





SCHOOL OF PUBLIC HEALTH





Master of Public Health in Epidemiology

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

For inquiries, please feel free to contact Stephanie Lemoine, Assistant Director of the MPH in Epidemiology program, at 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 2021.

HARVARD CHAN ESSENTIAL RESOURCES FOR STUDENTS

MPH IN EPIDEMIOLOGY PROGRAM OFFICE — OFFICE OF EDUCATIONAL PROGRAMS

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617-432-1558

REGISTRAR'S OFFICE

Kresge G-4 Suite

hsph.me/registrar

registrar@hsph.harvard.edu

617-432-1032

Academic Calendar: hsph.me/academic-calendar

> Harvard Course Catalog: my.harvard.edu

> **Student Handbook**: hsph.me/student-handbook

> Student Knowledge Center: hsph.me/knowledge-center

OFFICE FOR ALUMNI AFFAIRS hsph.me/alumni-office

alumni@hsph.harvard.edu

OFFICE OF CAREER AND PROFESSIONAL DEVELOPMENT hsph.me/career-services

careers@hsph.harvard.edu

OFFICE OF DIVERSITY AND INCLUSION hsph.me/diversity

odi@hsph.harvard.edu

OFFICE OF FINANCIAL AID hsph.me/fin-aid-office

financialaid@hsph.harvard.edu

OFFICE OF REGULATORY AFFAIRS AND RESEARCH COMPLIANCE

Contact for Institutional Research Board (IRB) approval

hsph.me/orarc

OFFICE FOR STUDENT AFFAIRS hsph.me/student-affairs

studentaffairs@hsph.harvard.edu

Student Support Services: hsph.me/support-services

PROGRAM DESCRIPTION AND OVERVIEW

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 2021 (conducted remotely due to COVID-19) and June 2022.
- 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

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
- Intergrative 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.

Courses during the first year of the MPH-EPI program (EPI 522, EPI 524 and EPI 525) are required to be taken for an ordinal grade.

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.

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 <u>Academic Calendar Summary</u> on the <u>Registrar's Office website</u>.

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 <u>not</u> recommended that MPH in Epidemiology students take online elective courses during the first year in the program; however, students may take the MPH public health core courses during the first year.

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:

International students will be required to attend the two three-week on-campus sessions in June 2021 (remote due to COVID-19) and June 2022 on a student visa. This policy includes students from Canada. The Harvard Chan School is unable to extend the student visa past the June session since the remainder of the program is completed online. MPH in Epidemiology students are also ineligible for OPT status.

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 2023 semester for 2.5 credits.

Additional Resources Available for MPH in Epidemiology Students:

MPH IN EPIDEMIOLOGY ILIBRARY

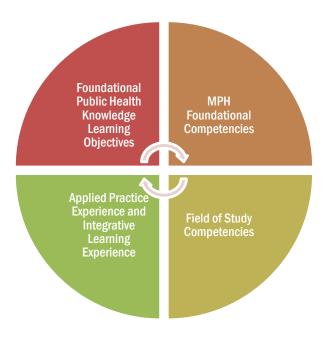
Students who enroll in the program will have access to the MPH in Epidemiology iLibrary in Canvas. The iLibrary is a repository that has a variety of useful information including podcasts, videos, data analysis tutorials, lecture notes, external epidemiology resources, and career resources.

HARVARD CHAN'S COMPETENCY AND APPLICATION-BASED MPH CURRICULUM

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.

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 2021	10

SCHOOL-WIDE FOUNDATIONAL COURSE

Course Number	Title	Semester	Credits
ID 100	Foundations for Public Health	Fall 2021	1 (P/F Only)

MPH PUBLIC HEALTH CORE

Course Number	Title	Semester	Credits
MPH 101	MPH Qualitative Methods for Public Health	Summer or Fall 2 (2021 or 2022)	.25 (P/F Only)
MPH 102	Health Systems	Summer, Fall or January (2021/2022/2023)	1.25
MPH 103	Leadership and Communication	Fall or January (2021/2022/2023)	1.25
MPH 104	Social, Behavioral, and Structural Determinants of Health	Summer, Fall or January (2021/2022/2023)	1.25
MPH 105	Public Health Policy and Politics	June 2022	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 <u>Canvas</u>, and can complete this part of the course at their own pace. The remainder of

the course will be available at the beginning of Fall 1. MPH-EPI students will enroll in ID 100 during the Fall semester.

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 conducting 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.

Students may waive out of MPH 101 if they enroll in HPM 559: Introduction to Qualitative Research Methods during Year 2 in the program.

WINTERSESSION: JANUARY TERM (2022/2023) - 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 <u>course catalog</u>. 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		
Year 1 Required Courses					
EPI 522	Analytic Methods for Epidemiology	Fall 2021	5		
EPI 524	Confounding Control: A Component of Causal Inference	Spring 1 2022	2.5		
EPI 525	Study Designs for Epidemiologists	Spring 2 2022	2.5		
	Year 2 Required Courses				
HPM 549	Ethical and Regulatory Issues in Human Research	June 2022	2.5		
EPI 945U	Practicum and Culminating Experience for the MPH in	June 2022	1.25		
	Epidemiology				
HPM 260	Health Economics and Applications to Global Health Policy	Summer 2022	2.5		
EPI 945F	Practicum and Culminating Experience for the MPH in	Fall 2022	1.25		
	Epidemiology				
EPI 945S	Practicum and Culminating Experience for the MPH in	Spring 2023	2.5 or 5		
	Epidemiology				
	Year 2 Electives				
EPI 526	Analysis of Publicly Available Databases for Epidemiologic and	Fall 2022	2.5		
LF1 320	Health Services Research	1 dii 2022	2.5		
EPI 527	Design and Conduct of Trials in Preventive Medicine	Fall 2022	2.5		
EPI 528	Systematic Review and Meta-Analysis	Fall 2022	2.5		
EPI 529	Applications of Epidemiology	Fall 2022	1.25		
HPM 559	Introduction to Qualitative Research Methods for Public Health	Fall 2022	2.5		
BST 215	Linear and Longitudinal Regression	Spring 2023	2.5		
EPI 288	Introduction to Machine Learning and Risk Prediction	Spring 2023	2.5		
EPI 529	Applications of Epidemiology	Spring 2023	1.25		
HPM 506	Practical Scientific Methods for Improving Health and Heath Care	Spring 2023	2.5		
RDS 202	Decision Science for Public Health	Spring 2023	2.5		
TOTAL CREDITS: 45					

COURSE DESCRIPTIONS FOR REQURED MPH-EPI CORE CURRICULUM

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.

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.

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.

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.

HPM 549 - Ethical and Regulatory Issues in Human Research

ON-CAMPUS

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.

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.

Practicum and Culminating Experience for the MPH in Epidemiology EPI 945U EPI 945F/EPI 945S

ON-CAMPUS 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

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.

EPI 527 – Design and Conduct or 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.

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.

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.

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.

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.

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.

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.

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

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. *These two modules will be completed in Fall 1*.

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.

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.

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 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.

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.

MPH 105 - Public Health Policy and Politics

ONLINE

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

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 2021: Students will complete a survey about their initial ideas for the practicum.

DECEMBER 2021: The MPH in Epidemiology Practicum Committee (MPH-EPI-PC) meets to assign each student an MPH-EPI-PC first year mentor. The MPH-EPI-PC consists of several faculty members at the School, most of whom have appointments in the Department of Epidemiology.

JANUARY 2022-MAY 2022: 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.

APRIL 2022: Students will submit initial Learning Agreement to MPH-EPI-PC mentor to help them identify a Harvard mentor during the 2nd year of the program.

JUNE 2022: Students will meet in-person with their Harvard mentor to discuss details of their project.

SEPTEMBER 2022: Students will submit a revised draft of their Learning Agreement to Harvard mentor and instructor of EPI 945.

OCTOBER 2022: 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 2022: Students will submit a progress report with an update on their practicum project, including methods used and a detailed analysis plan.

MARCH 2023: Students will submit a detailed progress report with update on their project, including tables/figures with preliminary results.

APRIL 2023: Students will submit the final title, abstract (250 words max), PowerPoint slides, and a recording of their practicum presentation*

MAY 2023: 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.

Students who do not have a clearly-developed plan for a practicum project by the second June session should meet with the instructor of the Fall elective course EPI 526: Analysis of Publicly Available Databases for Epidemiologic and Health Services Research. This course describes multiple databases that are available for public use and can be used for the practicum project. Once the student selects the topics and database for a practicum, a mentor can be identified to work with that student.

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	SUMMER 2021	ID 207: Introduction to Epidemiology and Biostatistics	7.5 credits	
		ID 208: Introduction to Epidemiology and Biostatistics	2.5 credits	
		TOTAL		10
		ID 100: Foundations of Public Health	1 credit	
		MPH 101: Qualitative Methods for Public Health	.25 credits	
	FALL 2021	EPI 522: Analytic Methods of Epidemiology	5 credits	
ä		MPH 103: Leadership and Communication	1.25 credits	
Year 1		TOTAL		7.5
<i>></i>	WINTERSESSION	MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits	
	2021	TOTAL		1.25
	SPRING 2022	EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits	
		EPI 525: Study Designs for Epidemiologists	2.5 credits	
		TOTAL		5
	SUMMER 2022	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	
		TOTAL		7.5
7		EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits	
Year 2	FALL 2022	MPH-EPI Fall Electives (Choose two 2.5 credit courses; EPI 526, EPI 527, EPI 528 or HPM 559)	5 credits	
		TOTAL		6.25
	WINTERSESSION	MPH 102: Health Systems	1.25 credits	
	2022	TOTAL		1.25
	SPRING 2023	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	2.5 credits	
		MPH-EPI Spring Electives (Choose one 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits	
		EPI 529: Applications of Epidemiology	1.25 credits	
		TOTAL		6.25
		PROGRAM TOTAL		45

		ID 207: Introduction to Epidemiology and	7.5 credits	
	SUMMER 2021	Biostatistics		
		ID 208: Introduction to Epidemiology and Biostatistics	2.5 credits	
		TOTAL		10
		ID 100: Foundations of Public Health	1 credit	
		MPH 101: Qualitative Methods for Public Health	.25 credits	
		EPI 522: Analytic Methods of Epidemiology	5 credits	
<u> </u>	FALL 2021	MPH 102: Health Systems	1.25 credits	
Year		MPH 103: Leadership and Communication	2.5 credits	
>		MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits	
		TOTAL		11.25
	WINTERSESSION	Not Applicable	0 credits	
	2021	TOTAL		0
	SPRING 2022	EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits	
		EPI 525: Study Designs for Epidemiologists	2.5 credits	
		TOTAL		5
	SUMMER 2022	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	
		TOTAL		7.5
7		EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits	
Year 2	FALL 2022	MPH-EPI Fall Electives (Choose one 2.5 credit course; EPI 526, EPI 527, EPI 528 or HPM 559)	2.5 credits	
-		TOTAL		3.75
	WINTERSESSION	Not Applicable	0 credits	
	2022	TOTAL		0
		EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	5 credits	
	SPRING 2023	MPH-EPI Spring Electives (Choose one 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits	
		TOTAL		7.5
		PROGRAM TOTAL		45

		ID 207. Introduction to Enidemiology and	7	
	SUMMER 2021	ID 207: Introduction to Epidemiology and Biostatistics	7.5 credits	
		ID 208: Introduction to Epidemiology and Biostatistics	2.5 credits	
		TOTAL		10
		ID 100: Foundations of Public Health	1 credit	
1	FALL 2021	EPI 522: Analytic Methods of Epidemiology	5 credits	
ar		TOTAL		6
Year 1	WINTERSESSION	MPH 102: Health Systems	1.25 credits	
	2021	TOTAL		1.25
		EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits	
	SPRING 2022	EPI 525: Study Designs for Epidemiologists	2.5 credits	
		TOTAL		5
	SUMMER 2022	EPI 945S: Practicum & Culminating Experience for	1.25 credits	
		the MPH in Epidemiology	2 F avadita	
		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 103: Leadership and Communication	1.25 credits	
		TOTAL		8.75
~	FALL 2022	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits	
Year 2		MPH-EPI Fall Electives (Choose one 2.5 credit course; EPI 526, EPI 527, EPI 528 or HPM 559)	2.5 credits	
(e		MPH 101: Qualitative Methods for Public Health	.25 credits	
		TOTAL		4.00
	WINTERSESSION	MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits	
	2022	TOTAL		1.25
	SPRING 2023	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	5 credits	
		MPH-EPI Spring Electives (Choose one 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits	
		EPI 529: Applications of Epidemiology	1.25 credits	-
		TOTAL		7.5
		PROGRAM TOTAL		45

		ID 207: Introduction to Epidemiology and	7.5 credits	
	SUMMER 2021	Biostatistics ID 208: Introduction to Epidemiology and	2.5 credits	
	SUMMER 2021	Biostatistics	2.5 credits	
		TOTAL		10
		ID 100: Foundations of Public Health	1 credit	
	FALL 2021	MPH 101: Qualitative Methods for Public Health	.25 credits	
T,	1722 2022	EPI 522: Analytic Methods of Epidemiology	5 credits	
ä		TOTAL		6.25
Year 1		MPH 102: Health Systems	1.25 credits	
	WINTERSESSION 2021	MPH 104: Social, Behavioral, and Structural Determinants of Health	1.25 credits	
		TOTAL		2.5
	CDDING 2022	EPI 524: Confounding Control: A Component for Causal Inference	2.5 credits	
	SPRING 2022	EPI 525: Study Designs for Epidemiologists	2.5 credits	
		TOTAL		5
	JUNE 2022	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	
		TOTAL		7.5
	FALL 2022	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	1.25 credits	
Year 2		MPH-EPI Fall Electives (Choose one 2.5 credit course; EPI 526, EPI 527, EPI 528 or HPM 559)	2.5 credits	
g		EPI 529: Applications of Epidemiology	1.25 credits	
X		MPH 103: Leadership and Communication	2.5 credits	
		TOTAL		7.5
	WINTERSESSION	Not Applicable	0 credits	
	2022	TOTAL		0
	SPRING 2023	EPI 945S: Practicum & Culminating Experience for the MPH in Epidemiology	2.5 credits	
		MPH-EPI Spring Electives (Choose one 2.5 credit course; BST 215, EPI 288, RDS 202, or HPM 506)	2.5 credits	
		EPI 529: Applications of Epidemiology	1.25 credits	
		TOTAL		6.25
		PROGRAM TOTAL		45

Academic Calendar for the MPH in Epidemiology Program 2021-2023

On-Campus (Online for June 2021)

June 2021: June 7 – June 25 New Student Orientation: June 7

Online

Summer 2021: July 6 – August 13

Fall 2021: August 28 – December 15 Fall 1: August 28 – October 20 Fall 2: October 23 – December 15

WinterSession 2022: January 2 – January 19

Spring 2022: January 22 – May 10 Spring 1: January 22 – March 8 Spring 2: March 18 – May 10

On-Campus

June 2022: June 6 – June 24

Online

Summer 2022: July 5 – August 12

Fall 2022: August 29 – December 16 Fall 1: August 29 – October 21 Fall 2: October 24 – December 16

WinterSession 2023: January 3 – January 20

Spring 2023: January 23 – May 12Spring 1: January 23 – March 10Spring 2: March 19 – May 12

On-Campus

MPH-EPI Symposium 2023 (Possible Dates): Monday, May 22, 2023 and Tuesday, May 23, 2023

Harvard Chan School Convocation: Wednesday, May 24, 2023

Harvard University Commencement: Thursday, May 25, 2023

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.