for Epidemiology	Fall 2020	5
EPI 524	Confounding Control: A Component of Causal Inference	Spring 1 2021	2.5
EPI 525	Study Designs for Epidemiologists	Spring 2 2021	2.5
<b>Year 2 Required Courses</b>			
HPM 549	Ethical and Regulatory Issues in Human Research	June 2021	2.5
EPI 945U	Practicum and Culminating Experience for the MPH in Epidemiology	June 2021	1.25
HPM 260	Health Economics and Applications to Global Health Policy	Summer 2021	2.5
EPI 945F	Practicum and Culminating Experience for the MPH in Epidemiology	Fall 2021	1.25
EPI 945S	Practicum and Culminating Experience for the MPH in Epidemiology	Spring 2022	2.5 or 5
<b>Year 2 Electives</b>			
EPI 526	Analysis of Publicly Available Databases for Epidemiologic and Health Services Research	Fall 2021	2.5
EPI 527	Design and Conduct of Trials in Preventive Medicine	Fall 2021	2.5
EPI 528	Systematic Review and Meta-Analysis	Fall 2021	2.5
EPI 529	Applications of Epidemiology	Fall 2021	1.25
HPM 559	Introduction to Qualitative Research Methods for Public Health	Fall 2021	2.5
BST 215	Linear and Longitudinal Regression	Spring 2022	2.5
EPI 288	Introduction to Machine Learning and Risk Prediction	Spring 2022	2.5
EPI 529	Applications of Epidemiology	Spring 2022	1.25
HPM 506	Practical Scientific Methods for Improving Health and Health Care	Spring 2022	2.5
RDS 202	Decision Science for Public Health	Spring 2022	2.5
<b>TOTAL CREDITS: 45</b>			

## COURSE DESCRIPTIONS FOR REQUIRED MPH-EPI CORE CURRICULUM

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### **ID 207 – Introduction to Epidemiology and Biostatistics**

**ONLINE** (SYNCHRONOUS)

### **ID 208 – Introduction to Epidemiology and Biostatistics**

**ONLINE** (SYNCHRONOUS)

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-credit intensive course, and has two components: 3 weeks on campus in June (remote in June 2021), and a 6-week online component in July and August. Both ID 207 and ID 208 are required to fulfill this course.

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### **EPI 522 – Analytic Methods for Epidemiology**

**ONLINE**

This course will cover a wide variety of methods used to analyze epidemiologic data. It will start with a review of the basic principles of causal inference and use of causal diagrams to identify confounding. This will provide a basis for introducing regression-based methods to control for confounding, including logistic regression and propensity score analysis. The course will also cover survival analysis and Cox proportional hazards regression for time-to-event data, methods for missing data, extensions of logistic regression (including ordinal logistic regression, multinomial logistic regression, and conditional logistic regression), and methods for developing and validating prediction rules based on regression models. Students will learn to implement these analytic methods using the Stata statistical software package, and they will apply these methods to a research question by working on a group project with a publicly-available dataset.

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### **EPI 524 – Confounding Control: A Component of Causal Inference**

**ONLINE**

Controlling for confounding is a fundamental component of epidemiologic research. EPI 524 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 score methods, the parametric g-formula, inverse probability weighting of marginal structural models, and instrumental variable methods as means for confounding control.

EPI 524 is designed to be taken after EPI 522. The models described in EPI 524 are for time-fixed dichotomous exposures and dichotomous, continuous, and failure time (e.g., survival) outcomes.

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### **EPI 525 – Study Design for Epidemiologists**

**ONLINE**

This course reviews the main study designs currently used to describe, predict, and investigate the causes of adverse health outcomes in humans. We will examine general principles, interpretation, strengths, and limitations of the study designs that are commonly used for population research. The course covers ecological, cross-sectional, cohort, case-control, and case-only designs in a number of different settings. Issues related to study population identification, exposure and disease definition and ascertainment, misclassification, confounding, and generalizability are considered in the light of typically available data sources. Idiosyncrasies of several fields, from infectious disease to occupational epidemiology, and their relevance to the selection of an optimal study design are discussed.

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## **HPM 549 – Ethical and Regulatory Issues in Human Research**

**ONLINE** (SYNCHRONOUS)

This course introduces ethical and regulatory requirements for review, conduct and oversight of research involving humans. Topics include 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 discussions of case studies covering a variety of topics. Students will also have the opportunity to obtain hands-on experiences such as participating in a mock IRB meeting.

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## **HPM 260 – Health Economics with Applications to Global Health Policy**

**ONLINE**

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.

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## **Practicum and Culminating Experience for the MPH in Epidemiology**

**EPI 945U**

**EPI 945F/EPI 945S**

**ONLINE** (SYNCHRONOUS)

**ONLINE**

Students in the Master of Public Health in Epidemiology (MPH-EPI) program are required to develop and conduct a supervised project (practicum) addressing a clinical or public health question of interest. This practicum may include aspects of epidemiology, biostatistics, decision sciences, or other quantitative aspects of public health. All students are assigned a Harvard faculty member to be their mentor for the practicum. The Harvard mentor can be from the Harvard T.H. Chan School of Public Health or from one of the other schools at the University.

During the first year of the program, members of the MPH-EPI Practicum Committee assist students in selecting an appropriate practicum topic and identifying the Harvard faculty member who will be their mentor for the practicum. Students then submit a brief proposal (the Learning Agreement) which must be approved by the mentor and the MPH-EPI Practicum Committee. During the second year, students have regular online meetings with their mentor to obtain guidance and feedback on the project, and they submit progress reports during the fall and spring. The practicum culminates with a final presentation and a symposium in May, before graduation.

## COURSE DESCRIPTIONS FOR MPH-EPI ELECTIVES

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### **EPI 526 – Analysis of Publicly Available Databases for Epidemiologic and Health Services Research**

**ONLINE**

This course addresses the use of existing public use databases to study important questions related to clinical risk factors, treatment, outcomes, and health policy. The course is designed to bridge coursework in epidemiological methods and biostatistics by providing practical experience manipulating and analyzing publicly available databases and complex surveys. Special attention is 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 designs 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 databases will be emphasized throughout the course, and key statistical issues will be addressed, including appropriate analyses of complex survey designs. 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. Students should have working knowledge of Stata software and basic programming skills.

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### **EPI 527 – Design and Conduct of Trials in Preventive Medicine**

**ONLINE**

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.

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### **EPI 528 – Systematic Review and Meta-Analysis**

**ONLINE**

This course introduces students to the science of research synthesis. Principles and methods for conducting a systematic and quantitative review are illustrated through case studies of public health and medical issues, with emphasis on exploring sources of variation in various settings. The course will introduce research databases, reference management software, pooled estimates and sources of heterogeneity, bias, and practical applications.

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### **EPI 529 – Applications of Epidemiology**

**ONLINE**

This course provides students with a wide variety of applications of epidemiology methods from a menu of modules that reflects active research by the members of the Department of Epidemiology at the Harvard T.H. Chan School of Public Health. Modules contain 3-4 videos (total length approximately one hour) on a common topic and are listed by the twelve Areas of Interest within the Department of Epidemiology. These include Cancer Epidemiology and Cancer Prevention, Cardiovascular Epidemiology, Clinical Epidemiology, Environmental and Occupational Epidemiology, Epidemiologic Methods, Epidemiology of Aging, Infectious Disease Epidemiology, Genetic Epidemiology and Statistical Genetics, Neuro-Psychiatric Epidemiology, Nutritional Epidemiology, Pharmacoepidemiology, and Reproductive, Perinatal, and Pediatric Epidemiology. Students are required to view the videos and complete the assignments related to eight modules chosen from the listed options.

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## **HPM 559 – Introduction to Qualitative Research Methods for Public Health** **ONLINE**

This online course will provide an introduction to qualitative methods in public health research. It is aimed at students who have little or no prior knowledge of qualitative research methods, and an interest in using or conducting qualitative research to inform health policy and practice. The course is designed to introduce students to fundamental questions, principles, and skills necessary to critically design, conduct, interpret and evaluate qualitative research. Throughout the course, the emphasis will be on gaining and reflecting on practical experience of designing qualitative research projects and using core qualitative methods.

We begin by considering the question “why qualitative research?” reflecting on the philosophical foundations of qualitative approaches and considering the value of qualitative methodologies for health research. We explore the implications for designing and evaluating qualitative research projects, taking account of ethical considerations and the practical constraints of conducting research in diverse applied settings. The remaining sessions focus on developing practical skills for conducting qualitative research: generating data through interviews, focus groups, and observations, and analyzing qualitative data. Students will have opportunities to design and plan qualitative studies, to conduct and evaluate interviews, and to practice analyzing qualitative data. As an introductory level course, it necessarily aims to cover a breadth of topics; it does not, therefore, provide in-depth or advanced coverage of any one aspect of qualitative data collection or analysis.

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## **BST 215 – Linear and Longitudinal Regression** **ONLINE**

This course is intended for students who are already very comfortable with fundamental techniques in statistics. 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.

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## **EPI 288 – Introduction to Machine Learning and Risk Prediction** **ONLINE**

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.

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## **HPM 506 – Practical Scientific Methods for Improving Health and Health Care** **ONLINE**

Despite rapid advances in science and translational research, there are enormous gaps between what we know (the evidence from research) and the effectiveness of prevention and care services we provide. Improvement in health and health care outcomes has been agonizingly slow, but increasing global evidence and experience suggest that progress can be accelerated through a scientific approach to quality improvement. The purpose of this online course is to provide you with practical, yet rigorous methods and tools for tackling problems and getting results in public health and health care, or, in fact, for achieving credible results in any field where gaps between “knowing and doing” exist.

This course uses engaging videos, personal improvement projects, and interactive assignments to teach the fundamentals of improvement science. We will emphasize a flexible and practical methodology, The Model for



Improvement, but will crosswalk this model with other approaches you are likely to encounter, including implementation science, Lean, and Six Sigma. In addition, we will explore how methods from other scientific disciplines can accelerate improvement, especially epidemiology, qualitative and ethnographic methods, program design and evaluation, information science, and behavioral science/behavioral economics. You will practice what you learn by designing, implementing, and evaluating your personal improvement project. Course faculty will offer tips on performing rigorous, publishable projects as part of routine work (including how to differentiate between quality improvement and research that requires approval from institutional human studies review boards). You will practice what you have learned by critiquing published quality improvement studies, including successful and unsuccessful efforts to scale-up promising improvement ideas. We will encourage discussion of the intersection between improvement initiatives and global equity and social justice issues. Faculty and teaching assistants will provide real-time feedback through Canvas.

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## **RDS 202 – Decision Science for Public Health**

**ONLINE**

Challenges in public health policy and clinical medicine are marked by complexity, uncertainty, competing priorities and resource constraints. This course is designed to introduce the student to the methods and applications of decision analysis and cost-effectiveness analysis in clinical and public health decision making. The objectives of the course are: (1) to provide a basic introduction to the methods and tools of decision science, and to recognize when, how, and in what context they can provide value in clinical and public health decision making; (2) to equip students with the ability to structure and bound a decision problem logically (articulating the objective, perspective, and time horizon), identify key elements (alternatives, uncertainties, and outcomes) and influential factors (preferences, risk attitudes, values); (3) to provide students with basic skills in revising probabilities given new information, building and analyzing decision trees, conducting cost effectiveness analysis, performing sensitivity analyses, and communicating results; (4) to enable students to thoughtfully and critically evaluate published analyses conducted to evaluate or inform clinical strategies, health technologies, and public health policies in developed and developing countries.



## COURSE DESCRIPTIONS FOR MPH PUBLIC HEALTH CORE

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### **ID 100 – Foundations for Public Health**

**ONLINE**

The purpose of this course is to provide an introduction to public health and establish a solid foundation for your education, experience and engagement over the next year. In the summer portion of the course, you will be introduced to the principles and science of public health, the major causes of morbidity and mortality, the social determinants of health, and the ways society can respond from the health sector and from outside the health sector. You will become familiar with commonly used metrics and measures that make up the "language of public health" and be exposed to conceptual frameworks that will help you to "ask the right questions." In the fall portion of the course, we will adopt a case-based approach to explore some of the most important interdisciplinary health problems facing populations—locally and globally. Adopting an ecologic perspective, we will pay particular attention to transnational risks and global governance—preparing you to engage academically and professionally with the most consequential challenges of our times—from pandemic risk to climate change. The course consists of **six modules**. You will complete the first four modules over the summer and the last two modules in Fall 1.

**Foundation Modules.** There are four core foundation modules (**Module A, B, C and D**), each of which contains an average of three lessons. Each lesson generally consists of a required reading and a few short videos with a brief "knowledge check" quiz at the end of most videos. There is an assessment exercise following each of the four modules. *These four modules will be completed in the summer.*

**Application Modules.** There are two applied modules (**Module E and F**) through which you will be exposed to some of the most important interdisciplinary health problems facing populations. These modules will include a variety of asynchronous multimedia learning experiences, as well as case-based synchronous discussions intended to foster engagement with faculty and peers.

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### **MPH 101 – MPH Qualitative Methods for Public Health**

**ONLINE**

This online module will provide a basic introduction to qualitative methods in public health research. It is intended for students with little or no prior knowledge of qualitative research methods, but who have an interest in using or conducting qualitative research to inform health policy and practice. The module will provide an overview of the qualitative research paradigm, including fundamental principles of the paradigm, potential uses of qualitative inquiry in addressing public health issues, the value and utility of core data generation methods, and basic principles of qualitative data analysis.

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### **MPH 102 – Health Systems**

**ONLINE**

Health systems are the foundation of health care delivery and an essential component of the public health landscape. MPH 102: Health Systems is designed to provide MPH students with an understanding of the components of a health system and alternative ways of understanding its structure, functions, and effectiveness. Through exploring both global and U.S. health systems within a comparative framework, students will learn to analyze the different choices that countries make in providing health coverage and health care to their populations and the challenges and benefits that these choices entail. This is an introductory survey course that enables students to learn essential concepts in each topic area.

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### **MPH 103 – Leadership and Communication**

**ONLINE**

The effective practice of public health in the 21st century requires working with interdisciplinary teams, communicating effectively with diverse audiences, and successfully leading and managing others to achieve better health outcomes for all populations. This course is designed to provide MPH students with an understanding of, and appreciation for, the fundamentals of leadership, management, and governance; cultural competence; and communicating with different audiences. Through case study analysis, experiential exercises, simulations, lectures, practitioner panels, and application activities and assignments, students will explore the

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opportunities and challenges of being in leadership positions and will develop important skills in negotiation and mediation, budgeting and resource management, systems thinking, and selecting and developing a variety of audience-appropriate communication strategies.

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### **MPH 104 – Social, Behavioral, and Structural Determinants of Health**

**ONLINE**

Social, Behavioral, and Structural Determinants of Health aims to provide an introduction to the social determinants of health, examine how social determinants influence the health of individuals, communities, and populations, provide an overview of public health intervention and evaluation approaches, and introduce health advocacy. Faculty will offer foundational frameworks and theories, discuss relevant research, explore potential interventions to improve health status and health outcomes, and encourage participants to apply their learning to current US and international contexts and issues. In addition to weekly discussion boards and check-in quizzes to grapple with the weekly material, students will get to complete two written assignments centered around identifying and addressing a solution about a health disparity in their home community. After learning the basics of how to write a critical communication/advocacy format (i.e. an op-ed), students will author one as the final assignment for this course.

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### **MPH 105 – Public Health Policy and Politics**

**ONLINE (SYNCHRONOUS)**

The effective practice of public health in the 21st century demands familiarity with the dynamics of policy development. This includes policy development, enactment, implementation, evaluation, and revision, plus understanding political dynamics to achieve policy change and improvement. While this pursuit is lifelong, learning key foundational elements can quicken and broaden effective inquiry and engagement. This course will introduce MPH students to core and essential elements of policy and politics in the public health context, laying a foundation on which students can expand their familiarity and sophistication throughout their professional careers. Most of the sessions will include the use of a case study to illuminate and explore policy concepts and to familiarize students with public health policy areas. Cases will be incorporate a global and/or domestic focus. Two core policy/political models will be consistent reference points in analyzing cases: first, John Kingdon's agenda setting model (also known as the multiple streams model) and second, Mark Moore's strategic triangle (aka: public value) framework. To understand cases and core models, students will learn multiple dimensions of the policy process, including the roles of ethics, evidence, and equity. Students will engage in population-based policy design; evaluate policies to assess their impact on population health and health equity; and practice communication skills relating to public health content.

## MPH IN EPIDEMIOLOGY PRACTICUM PROJECT

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A highlight of the MPH in Epidemiology program is the student-initiated and faculty-mentored practicum project, which gives students the opportunity to apply the skills learned from coursework to a real project. Under the personalized mentorship and oversight of a Harvard faculty member, each student develops and initiates a practicum proposal. The culmination of the degree program is a presentation to faculty and students in the program as part of a symposium before graduation. This culminating experience will provide the opportunity for students to highlight their mastery of program competencies to the Harvard community.

The process by which students complete the MPH in Epidemiology practicum involves group mentoring during the first year and individual mentoring during the second year of the program. A potential timeline for the practicum is below.

**OCTOBER 2020:** Students will complete a survey about their initial ideas for the practicum.

**DECEMBER 2020:** The MPH in Epidemiology Practicum Committee (MPH-EPI-PC) meets to assign students an MPH-EPI-PC member who will contact them to discuss their ideas. The MPH-EPI-PC consists of several faculty members at the School, most of whom have appointments in the Department of Epidemiology.

**JANUARY 2021-MAY 2021:** Students will have at least two individual consultations with a member of the MPH-EPI-PC. The purpose of each consultation is to discuss the student's ideas for a practicum and suggest potential Harvard mentors.

**APRIL 2021:** Students will submit an initial draft of their Learning Agreement to confirm their project plans and to help them identify a Harvard mentor to work with during the 2<sup>nd</sup> year of the program.

**JUNE 2021:** Students will participate in EPI 945U and meet with their Harvard mentor to discuss details of their project (if they have not done so already).

**SEPTEMBER 2021:** Students will submit a revised draft of their Learning Agreement to Harvard mentor and instructor of EPI 945.

**OCTOBER 2021:** Students will submit a final draft of their Learning Agreement via CareerConnect.

**FALL/JANUARY/SPRING:** Students will meet online monthly or bi-monthly with their Harvard mentor.

**DECEMBER 2021:** Students will submit a progress report with an update on their practicum project, including methods used and a detailed analysis plan.

**MARCH 2022:** Students will submit a detailed progress report with update on their project, including tables/figures with preliminary results.

**APRIL 2022:** Students will submit the final title, abstract (250 words max), PowerPoint slides, and a recording of their practicum presentation\*

**MAY 2022:** Students will submit a brief critique of one other student's presentation in addition to the practice and competencies self-assessment survey via CareerConnect. Students will also attend the MPH in Epidemiology Practicum Symposium.

## MPH IN EPIDEMIOLOGY SAMPLE SCHEDULES

### SAMPLE SCHEDULE #1

Year 1	SUMMER 2020	ID 207: Introduction to Epidemiology and Biostatistics	7.5 credits
		ID 208: Introduction to Epidemiology and Biostatistics	2.5 credits
		<b>TOTAL</b>	<b>10</b>
	FALL 2020	ID 100: Foundations of Public Health	1 credit
		MPH 101: Qualitative Methods for Public Health	0 credits
		EPI 522: Analytic Methods of Epidemiology	5 credits
	<b>TOTAL</b>	<b>6</b>	
	SPRING 2021	EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits
		EPI 525: Study Designs for Epidemiologists	2.5 credits
<b>TOTAL</b>		<b>5</b>	
Year 2	SUMMER 2021	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits
		HPM 549: Ethical and Regulatory Issues in Public Health	2.5 credits
		MPH 105: Public Health Policy and Politics	1.25 credits
		HPM 260: Health Economics and Applications to Global Health Policy	2.5 credits
		MPH 102: Health Systems	1.25 credits
		<b>TOTAL</b>	<b>8.75</b>
	FALL 2021	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits
		MPH-EPI Fall Electives (Choose <b>two</b> 2.5 credit courses; EPI 526, EPI 527, EPI 528 or HPM 559)	5 credits
		MPH 103: Leadership and Communication	1.25 credits
		<b>TOTAL</b>	<b>7.5</b>
	WINTERSESSION 2022	MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits
		<b>TOTAL</b>	<b>1.25</b>
	SPRING 2022	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	5 credits
		MPH-EPI Spring Electives (Choose <b>one</b> 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits
		<b>TOTAL</b>	<b>7.5</b>
	<b>PROGRAM TOTAL</b>		<b>46</b>

## SAMPLE SCHEDULE #2

Year 1	SUMMER 2020	ID 207: Introduction to Epidemiology and Biostatistics	7.5 credits
		ID 208: Introduction to Epidemiology and Biostatistics	2.5 credits
		<b>TOTAL</b>	<b>10</b>
	FALL 2020	ID 100: Foundations of Public Health	1 credit
		MPH 101: Qualitative Methods for Public Health	0 credits
		EPI 522: Analytic Methods of Epidemiology	5 credits
	<b>TOTAL</b>	<b>6</b>	
	SPRING 2021	EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits
		EPI 525: Study Designs for Epidemiologists	2.5 credits
<b>TOTAL</b>		<b>5</b>	
Year 2	SUMMER 2021	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits
		HPM 549: Ethical and Regulatory Issues in Public Health	2.5 credits
		MPH 105: Public Health Policy and Politics	1.25 credits
		HPM 260: Health Economics and Applications to Global Health Policy	2.5 credits
		<b>TOTAL</b>	<b>7.5</b>
	FALL 2021	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits
		MPH-EPI Fall Electives (Choose <b>one</b> 2.5 credit courses; EPI 526, EPI 527, EPI 528 or HPM 559)	2.5 credits
		EPI 529: Applications of Epidemiology	1.25 credits
		<b>TOTAL</b>	<b>5</b>
	WINTERSESSION 2022	MPH 102: Health Systems	1.25 credits
		MPH 103: Leadership and Communication	1.25 credits
		MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits
		<b>TOTAL</b>	<b>3.75</b>
	SPRING 2022	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	5 credits
		MPH-EPI Spring Electives (Choose <b>one</b> 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits
		EPI 529: Applications of Epidemiology	1.25 credits
		<b>TOTAL</b>	<b>8.75</b>
<b>PROGRAM TOTAL</b>			<b>46</b>

## **Academic Calendar for the MPH in Epidemiology Program 2020-2022**

### **On-Campus (Online for June 2020)**

**June 2020:** June 1 – June 19

**New Student Orientation:** June 1

### **Online**

**Summer 2020:** July 6 – August 14

**Fall 2020:** August 31 – December 18

**WinterSession 2021:** January 4 – January 22

**Spring 2021:** January 25 – May 12

**Spring 1:** January 25 – March 12

**Spring 2:** March 22 – May 12

### **On-Campus (Online for June 2021)**

**June 2021:** June 7 – June 25

### **Online**

**Summer 2021:** July 6 – August 13

**Fall 2021:** August 30 – December 17

**Fall 1:** August 30 – October 22

**Fall 2:** October 25 – December 17

**WinterSession 2022:** January 3 – January 21

**Spring 2022:** January 24 – May 13

**Spring 1:** January 24 – March 11

**Spring 2:** March 21 – May 13

### **On-Campus**

**MPH-EPI Symposium 2022 (Possible Dates):**

Monday, May 23, 2022 and Tuesday, May 24, 2022

**Harvard Chan School Convocation:** Wednesday, May 25, 2022

**Harvard University Commencement:** Thursday, May 26, 2022

Please check the academic calendar online for a complete listing, including School holidays, add/drop and pass/fail deadlines, WinterSession dates and School recesses:

<https://www.hsph.harvard.edu/registrar/academic-calendar>

**Students are expected to observe all deadlines.**

<b>NAME:</b>	<b>EXPECTED GRADUATION DATE:</b> May 2022
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**MPH PUBLIC HEALTH CORE CURRICULUM**

<b>BIOSTATISTICS AND EPIDEMIOLOGY CORE</b>				
Course #	Course Title	Credits	Semester	Ordinal or P/F
ID 207	Introduction to Epidemiology and Biostatistics	7.5	June 2020	_____
<i>and</i> ID 208		2.5	Summer 2020	_____

<b>MPH PUBLIC HEALTH CORE</b>				
Course #	Course Title	Credits	Semester	Ordinal or P/F
ID 100	Foundations for Public Health	1.0	Fall 2020	P/F
MPH 101	Qualitative Methods for Public Health	.25	Fall 2020	P/F
MPH 102	Health Systems	1.25	_____	_____
MPH 103	Leadership and Communication	1.25	_____	_____
MPH 104	Social, Behavioral, and Structural Determinants of Health	1.25	_____	_____
MPH 105	Public Health Policy and Politics	1.25	_____	_____

<b>MPH-45 EPIDEMIOLOGY – REQUIRED CORE CURRICULUM</b>				
Course #	Course Title	Credits	Semester	Ordinal or P/F
EPI 522	Analytic Methods for Epidemiology	5.0	Fall 2020	_____
EPI 524	Confounding Control: A Component of Causal Inference	2.5	Spring 2021	_____
EPI 525	Study Designs for Epidemiologists	2.5	Spring 2021	_____
HPM 549	Leadership and Communication	1.25	_____	_____
HPM 260	Health Economics with Applications for Global Health Policy	1.25	_____	_____
MPH 105	Public Health Policy and Politics	1.25	_____	_____

<b>APPLIED PRACTICUM AND INTERACTIVE CULMINATING EXPERIENCE</b>				
Course #	Course Title	Credits	Semester	Ordinal or P/F
EPI 945U	Practicum and Culminating Experience for the MPH in Epidemiology	1.25	June 2021	_____
EPI 945F		1.25	Fall 2021	_____
EPI 945S		2.5 or 5.0	Spring 2022	_____



<b>ELECTIVES</b>				
<b>Course #</b>	<b>Course Title</b>	<b>Credits</b>	<b>Semester</b>	<b>Ordinal or P/F</b>

**You must complete a total of 45 credits in order to graduate. TOTAL =**

(Part-time students can enroll in a maximum of 14.75 credits per semester.)

**NOTES**

Questions? Contact the MPH-EPI Program Office/Office of Educational Programs in Kresge G-29 ([mphepi@hsph.harvard.edu](mailto:mphepi@hsph.harvard.edu))