



Icahn  
School of  
Medicine at  
Mount  
Sinai

Graduate Program in Public Health

## GRADUATE PROGRAM IN PUBLIC HEALTH



**CURRICULUM GUIDE**

**ACADEMIC YEAR 2022-2023**

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## EXPLANATION OF COURSE NUMBERING SYSTEM

The Curriculum Guide includes courses that are offered through the Graduate Program in Public Health and begin with the prefixes MPH. The guide is organized according to the below Areas of Discipline.

The first two numbers denote the area:

Areas of Discipline	
00	General Public Health
01	Health Policy, Management & Economics
02	Socio-Behavioral Health
03	Quantitative & Qualitative Research Methods
04	Epidemiology
05	Occupational & Environmental Medicine
06	Outcomes Research
07	Global Health
08	Biostatistics

The third number denotes the level:

Level of Course	
0	Introduction
1	Intermediate
2	Advance

The fourth is a number for the course itself.

## COURSE PRE-REQUISITES

Please note, some courses require that students have taken certain pre-requisites. These pre-requisites are often fulfilled when the student takes the core introductory level courses. Students will not be eligible to take a course if they lack the required pre-requisites. Please refer to the course description in the Curriculum Guide for information on each course's pre-requisites.

A course director may allow a student to take a course if they gained the pre-requisite knowledge through previous work, training, or other coursework. Please contact the course director for questions.

## GENERAL PUBLIC HEALTH

### **MPH0001 Introduction to Public Health**

Course Directors: Cappy Collins, MD, MPH  
Fall Term

1 credit

This introductory course will provide a broad overview of the power of public health. We cover fundamental public health concepts to guide your studies and careers. A principal goal of the course is to give students an understanding of the function of public health as a set of tools to improve the health and achievement of populations. Guest speakers include a diverse array of professionals from various disciplines to provide students with a sense of the breadth and depth of public health as well as a sense of the extraordinary range of career opportunities that exist in this dynamic field.

### **MPH0002 Public Health Surveillance**

Course Directors: Kristin Oliver, MD, MHS and Erin Thanik, MD, MPH  
Spring I Term

3 credits

Public health surveillance is the ongoing systematic collection, analysis, and interpretation of data to prevent and control disease. This course will introduce students to local, national and global surveillance systems, including NHANES, BRFSS, NYC Community Health Survey. Through class lectures, demonstrations and lab assignments students will link health data to public health practice. The course is a requirement for students in the Health Promotion Disease Prevention track.

### **MPH0003 Current Topics in Clinical Preventive Medicine**

Course Directors: Betty Kolod, MD, MPH and Karen Li, MD  
Fall Term, Every other year

2 credits

This course builds on the fundamental aspects of clinical prevention and the United States Preventive Services Task Force Guidelines. Designed for the healthcare professional, the course will include discussions about new evidence-based approaches that guide clinicians regarding the appropriateness and utility of new preventive services, screening tests, guidance for counseling patients, and an examination of current interventions at the community level, in addition to current controversies and research in the prevention field.

### **MPH0006 Public Health, Medical Ethics, and the History and Philosophy of Medicine**

Course Directors: Rosamond Rhodes, PhD and Daniel Moros, MD  
To be Announced

3 credits

The availability of well-confirmed effective treatments forces us to address the ethics of health policy and public health interventions. Health policy and public health must therefore wrestle with questions about how to apply medical knowledge in protecting society from disease-related risks and diminishing hazards to life and health. In doing so, public health policies and measures confront ethical challenges involving liberty, privacy, and justice.

This course examines classic and emerging issues in medical ethics by paying particular attention to the history of medicine and the nature of scientific thought. Many issues in medical ethics are long-standing, such as concerns about withholding treatment, abortion, and truth-telling. Others arise with the development of scientific medicine and interventions that promote population health beginning in the 1700s: vaccination, disease control measures, licensing of medical professionals, drug regulation, treating children over parental objection, use of body parts for transplantation, access to health care, prolonging life. Advances in biotechnology, microelectronics, microbiology, and nanotechnology continuously produce new issues. Although social benefit is the goal of health policies and public health measures, because interventions affect different people in different ways, justice always requires consideration.

In our globally interconnected, rapidly advancing technological world, it is easy to misunderstand and mishandle public health questions. We need to consider both the past and the future in making our decisions. This course will therefore discuss efforts in controlling the spread of cholera, typhoid, and sexually transmitted diseases together with articles from the contemporary bioethics literature. It will also address some of today's pressing public health concern today: mandatory vaccination, quarantine, legalization of recreational drugs, reproductive choice, organ sales, aid in dying, allocation of scarce medical resources, malpractice reform, the development of a national health care system. Our aim is to develop a deep understanding of the relevant ethical issues so as to prepare medical professionals, public health officials, and philosophers to develop informed positions on matters concerning health policy and public health.

### **MPH0007      Social Justice in Public Health and Medicine**

Course Director: Rosamond Rhodes, PhD and Ethan Cowan, MD  
Fall Term

3 credits

Justice is a major concern in theoretical ethics and political philosophy and a huge literature is devoted to trying to explain just what it entails. In this course our aim will be to examine a broad spectrum of issues in medicine, medical research, and public health that raise questions about justice. In light of these critical examples, we shall review and critique an array of philosophical views on justice. Throughout the seminar we shall be engaged in two activities: (1) using clinical dilemmas and health policies as touchstones for developing a clear understanding of justice, and (2) developing an understanding of how theories of justice apply in different public health and medical contexts. By going from practice to theory and from theory back again to practice we shall advance our understanding of the theoretical literature as well as the requirements of justice in public health, medicine and other areas of the social world.

This course will begin with an examination of the allocation of medical resources that raise questions about justice. It will then move on to examine contemporary work on justice and review of some theoretical work by authors who focus their attention on justice in medicine (e.g., Norman Daniels and Paul Menzel). As the seminar progresses, we shall develop an understanding of how the U.S. happens to have developed the mechanisms that we now have for the delivery of health care. We shall examine how medical resources are actually distributed here, elsewhere, and globally, and in various contexts. We shall consider ways in which those allocations do and do not express justice. We shall also explore some of the problems that become apparent when you attend to the special needs of social groups (e.g., the poor, children, women, the elderly, African-Americans) and examine

dilemmas and conflicts that are raised by issues such as the treatment of premature and compromised neonates and resource allocations during the COVID-19 pandemic.

### **MPH0008 Introduction to Public Health Nutrition**

Course Director: Laurie Tansman, MS, RD, CDN

To be Announced

3 credits

Public Health Nutrition continues to be an exciting and expanding field with a multitude of new strategies to improve public health! Because of all the excitement that each new initiative generates, there are always controversies coupled with confusion. This course is designed to provide an introductory overview of Public Health Nutrition concepts and issues while educating the student about the most current Public Health Nutrition Issues. While certain basics are always covered, each semester is unique as the most current public health initiatives are addressed. The course director is passionate about public health and has given public testimony on many issues at the local, state and national level. In response to student request, this course has been redesigned to include a more in depth review of nutrition-related illnesses and their treatment. A popular component of this course is the assignments that enhance the students' insight on public health nutrition. This isn't just a course about reading and listening but doing!

### **MPH0010 Zoonoses: An Emerging Public Health Issue**

Course Director: Stephanie Factor, MD, MPH

Spring II Term

3 credits

Zoonoses, diseases transmitted from animals to humans, are increasingly being recognized as emerging or re-emerging disease threats to public health. This course will explore the interactions between physicians, veterinarians, and public health professionals; provide an understanding of the public health consequences of these diseases; and explore preventive measures. Finally, we will set the framework for discussions of agents of bioterrorism and the public health response to these threats. The course attracts top speakers from across the country in the fields of public health, infectious diseases, veterinary medicine, and the biomedical sciences.

### **MPH0012 Public Health Lab**

Course Director: Cappy Collins, MD, MPH, and Elizabeth Isakson, MD, FAAP

Fall Term

3 credits

How do we turn public health theory into meaningful change in the world? How can you do the most good for the problem you care about? The answers exist! This course will review fundamental concepts in public health practice and translation into successful actions. These concepts and practices can guide program and policy developments in the service of helping populations, and they accommodate variables including the scope of the efforts, the level of involvement of the population, the utilization of other stakeholders and the sustainability of the efforts. Students will develop their own advocacy project proposals. Empowering other people starts with empowering oneself.

Pre-requisite: Completion of 1-2 terms in the Program.



## **MPH0013     Public Health Informatics**

Course Director: To be Announced  
To be Announced

3 credits

Technology is progressing at lightning speed, revolutionizing every aspect of healthcare and life. As public health educators, we are charged with not only providing a strong foundation in the traditional practice of public health, but also preparing our students to lead the avant garde of public health as it will be practiced tomorrow. Increasingly, such leadership requires a skill set that includes public health informatics.

Public health has always been highly interdisciplinary, but modern public health is rapidly becoming a field that requires an unprecedented level of technological savvy. Real-time syndromic surveillance, big data, mobile technologies, electronic health records, and other health information technologies are poised to benefit population health enormously.

Practitioners who are not comfortably conversant in the use of these technologies will be unable to fully participate in, much less lead, the conversation. It is our responsibility to prepare our students and guide their exposure to this reality of modern healthcare. As standards of care shift, ISMMS students must be prepared to lead the way.

## **MPH0014     Program Planning**

Course Director: Bill Bower, MPH  
Spring I Term

3 credits

Students who successfully complete this course will be able to design an evidence-based and culturally appropriate public health program, in both US and developing country contexts. The course requires quite a bit of small group work in teams of three to develop a final plan for a public health program. The small groups are required to submit four graded assignments and meet with the professor via Zoom four times during the fall term to get feedback. Specifically, students will gain competence in analyzing local needs and resources; developing an evidence-based and technically and programmatically sound causal pathway; articulating program objectives; designing relevant program partnerships and technical components; and designing the program's monitoring and evaluation plan, implementation plan and budget.

Pre-requisite:    Completion of 1-2 terms in the Program

## **MPH0015     History of Public Health in America**

Course Director: Paul Theerman, PhD  
Spring II Term

3 credits

What can history tell us about the current state of public health in the United States? This overview of the history of public health will examine evolving notions of a healthy public. Looking at the underlying social, political, and cultural structures that aid, hinder, and shape the public health mission, it will place the history of public health in the context of the larger histories of medicine, the nation,

and the world. Several disease case studies will be looked at in detail, to provide insight into the factors that go into successful--and unsuccessful--public health movements. The course will conclude with a look at recent public health crises, to understand them within the context of global history.

### **MPH0016 LGB/TGD/Q+ Health: Research, Policies and Best Practices**

Course Director: Barbara Warren, PsyD  
Spring II Term

3 credits

LGBTQI people have made considerable progress in securing equal rights, from open military service to marriage equality. Polling data indicates the general public has increasingly positive views of LGBTQI civil rights. Despite this, LGBTQI persons still face discrimination, stigma and exclusion in many policy arenas and significant health disparities. Development of an evidence base for LGBTQI health interventions remains in critical need of more dedicated efforts. This course reviews the demographics and diversity of LGBTQI populations; advances and gaps in LGBTQI health knowledge and research; and policies and strategies in public health practice towards achieving fuller health equity for LGBTQI persons.

Pre-requisites: MPH0001 Introduction to Public Health or  
MPH0700 Introduction to Global Health

### **MPH0018 Current Topics in Public Health: Risk Assessment of COVID-19**

Course Director: Nicholas DeFelice, PhD  
Fall Term

3 credits

This course focuses on how mathematical models can be used to help inform public health decisions. Over the course of the semester, we will examine how SAR-CoV-2 spread around the world. We will also explore what happened in the US, how our current disease monitoring structure is set up, and how it shapes our policies and decisions making on the local, state and federal in US. This will be done with a goal of developing a mathematical model to make inference in high uncertainty situations.

Prerequisite: MPH 0300 Introduction to Biostatistics

### **MPH0024 Seminar in Applied Preventive Medicine - Fall**

Course Director: Betty Kolod, MD, MPH and Kristin Oliver, MD, MHS  
Fall

1 credit

This weekly seminar focuses on current local, national, and international issues in public health and preventive medicine. Discussions center on critical review of new published literature in public health and include topics related to health policy, economic and legal issues, and the impact of these issues on the health of populations. There will be didactics on public health ethics, risk communications and preventive medicine research as well as critical review of enrolled student research or theses. On a rotating basis, each student is responsible for setting the agenda and chairing seminar discussions.

Pre-requisites: MPH0400 Introduction to Epidemiology

## MPH0300 Introduction to Biostatistics

Students who are not Residents in the Department of Preventive Medicine must receive permission from Course Director prior to enrolling in this course.

## **MPH0025 Seminar in Applied Preventive Medicine – Spring I**

Course Director: Betty Kolod, MD, MPH and Kristin Oliver, MD, MHS  
Spring I

1 credit

This weekly seminar focuses on current local, national, and international issues in public health and preventive medicine. Discussions center on critical review of new published literature in public health and include topics related to health policy, economic and legal issues, and the impact of these issues on the health of populations. There will be didactics on public health ethics, risk communications and preventive medicine research as well as critical review of enrolled student research or theses. On a rotating basis, each student is responsible for setting the agenda and chairing seminar discussions.

Pre-requisites: MPH0400 Introduction to Epidemiology  
MPH0300 Introduction to Biostatistics

Students who are not Residents in the Department of Preventive Medicine must receive permission from Course Director prior to enrolling in this course.

## **MPH0026 Seminar in Applied Preventive Medicine – Spring II**

Course Director: Betty Kolod, MD, MPH and Kristin Oliver, MD, MHS  
Spring II

1 credit

This weekly seminar focuses on current local, national, and international issues in public health and preventive medicine. Discussions center on critical review of new published literature in public health and include topics related to health policy, economic and legal issues, and the impact of these issues on the health of populations. There will be didactics on public health ethics, risk communications and preventive medicine research as well as critical review of enrolled student research or theses. On a rotating basis, each student is responsible for setting the agenda and chairing seminar discussions.

Pre-requisites: MPH0400 Introduction to Epidemiology  
MPH0300 Introduction to Biostatistics

Students who are not Residents in the Department of Preventive Medicine must receive permission from Course Director prior to enrolling in this course.

## **MPH0023 Culminating Experience Seminar**

Course Director: Kristin Oliver, MD,  
Fall, Spring I, Spring II

1 credit

Students must have their Culminating Experience Statement of Support and Project Outline submitted to the Program Office before starting this course.

This seminar is designed for second year students who will be completing Culminating Experience (thesis, manuscript, or capstone). These works are more than a paper - They are major independent projects that requires you to design, implement, and present professional work of public health significance. This course will help you design your Culminating Experience, start writing, and give and receive feedback from peers. The course is heavily interactive. We will work with materials provided primarily by the students. By the end of the term, you should be ready to complete your Culminating Experience.

Pre-requisites: MPH0320 Research Methods

## HEALTH POLICY, MANAGEMENT & ECONOMICS

### **MPH0100 Introduction to Policy & Management**

Course Director: Ashley Fox, PhD  
Spring II Term

3 credits

Why did U.S. health reform pass in 2010 when historically large scale reform of this magnitude has been blocked? How will the states implement health reform and will it be defeated through a constitutional challenge? Why is HIV prioritized over other health areas even though the global burden is lower than other diseases? How are new public-private partnerships transforming the financing of health systems? This course aims to assist students in understanding how political processes shape health policy and health outcomes both domestically and internationally.

Through an introduction to theoretical and applied concepts in public policy and political science, students will learn how to assess the political feasibility of different health policy options and how to craft persuasive policy briefs targeting decision makers at all levels of government. In addition to theoretical material, the course will draw on insights from a concrete set of case studies across a variety of health policy topics including: the politics of health reform in the U.S., global health agenda setting, and health system strengthening in developing countries among other topics.

### **MPH0103 Strategic & Program Management**

Course Director: Arthur Gianelli, MBA, MPH  
Spring II Term

3 credits

This course is an introduction to understanding; the competencies, roles and responsibilities of public health and health managers; health organizations, which are complex and changing in response to community needs and to changing environments; the skills required to establish and maintain organizational culture and organizational change; and talent and team management. Through readings, class discussion and the analysis of case studies, students, will have an opportunity to explore and identify key management and leadership challenges impacting public health and health; formulate and evaluate alternative solutions to problems; learn verbally and in writing to present analysis of managerial plans and proposals. The course will emphasize skill development in the management of mission, strategy, operations and the business aspects of health organizations.

### **MPH0104 Healthcare in Communities & the Public Sector**

Course Director: Richard Roberts  
Spring II Term

3 credits

A major focus of this class is on understanding how community life and health are related. Students will learn how to analyze communities, compare data regarding the health status of communities and to compare selected communities to each other. Case material will be used to emphasize the multiple ways one can assist communities as a whole and those at risk for health problems. Exemplars will be offered by guest lecturers involved in community change. Social and economic factors will be identified that affect community health status.

## **MPH0105 Health Economics**

Course Director: Alexander S. Preker, PhD  
Spring I Term

3 credits

The intent of this course is to train future public health practitioners on the economic and political questions that emerge in the process of developing health systems.

The course looks in detail at the US health care system, including its history, evolution, achievements and continued challenges from an economic perspective. The various sessions during the course will review core economic principles applied to the role of governments, the private sector and the competitive marketplace. The course will provide an overview of traditional microeconomic theory and practice as applied to demand, supply, competition, monopoly, and social welfare. It will drill down on topics such as role of governments, private sector, market competition, government failure and market failure. Special sessions will be devoted to topics on clinical services, non-clinical services, the health care workforce, health financing, the health related manufacturing sectors (pharmaceuticals, medical technology and information technology) and leadership/health management. Special attention will be paid to the implication of the Covid 19 crisis for the economic function and performance of health care system and its major components.

Students who successfully complete this course will be able to:

- Analyze the key policy and public health challenges faced by the US and other health care systems using economic principles, market analysis and health policy formulation
- Design key policy recommendations to address some of the public health challenges faced by vulnerable population groups that are consistent with underlying economic principles economic principles, market analysis and health policy formulation
- Apply the principles of economic evaluation to selected problems in the health sector and health industry verticals.

The major course output will be guided, semester-long exercises in analyzing and developing strategic development plans from a public health professional's perspective to guide political and economic decision making. The focus on health systems is a concrete means to understand the more general competencies involved in the application of economic analysis, which include political, financial, technical and organizational skills. The course will link to the ongoing health care reform debate to help participants understand the underlying economic issues raised by the reforms.

## **MPH0106 Public Health: Politics and Policy**

Course Director: To be Announced  
To be Announced

3 credits

Why did U.S. health reform pass in 2010 when historically large scale reform of this magnitude has been blocked? How will the states implement health reform and will it be defeated through a constitutional challenge? Why is HIV prioritized over other health areas even though the global burden is lower than other diseases? How are new public-private partnerships transforming the

financing of health systems? This course aims to assist students in understanding how political processes shape health policy and health outcomes both domestically and internationally.

Through an introduction to theoretical and applied concepts in public policy and political science, students will learn how to assess the political feasibility of different health policy options and how to craft persuasive policy briefs targeting decision makers at all levels of government. In addition to theoretical material, the course will draw on insights from a concrete set of case studies across a variety of health policy topics including: the politics of health reform in the U.S., global health agenda setting, and health system strengthening in developing countries among other topics.

### **MPH0107     Accounting & Budgeting for Public Health Administration**

Course Director: Frank Cino, MPH, CPA  
Spring II Term

3 credits

Financial statements enable managers to evaluate the performance of an organization and assess its financial position. Budgets, based on forecasts, take the form of projected statements and serve as an important managerial tool for planning and control purposes. This course provides an introduction to the accounting, budgeting and financial reporting techniques commonly used in the health care and not-for-profit environment. Emphasis is placed on enabling students to become comfortable with financial analysis, budgets and commonly-used financial terminology so that they can effectively address financial matters they will encounter in leadership roles in health care and not-for-profit organizations.

### **MPH0108     Comparative Health Systems**

Course Director: Alexander S. Preker, PhD  
Fall Term

3 credits

The recent introduction of the Affordable Health Care Act and further proposed reforms under the American Health Care Act has had and will continue to have a major impact on the delivery of healthcare in the USA. The course will review major trends in health care in the US and use a comparative health systems approach to explore reform options based on what has worked well and not so well in both the USA and other OECD countries like the UK, France Germany, Canada, and Australia.

The course will explore each country's geography and culture, the history of its health system, followed by a detailed analysis of evaluation of cost, quality, access and innovation. The course is designed to be accessible by students of health administration, public health, nursing and other allied health professions. A major course output will be a guided, semester-long exercise in analyzing a health system. Students select a term project for expanding coverage for poor and vulnerable populations in a sample country of their choice. The course will use a health systems approach to strengthen more general competencies in the application of systems analysis, using political, financial, technical and organizational skills. The course will be particularly useful for students that may want to transition to a high level policy career or executive leadership and management role within health system.

## **MPH0110      Pharmacoeconomics**

Course Director: Renée Arnold, PharmD  
Spring II

3 credits

Why is Gilead Science's new Hepatitis C pill (Sovaldi) so expensive (\$84,000 for a course of therapy, about \$1,000 a pill) and is its approximately 90% cure rate worth the cost? US FDA Commissioner Scott Gottlieb recently (WSJ 8.25.18) commented on the difficulty in valuing curative therapies. How important is cost in health policy decisions? Why are pharmaceutical companies more and more developing "orphan" drugs, that is, drugs for rare diseases. In the current healthcare environment in the US, there is rationing of healthcare, often not on an objective basis. What makes a medication or device cost-effective or not? Authorities in many countries are using cost-effectiveness analyses (CEA) to make reimbursement decisions and cost of treatments and diagnostics (e.g., mammograms) are being hotly debated. Why are there major initiatives afoot, even in U.S. medical societies (i.e., American College of Cardiology/American Heart Association and American Society of Clinical Oncology) to incorporate cost-effectiveness ("value") into medical decision-making? How are these analyses being done? Learn the principles of CEA, get hands-on experience and tutorials with software often used for these types of evaluations, watch YouTube excerpts of debates about making Hepatitis C treatments available in California Medicaid and other markets. Hear a key pharmaceutical company researcher discuss his challenges in use of CEA in the fragmented US healthcare coverage environment, see user-friendly computer programs that have been developed based on these analyses and debate the use of CEA in making life-or-death reimbursement decisions. This introductory course focuses on the major concepts and principles of pharmacoeconomics, with particular emphasis on modeling, methodologies and data sources. Students will learn about the international use of pharmacoeconomics in drug regulation, pricing and reimbursement. Examples of pharmacoeconomic models used by the pharmaceutical industry and in government will illustrate the theoretical lessons.

## **MPH0111      Organizational Behavior & Human Resources**

Course Director: Matthew Baney, MS  
Spring I Term

3 credits

Human resource management in health organizations and the relationship between HR, organizational strategy, and organizational behavior is the focus of this course. We will analyze human work behavior at the individual, interpersonal, team and organizational levels. Included are topics such as motivation, communication, group and team dynamics, leadership, decision-making, job and organization design, conflict management, organizational culture and identity, and organizational change. We will apply organizational behavior theory and explore the factors that affect behavior, performance, and job satisfaction of people working in organizations.

The objectives of the course will be to understand the characteristics and processes of work organizations; to successfully develop management skills; to apply the skills of management and impact organizational behavior and performance.

## **MPH0112      Public Health Law**

Course Director: To be Announced  
To be Announced

3 credits



Familiarity with the legal environment is essential to an understanding of public health management and regulation, and to understanding assets and resources available to improve community health. This course introduces students to the legal system and to the process by which laws and policies impacting public health are formulated. We will explore the role of the law in shaping the provision of health services, disease and injury prevention, quality improvement, and other aspects of public health. Selected topics at the forefront of healthcare law will be discussed, including police powers of the state relating to the public health, population health, reproductive rights, compulsory vaccination and quarantine, and the law and ethics of human subject research (among others). Faculty will include attorneys specializing in the selected topics, as well as public health physicians and advocates.

### **MPH0120      Managed Care & Healthcare Reform**

Course Director: Arthur Gianelli, MBA, MPH  
Spring I Term

3 credits

Following a brief survey of the 3000 year history of insurance, the course will focus on health insurance and reform in this country before examining the variety of techniques used by managed care organizations and various national health systems to balance health expenditures, access and quality of healthcare.

Through weekly Socratic-type discussions about contemporary healthcare controversies, the course will help develop students' critical thinking about health policy alternatives and managerial decision-making. Feedback on short weekly essays, student presentations, and a final essay will help students improve their written and presentation skills.

### **MPH0121      Capstone Seminar in Health Care Management**

Course Director: Matthew Baney, MS  
Fall Term

1 credit

This course is will assist students in designing and implementing their capstone project. Students will examine the formulation and implementation of business strategies in health organizations, models of strategic management and change, and the role of stakeholders in the strategic management process. They will also review specific analytical tools used in strategy formulation and presentation.

Pre-requisite: Completion of first year in the Health Care Management track.

This course is limited to students entering their second year in the Health Care Management track.

## SOCIO-BEHAVIORAL HEALTH

### **MPH0201 Introduction to Socio-Behavioral Health**

Course Directors: Maya Korin, PhD, MS  
Fall Term

3 credits

This core course provides an overview of the social and behavioral sciences and their importance in the interdisciplinary field of public health. The course content will introduce students to several relevant social and behavioral theories of health, their application to public health issues, and their use in the development of policies, strategies, interventions and programs. Students will also learn how social hierarchies and disparities based on class, race/ethnicity, and gender intersect and influence the health and well-being of individuals and populations. In addition, some lectures will focus on social networks, social support and community capacity building. Through a series of assignments, students will enhance their knowledge and awareness of the role of social and behavioral sciences in public health and its relevance to their specific discipline.

### **MPH0203 Introduction to Medical Anthropology**

Course Director: Victor M. Torres-Vélez, PhD  
Spring II Term

3 credits

Biomedicine is defined as the medical science that applies biological and physiological principles in clinical practice to cure patients from disease. For biomedicine, the cause of sickness is found at the cellular level-- that is when a pathogen or germ alters the natural balance of the organism. To restore health is to trace and eradicate the physiological entity affecting the organism. In Western societies, this scientific understanding of disease is not only at the core of biomedical practice but also of people's imagination. To enter as a patient in the realm of biomedicine is to enter the realm of science, factuality and expert knowledge. Because scientific practice deals with "Nature," science is not only perceived as objective but as removed from culture. This course will attempt to reveal biomedicine as a cultural system. Through the lenses of medical anthropology, this course will examine:

- The emergence of biomedicine at the eve of the industrial revolution. We will be looking at the rise of biomedicine not as an institution only working within the confines of the diseased body. Rather, we will understand biomedicine as a cosmological project encompassing the whole of society, even when it is done through minute disciplining of the body. That is shaping the boundaries of what is possible, what can be seen and what constitutes reality.
- The different roles played by medical anthropologists in relation to biomedicine. While originally medical anthropologist's relationship with biomedicine was one of "translation" - that is how to make the "exotic other" comply with biomedical interventions - this role has dramatically changed. We will emphasize not on anthropologists who are primarily working with biomedicine but rather those making biomedicine their object of study. We will survey some of the main debates within the discipline.
- A wide array of ethnographies trying to answer the question of whether biomedicine is outside of culture. Particularly, we will be looking at the ways in which biomedical practice constructs its subject of study. We will review medical practices' core philosophical assumptions through some comparative cross-cultural analysis.

- The ways in which biomedicine particularly target women's bodies while upholding a male-centered ontology that disregards women's embodied experiences.
- The ways in which the political-economic organization of capitalist production creates health disparities. We will study the case of Haiti, situating their health crises not at the cellular level, but at the crossroads of Neoliberalism and a tortuous history of U.S. economic, political and military interventions.

## **MPH0210 Health and Literacy: Improving Health Communication Efforts**

Course Director: Maya Korin, PhD, MS  
Spring II Term

3 credits

The issue of health literacy is critically important to the development of effective health communication strategies and outreach. National evaluations of literacy have raised serious concerns about the ability of nearly half the U.S. adult population to access, understand, and apply health communication messages (NAAL 2003), including those messages found in health information, related to health care services, and exchanged during health provider/patient interaction. This course explores the link between literacy and health in the US and how poor health literacy impacts accessing, understanding, and applying health communication messages. Course participants will learn how to take health literacy into account in their work as public health practitioners by understanding the consequences of low health literacy in health outcomes, conducting health literacy loads of spoken and written material, and developing skills to communicate health more effectively across a variety of settings and contexts.

## **MPH0211 Substance Use & Public Health**

Course Director: Betty Kolod, MD, MPH  
Spring I Term, Every other year

2 credits

We are facing a public health crisis of substance use disorders (SUDs) across NYC and the country. In the US, approximately 20.4 million people ages 12 and older had an SUD diagnosis in the past year, according to the 2019 National Survey on Drug Use and Health. Addiction touches the lives of children, adolescents, and adults across all racial, ethnic, and socioeconomic backgrounds.

This course will explore the public health impact of several important SUDs and evidence-based interventions to mitigate harms associated with substance use. Topics include substance use and mental health, tobacco control, the epidemic of SUDs in NYC, cannabis and teens, drug decriminalization, overdose in the ER, binge drinking on college campuses, environmental and genetic risk factors for opioid addiction, and others.

This seminar will be problem-based and composed of lectures from experts and exposure to people who use drugs, with emphasis on research, evidence-based practice, and policy. Course assignments include attendance and reflection on an SUD group therapy session (12-step or other model) and a presentation on a controversial area of addiction.

Students who successfully complete this course will be able to:

- Assess the social, cultural, political, economic, and environmental factors that promote or prevent substance use in an individual or community

- Design an intervention or program to prevent or manage substance use and SUDs on a population level
- Identify the behavioral and neurobiological effects of substance use and SUDs

### **MPH0212 Life Cycle of Violence: Implications for Public Health**

Course Director: Andrea Rothenberg, MS, LCSW  
Spring I Term

2 credits

According to Healthy People 2020, “Acts of violence are among the top 15 killers of Americans of all ages.” Once thought of solely as a criminal justice issue, violence prevention and intervention have been embraced as a major public health issue. The television drama, Law and Order: Special Victims Unit (SVU), claims to be “fictional” and states that their show “does not depict any actual person or event.” Yet many episodes strongly resemble real-life situations “ripped from the headlines,” with a few added twists and turns to enhance the plot! Students will view SVU episodes and read peer reviewed articles to guide interactive discussions on the impact of violence over the course of the lifespan on health and wellbeing. Insights from this course will drive more thoughtful and informed practice when working with this important leading health indicator.

### **MPH0215 Emerging Issues in Women's Sexual and Reproductive Health and Rights**

Course Director: Andrea Rothenberg, MS, LCSW  
Fall Term

2 credits

Sexual and Reproductive Health and Rights (SRHR) of women are integral to their overall health and wellbeing. According to the United Nations Population Fund (2021), “a woman who has control over her body is more likely to be empowered in other spheres of her life. A woman—or adolescent girl—with little bodily autonomy is less likely to have control over her home life, her health and her future, and less likely to enjoy her rights.” Multiple theoretical frameworks will be presented to explore pertinent SRHR issues including body autonomy, gender identity and gender roles, LGBTQ health, women and Covid-19, gender-based violence and abortion. Special emphasis will be placed on discussing the impact of poverty, ethnicity, class and institutional racism experienced by many marginalized populations which may deprive them from seeking and obtaining adequate health information, access to quality health services and free to fully participate in the expression of their sexuality.

### **MPH0216 Health Promotion Strategies**

Course Director: Malika Garg, MD, MS  
Spring II Term

3 credits

Health promotion is the practice of educating, equipping, and empowering individuals with the information and resources they need to fight disease. It is the process of empowering people to increase control over their health and its determinants through health literacy efforts and multi-sectoral action to increase healthy behaviors. This includes activities focused on individual behavior as well as a wide range of social and environmental interventions. Health promotion typically addresses

behavioral risk factors such as tobacco use, obesity, diet and physical inactivity, as well as areas of mental health, drugs and alcohol abuse, and sexual health.

Increasingly, lifestyle strategies such as whole food, plant-based diet, exercise, stress management, tobacco and alcohol cessation, and other non-drug modalities are being used to prevent, treat, and reverse chronic disease. This course offers the knowledge and skills recommended by a national panel of representatives from physician and health professional organizations as the basis for providing quality health promotion in lifestyle medicine services.

Topics focus on clinical processes, as well as a review of key modalities: nutrition, physical activity, behavior change, tobacco cessation, managing risky substance use, and stress management / emotional wellness. The course provides basic grounding the field of health promotion and disease prevention via lifestyle medicine and focuses on practice skills for public health professionals

## QUANTITATIVE & QUALITATIVE RESEARCH METHODS

### **MPH0300 Introduction to Biostatistics**

Course Director: John Doucette, PhD

Fall Term

3 credits

Lecture and Lab are required and may be held on separate days of the week

This course provides an introduction to the principles underlying biostatistical methods and their application to problems in epidemiology, public health and clinical research. Students will learn about basic probability distributions, descriptive statistics, presentation of data, hypothesis testing principles, and the specific hypothesis tests and analytic methods for a variety of data types. These analytic methods will include t tests, chi-square tests, nonparametric tests, correlation, regression, and basic survival analysis methods. Students will have the opportunity to apply these methods to sample data both via direct calculation and using SAS® statistical software. Each week, a one-hour laboratory session will reinforce material from lecture with additional examples and instruction in use of the SAS® software. Methods for determining sample size and power for a variety of commonly used study designs will also be presented, as will measures of the accuracy of diagnostic and screening tests.

### **MPH0300 Online Introduction to Biostatistics – Distance Learning (DL)**

Course Director: John Doucette, PhD

Fall Term

3 credits

Online Asynchronous Course

This is a more independent, self-paced style course with prerecorded lectures and lab exercises released weekly online. Students will be able to view, study and practice each week's content any time during the week. This course is most appropriate for students with strong quantitative skills, those who are independent learners, and those who have previously taken a statistics course. No prior knowledge about statistics is assumed, however, and the online option is open to all.

This course provides an introduction to the principles underlying biostatistical methods and their application to problems in epidemiology, public health and clinical research. Students will learn about basic probability distributions, descriptive statistics, presentation of data, hypothesis testing principles, and the specific hypothesis tests and analytic methods for a variety of data types. These analytic methods will include t tests, chi-square tests, nonparametric tests, correlation, regression, and basic survival analysis methods. Students will have the opportunity to apply these methods to sample data both via direct calculation and using SAS® statistical software. Each week, a one-hour laboratory session will reinforce material from lecture with additional examples and instruction in use of the SAS® software. Methods for determining sample size and power for a variety of commonly used study designs will also be presented, as will measures of the accuracy of diagnostic and screening tests.

## **MPH0305 Introduction to Qualitative Research Methods**

Course Director: Maya Korin, PhD, MS  
Spring I Term

3 credits

Qualitative research involves the collection and rigorous analysis of observations, interviews, and other records of human activity so that we can come to a richer understanding of structures, processes, and perspectives that drive or shape human behavior, particularly when it comes to health. This course is designed to introduce students to qualitative research methods and will use a combination of didactic, interactive, and applied techniques to teach knowledge and skills relevant to qualitative research. The course emphasizes practical skills of qualitative research design, data collection (i.e., interviewing, focus group facilitation) and data analysis. By the end of the course students will develop skills in how to formulate appropriate qualitative research questions, determine which qualitative data collection method is most appropriate, collect qualitative data using interviews and focus group discussions, and analyze qualitative data. Students will be exposed to different styles of presenting qualitative research results and will consider different ways in which qualitative data is used in practice

## **MPH0306 Introduction to Systematic Reviews and Meta-Analyses**

Course Directors: To be Announced  
To be Announced

1 credit

This course is designed to provide an introduction to systematic review and meta-analysis methodology, a prerequisite for those students who intend to produce one of these types of articles as their Culminating Experience. The course will cover i) developing an appropriate research question, ii) An overview of the process and best practices, iii) drafting a protocol, iv) designing a comprehensive search strategy and v) logistics of the screening and quality appraisal steps in the process. The course will also highlight the differences between a systematic review/meta-analysis that could feasibly be produced as a Culminating Experience vs. a publication quality systematic review/meta-analysis.

## **MPH0320 Research Methods**

Course Director: Kristin Oliver, MD, MHS  
Spring II Term

1 credit

Research Methods encompasses a set of fundamental skills and tools necessary for approaching the process of developing and answering a research question, being a future investigator, or an informed consumer of information in the marketplace. This course provides a solid and practical framework enabling students to successfully embark upon their Culminating Experience. As a prerequisite in the conduct of research, it prepares students to conceptualize, propose, design, and write research papers in general.

Topics covered include the characteristics of a research study, formulating a research question, experimental research designs, survey construction, data analysis and interpretation, and evaluation of research. Also addressed are strategies for conducting literature searches, research ethics, informed consent, and elements of a research proposal. Students will be required to complete IRB training,

HIPPA training, data security training, and outline a research proposal for their Culminating Experience project by the end of this course.

Full time students are required to take this course in the Spring II Term of their first year in the Master of Public Health Program. The course is only open to matriculated students in the Master of Public Health Program. This course is graded on a Pass/Fail basis.

Recommended Pre-requisites: MPH0001 Introduction to Public Health or  
MPH0700 Introduction to Global Health



## EPIDEMIOLOGY

### **MPH0400 Introduction to Epidemiology**

Course Director: Stephanie Factor, MD, MPH

Fall Term

3 credits

Lecture and Lab are required and meet on separate days of the week

This introductory course focuses on the fundamental concepts of epidemiology and its application to the field of public health. The course will provide students with an insight to epidemiologic methods and how they can be used to study health outcomes in human populations. Students will learn the elements of epidemiology, such as causation, study design, measures of effect, and potential biases. Practical and theoretical training will include lectures, small group discussions, and readings.

### **MPH0410 Epidemiology of Infectious Diseases**

Course Director: To be Announced

To be Announced

3 credits

Epidemiology of Infectious Diseases builds upon the concepts presented in Introduction to Epidemiology (P400), stressing the importance of considering the host, environment and disease agent in transmission dynamics. The nineteenth and twentieth centuries witnessed advances in prevention, treatment, and study of infectious diseases and the misconception that infectious diseases were disappearing. The study of infectious diseases leads to the continual development of vaccines, antibiotics, and technology, prompting epidemiologists to develop more advanced methods to monitor disease, investigate patterns of disease transmission, and evaluate innovative prevention modalities. The past thirty years have brought to light both new and re-emerging problems in the epidemiology of infectious diseases, including HIV, SARS, avian influenza, arboviruses, antimicrobial resistance, and the threat of bioterrorism.

This course will enable students to gain an understanding of the principles of infectious disease epidemiology, including modes of transmission, quantification of occurrence and risk, and methods for preventing disease at the population level. Students will receive a number of disease-specific lectures from public health practitioners who conduct surveillance for and epidemiologic studies on various infectious diseases. Students will also participate in classroom exercises, during which they will investigate an outbreak, create surveillance plans, present evidence of a disease threat, and recommend prevention and control measures.

Pre-requisites: MPH0400 Introduction to Epidemiology  
MPH0300 Introduction to Biostatistics

## **MPH0411     Journal Club for Health Professionals**

Course Director: Erin Thanik, MD, MPH

Full Year Course

1 credit

This course is for residents in specific ISMMS residency programs and meets once per month.

This intermediate level Journal Club is intended for Preventive Medicine and Occupational and Environmental Medicine residents only. The course builds upon the Introductory Journal Club for residents and trains residents in the presentation of articles relevant to the public health specialties of environmental, occupational and preventive medicine. Each resident will be assigned a week to be responsible for selecting and presenting an article relevant to their area of specialization. The student may decide to invite a Mount Sinai faculty expert in the particular topic to provide additional commentary on the article. Prior to class, all students are required to read the article and complete a short critique form. All students are expected to participate in class discussions.

Pre-requisites: Students must be residents in either the Preventive Medicine or Occupational and Environmental Medicine residency programs at ISMMS. Others must obtain approval of the course director to enroll.

MPH0400 Introduction to Epidemiology

MPH0300 Introduction to Biostatistics

The Club meets once a month for the academic year. This course is graded on a Pass/Fail basis.

## **MPH0413     Introduction to Epidemiology Data Analysis with R**

Course Director: Elza Rechtman, PhD & Joselyn Chavez-Fuentes, PhD

Spring I Term

1 credit

R is an open-source language widely used by epidemiologists to manage and clean data, carry out statistical analyses of epidemiologic data, and produce high-quality figures for research communications. This course will give students a solid foundation in the most important tools for performing epidemiology data analyses using R. Students will learn how to import data into R, merge datasets, clean and transform variables, visualize, and model population data. Emphasis will be given to modeling approaches for association estimates calculation such as beta coefficients, relative risks, and odds ratios using R. Students will be given hands-on training during class and work on an epidemiologic project using R. Prior programming experience is helpful but not necessary.

## **MPH0414     Cardiovascular Epidemiology**

Course Director: To be Announced

To be Announced

3 credits

This course provides a solid foundation of broad array of cardiovascular diseases from the perspective of individual to population with goals to improve health. The course provides basic understanding of cardiovascular disease pathophysiology and current paradigms in their management at the clinical and community levels. The course will discuss methods to estimate the impact of CV risk factors, and

burden and secular trends of disease such as atherosclerotic disease, arrhythmia, and heart failure. It will give students an understanding of broader determinant of CVD health such as genetics, lifestyle, environment, and policy. Lastly, the course will provide a framework for thinking about improving cardiovascular health of populations through reducing healthcare disparities, providing cost-effective and early interventions, and improved understanding of disease epidemiology.

Prerequisite: MPH0400 Introduction to Epidemiology

## **MPH0412 Epidemiology II**

Course Director: Maayan Yitshak-Sade, PhD

Spring I Term

3 credits

Epidemiology is the study of the distribution and determinants of health-related states and events in specified populations, and the application of this knowledge to control health problems. This course will introduce students to concepts that guide the design and analysis of various epidemiologic study designs, including counterfactuals, confounding, effect measure modification, measurement error and bias, as well as practical considerations. In parallel with lectures and assigned readings, lab sessions will guide students through applications of these concepts, including constructing causal diagrams and using R software for epidemiologic analysis. Prior R knowledge is **not** needed

Pre-requisites: MPH0400 Introduction to Epidemiology

MPH0300 Introduction to Biostatistics

Basic SAS proficiency

## **MPH0416 Epidemiology of Cancer & Chronis Diseases**

Course Director: Paolo Boffetta, MD, MPH

Fall Term

3 credits

The course will cover substantive and methodological issues in the epidemiology of chronic diseases, including cancer, chronic respiratory diseases, neurodegenerative diseases, and aging. Students will be presented with examples of descriptive and analytical epidemiology studies in each of these areas; aspects such as disease registration and its contribution to epidemiology research, estimates of attributable fractions, and preventive strategies will be also addressed. The course will complement the series of methodological courses offered within the epidemiology track, by providing a framework to incorporate research in chronic disease etiology and control.

Pre-requisite: MPH 0400 Introduction to Epidemiology,

Pre-requisite/co-requisite: MPH0412 Epidemiology II

## **MPH0417 Mental Health in the Modern Age**

Course Director: Guy Montgomery, PhD

Spring I Term

3 credits

Mental health is a critical component for high quality of life. Poor mental health is in and of itself aversive, and can lead to poor physical health and in some cases even death. The purpose of this course is to develop understanding modern conceptualizations of mental health on a population level.

This will be accomplished by: studying mental health within the context of its historical perspectives, providing foundational learning on the major classifications of mental health disorders and their impact on society, and providing insights into what is, and what factors lead to, “good” or positive mental health.

Pre-requisites: MPH 0400 Introduction to Epidemiology

### **MPH0418 Reproductive & Perinatal Epidemiology**

Course Director: Shanna Swan, PhD  
To be Announced

3 credits

In this course we will study the epidemiology of human reproductive function, pregnancy and pregnancy outcomes and the methodologic issues involved in studying these. Topics include: basic biology of male and female reproduction, male and female infertility, pregnancy outcomes, assisted reproduction, and factors (environmental, social and occupational) that impact reproductive function and pregnancy outcomes.

Pre-requisite: MPH 0400 Introduction to Epidemiology

### **MPH0419 Environmental and Occupational Epidemiology**

Course Director: Mathilda Chiu, ScD  
Spring I

3 credits

This course focuses on the fundamentals of epidemiological methods specific to environmental and occupational health research. The course will provide students with an insight to appropriate study designs and methodologies to investigate health effects of environmental and occupational exposures in different settings. These include essential concepts involved in generating research hypotheses, as well as environmental and occupational health specific issues such as use of exposure biomarkers, exposure sampling and modeling of exposures, study design issues, confounding and other types of bias, and phenotyping issues as they relate to environmental and occupational factors. We will also review novel data analytic strategies unique to environmental and occupational health (e.g. exposure mixtures), the nascent field of exposomics, and the interpretation of the study findings and public health implications for environmental and occupational epidemiological research. The students will also learn the techniques for critical appraisal of environmental and occupational epidemiological studies. These are achieved through lectures with in-depth discussion of current research status on environmental and occupational epidemiology, readings, homework assignments, mid-term exam, hands-on statistical analysis workshops, and a final project.

Pre-requisites: MPH0400 Introduction to Epidemiology  
MPH 0300 Introduction to Biostatistics

Recommended Co-requisites or Pre-requisite:

MPH0500 Introduction to Environmental Health

MPH0412 Epidemiology II

MPH0812 Applied Linear Models I

MPH0802 Statistical Computing with SAS

### **MPH0420    Epidemiology III**

Course Director: Kimberly Glazer, PhD, MPH  
Spring II Term

3 credits

Building upon the foundations of epidemiologic methods and design introduced in previous courses, Epidemiology III will cover the theoretical and practical considerations of analysis and interpretation of data generated from epidemiologic studies. Through lectures and guided analysis of epidemiologic datasets, students will learn the analytic approaches and modelling techniques used to investigate exposure-disease relationships within various epidemiologic study designs. This course will also include more advanced topics such as mediation analysis and the use of sensitivity analyses to quantify the impact of potential biases. As part of this course, students will perform an independent analysis of epidemiologic data to demonstrate mastery of the presented content. Students can use any statistical software they prefer for assignments, but all course examples, sample code and programming support will be provided using SAS only.

Pre-requisite: MPH0412 Epidemiology II

### **MPH0421    Research Seminar in Epidemiology**

Course Director: Stephanie Factor, MD, MPH  
Fall and Spring I Terms

2 credits

This course is designed for second year students studying Epidemiology to provide direction and support for the development of their research proposal in preparation for the submission of the final degree requirement. To participate in this course, students must have identified an ISMMS Faculty advisor and a general area for their first-author manuscript or thesis project. Class activities will include: student-directed discussions of peer-reviewed journal articles in their project-related area of interest; presentations by graduates on his or her experience completing the degree requirement; and student-prepared presentations of their capstone research proposal. Discussions about how to lead a productive journal club, issues related to preparing a good research proposal, and how to prepare effective PowerPoint presentations and other data-reporting formats will be part of the course experience. Outside readings will be assigned as appropriate for the in-class discussions/presentations.

Registration in Fall is for students taking the course in Fall and throughout Spring I.

Pre-requisite: This course is restricted to second-year students in the Epidemiology Track.

### **MPH0421    Research Seminar in Epidemiology for MS in Epidemiology Students**

Course Director: Dania Valvi, MD MPH PhD  
Spring I or Spring II Term

2 credits

This course aims to help the MS in Epidemiology students develop effective written and oral scientific communications from their Culminating Experience. The course is divided into three main sections

that cover the creation of effective (A) scientific posters, (B) written communications in format of a scientific manuscript or a thesis, and (C) oral presentations of an epidemiology project.

This is a highly interactive student-centered and student-led course. We will work in class with materials provided primarily by the students, including student poster, manuscript/thesis and oral presentation drafts. All students will be required to give and receive constructive feedback from other peers on how to improve their written and oral communications based on what they have learned in class. Students must have their Culminating Experience Proposal Outline signed by their faculty advisor and submitted to the Program Office before the first day of class and are strongly encouraged to write as much of their Culminating Experience materials as possible during this course.

### **MPH0421     Big Data Epidemiology: Introduction to OMICS Research**

Course Director: Dania Valvi, MD MPH PhD and Megan Niedzwiecki, PhD  
Spring II Term

3 credits

Omics is an emerging, multidisciplinary, and rapidly evolving field that has started to impact both clinical practice and public health, and holds promise to significantly improve precision medicine. Omics encompasses many molecular biology domains including genomics, epigenomics, transcriptomics, proteomics, metabolomics and exposomics. These molecular domains can offer a more nuanced perspective on how multiple exposures (e.g., environmental, lifestyle, social factors) affect health compared with traditional research approaches. However, omics datasets are large (tens of thousands of variables or more), resulting in analytical challenges that require adaptation of existing epidemiology designs and methods. This course will provide an overview of omics research areas and applications, latest omics epidemiology advances, and hands-on training in big omics data analysis.

Pre-requisite: MPH0412 Epidemiology II  
MPH0300 Introduction to Biostatistics  
MPH0812 Applied Linear Models I

Recommended: BIO6300 Introduction to R Programming

### **MPH0425     Epidemiology IV**

Course Director: Paolo Boffetta, MD, MPH  
Fall Term

3 credits

This advanced course in epidemiology is built around the overarching themes of the contribution of epidemiology to causal inference, and strategies for selection of study populations, prevention, control and quantitative assessment of bias, and options in study design and statistical analysis.

Pre-requisite: MPH0400 Introduction to Epidemiology  
MPH0412 Epidemiology II  
MPH0429 Epidemiology III

## OCCUPATIONAL & ENVIRONMENTAL MEDICINE

### **MPH0500 Introduction to Environmental Health**

Course Director: Lauren Zajac, MD, MPH & Candace Tannis, MD, MPH  
Spring I Term

3 credits

This course provides an overview of important topics in environmental and occupational health. The classroom sessions will focus on the health effects of exposures arising from air, water, food, work, built environment, and climate change. Case studies, current events, and relevant public health data tools will be emphasized. Small group sessions will allow students to explore and interpret environmental health data and discuss this data in context of common environmental public health case studies. Applicable principles of risk communication, toxicology, environmental epidemiology, and preventive medicine, as well as fundamentals of occupational and environmental laws and regulation will be discussed. The course will also highlight principles of environmental justice and addressing structural determinants of environmental health disparities.

The course provides basic underpinnings of the theory and practice of environmental health, and provides a structural framework for thinking about the field as a public health discipline.

### **MPH0515 Toxicology**

Course Director: To Be Announced  
Spring II Term

3 credits

This course provides an introduction to the major concepts in toxicology with particular emphasis on agents with public health relevance including metals, pesticides, air pollution, drugs of abuse, medication, and stress. The curriculum is designed to make toxicology accessible to students with broad scientific backgrounds including those outside of the biological science disciplines. Students will learn the basic principles of toxicology, as well as review target organs systems, contaminants, and mechanisms of actions of certain classes of compounds. Specific target organ toxicities will include hepatic, renal, cardiovascular, pulmonary, neuronal, developmental, reproductive, and endocrine systems. We will use in-class exercises and small groups to discuss recent publications, apply concepts, and understand the current knowledge of specific toxicological agents and their effects. This course is designed to present toxicology as an interdisciplinary science in public health.

### **MPH0516 Environmental Exposures, Risk, and Public Health**

Course Directors: To be Announced  
To be Announced

3 credits

Humans come into contact with chemicals every day. The computer on which you're reading this contains phthalates and brominated flame retardants – chemicals associated with endocrine disruption that are potentially carcinogenic. The fruits and vegetables we consume hold residual pesticides. Does this make them dangerous?

How are these exposures measured in practice? How do public health professionals determine the risk these exposures present and how to best manage them? Further, how do public health professionals communicate these risks in an evidence-based way to not falsely reassure or unnecessarily alarm people? How do we put risks in context?

This course introduces the major concepts in environmental exposure assessment and risk assessment – key topics for public health practitioners. Students will learn how common environmental exposures at home and in the workplace are identified and measured in different media (air, water, soil, consumer products) and how those data are used to characterize and quantify risk.

The course will also cover basic risk management and communication – how do we adequately mitigate risk and responsibly convey it to the public. Students will learn strategies of effective risk communication with various stakeholders. The unique and complimentary expertise of Drs. Ericson and Dowling (an environmental scientist and public health expert with global health experience investigating and mitigating pollution in low-and-middle income countries) will allow an array of case studies from the United States and around the world to be discussed from various angles.

The course will have traditional lectures, coupled with class discussions and activities to enhance learning of the topic and build practical skills for public health practice. Public health practitioners will be invited as guest lecturers to discuss how they conduct exposure assessments and/or risk assessments in their work as public health professionals. Students will complete several short assignments that integrate topics discussed in class through hands-on learning and online resources. The course will also include a final exam.

Pre-requisites:           MPH0500 Introduction to Environmental Health or  
                                  MPH0522 Clinical Occupational & Environmental Medicine  
Recommended Co-requisites (optional): MPH0515 Toxicology

## **MPH0522    Clinical Occupational & Environmental Medicine**

Course Director: John Meyer, MD, MPH & Rabeea Khan, MD, MPH  
Summer Intensive - Two weeks

3 credits

Environmental and occupational exposures known to cause human disease are examined from the public health framework of exposures and etiology, clinical diagnosis, and prevention. Regulatory and other approaches to prevent and reduce exposure will be discussed. Important public health and policy implications of workplace and environmental exposures will be examined.

The course is targeted toward those training or working in health care, and is limited to residents, physicians and medical students except with the permission of the Course Director.

## **MPH0523    Advanced Occupational & Environmental Pulmonary Disease**

Course Director: To be Announced  
To be Announced

2 credits

Pulmonary diseases due to occupational and environmental exposures have historically been at the center of the practice and science of occupational medicine. This course will review pulmonary



diseases caused by occupational and environmental exposures from the perspectives of clinical diagnosis, toxicology, treatment, and prevention. Regulatory and other approaches to reduce exposure will be discussed. Public health and policy implications will be considered as well.

This course is limited to health providers.

### **MPH0525    Communitology**

Course Director: Joel Forman, MD, Cappy Collins, MD, MPH and Angela Donadelle  
Spring II

3 credits

Life expectancy on the Upper East Side is 86 years compared to 77 years in East Harlem. Why should this be? This course introduces the learner to the root causes of health disparities confronting resource-poor communities, with particular focuses on children, the environment, and social determinants of health (SDHs).

We cover topics ranging from chemical exposures; qualities of the built environment; the health effects of climate change; and the mechanisms of toxic stress and epigenetics. We cover basic principles of exposure assessment; skills in pediatric environmental exposure history taking; and the adverse effects of environmental exposures on child neurodevelopment. Students learn how to design risk communication strategies for environmental exposures targeted to a specific group of children, access pediatric health reference material, apply state-of-the-art clinical evidence in the formulation of public health policy, and advocate for child health. The course format is participatory, and includes discussing peer-reviewed literature, lectures and clinical case scenarios.

This course will be capped at 15 students. Registration will be based on first come, first-served basis.

## OUTCOMES RESEARCH

### **MPH0621 Seminar in Applied Clinical Epidemiology & Health Services Research**

Course Director: Jenny J Lin, MD

Full Year Course

1 credit

This class meets on alternate weeks.

This seminar focuses on current methodological, analytical and logistical issues in clinical epidemiology and health services research. The course helps participants develop, refine, implement, and evaluate a quantitative clinical epidemiology or health services research study. Attendees also learn to critically evaluate the methodological strengths and weaknesses of key clinical research designs including: retrospective and prospective cohort studies, patient and physician survey research, secondary dataset analysis, and interventional studies. All seminar members must present a research proposal during the one year period, as well as participate actively in critique and feedback to other presenters. The course is primarily intended for clinician trainees in the MPH outcomes research track or Masters of Science in Clinical Research (MSCR) program but welcomes all students interested in outcomes research analysis.

Pre-requisites: MPH 0400 Introduction to Epidemiology

MPH 0300 Introduction to Biostatistics

### **MPH0623 Applied Analysis of Epidemiologic and Outcomes Research Data**

Course Director: Juan Wisnivesky, MD, DrPH

To be Announced

3 credits

This course is focused on learning the application of statistical methods for the analysis of epidemiologic and patient-oriented observational data. The emphasis will be on hands-on experience, involving case studies with real data and using the statistical software SAS. The focus will be on choosing and on implementing the appropriate statistical methods to analyze and interpret different types of data. Attention will also be paid to the theory behind these tests and on testing the validity of the assumptions. The course will cover data management, exploratory data analysis, model formulation, goodness of fit testing, and other standard procedures, including linear regression, analysis of variance, logistic regression, and survival analysis. The grade will be based on the homework, midterm, and a final exam. This course will be particularly well suited to students who are actively involved in an epidemiology, outcomes, health services, or survey research project that is entering the data analysis phase.

Pre-requisites: MPH 0300 Introduction to Biostatistics

MPH 0821 Applied Linear Models I

## **MPH0624    Outcomes Research Methods**

Course Directors: Henry Sacks, MD, PhD  
To be Announced

3 credits

The goals of this course are to provide students with a theoretical understanding and hands on experience in advanced epidemiology and outcomes research methods. The course will provide a review of each method within an interactive computing environment. Assignments requiring computer analysis of clinical data will be provided. Areas to be covered include meta-analysis, decision analysis, cost-effectiveness analysis, propensity score analysis, instrumental variable analysis, clinical prediction rules, and analysis of repeated measurements.

Pre-requisites: MPH 0300 Introduction to Biostatistics  
MPH 0821 Applied Linear Models I

## GLOBAL HEALTH

### **MPH0700 Introduction to Global Health**

Course Director: Nils Hennig, MD, PhD, MPH  
Fall Term

1 credit

This course provides an introduction to the major concepts and principles of global public health with particular emphasis on neglected populations. The course provides students with an understanding of the principles of health within the context of development, human rights, and globalization, and provides an appreciation of the pertinent challenges and controversies. Students will learn about the establishment of global health priorities, develop an appreciation for issues related to underserved populations, and learn about the major players in the global arena, including the challenges of financing. The course decolonizes global health education by rethinking institutional global public health partnerships and approaches.

A multidisciplinary approach is used to discuss the major determinants of health and disease with particular emphasis on the relationship between health and socioeconomic development. Students will meet some experts in the field and are encouraged to engage in discussions of the most current and important global public health topics. By the end of the course, students will have been introduced to the most important players, challenges and variables of global health and their interactions. They will be prepared to advance to more specific and in-depth courses of the Global Health Track.

### **MPH0703 Global Mental Health**

Course Director: Craig Katz, MD and Ali Haidar, MD  
Fall Term

3 credits

“There is no health without mental health.” While millions of people struggle with mental disorders, sufferers in resource-limited areas receive little or no treatment. This course will describe how to strategically approach global mental health planning and implementation for scaling up mental health services within a public health framework. It will rely on a model known as the Wheel of Global Mental Health, which encompasses seven interdependent elements that together encompass the goals, resources, and dynamics integral to scaling up. Questions raised by the COVID-19 pandemic can also be expected to shape this year's course.

### **MPH0705 Racism and Public Health in the United States**

Course Director: Malika Garg, MD, MS  
Spring II

3 credits

The Racism and Public Health in the United States Course will provide an introduction to the history of racism in the United States and its impact on social determinants of health. The Course aims to provide a contextual framework for examining structural racism as one of the root causes of health disparities. The Course will provide an overview of how social determinants of health not only impact an individual's health outcomes but also have an impact on future generations. This Course will

highlight long-standing racism and racist policies in the United States that have adversely impacted BIPOC communities.

The Course will introduce students to the concepts of racism in healthcare, structural racism, individual racism, and interpersonal racism. The Course content will discuss how public health policies, their implementation, budget and funding, impact the social determinants of health. By examining the ways that social determinants of health are being conceptualized by epidemiologic and social science tools, such as fundamental cause theory, structural violence, intersectionality and capabilities frameworks, students will explore ways to operationalize these understandings into their public health research and program intervention strategies.

The goal will be to shift the conversation from race to racism as the root cause of health inequities in the Black population. This Course will be conducted via a series of didactics, case discussions, guest lectures and group discussions as well as a round table conference of experts in the field. The students will also be encouraged to participate in a survey to discern their understanding of the subject matter. Students may be required to participate in focus groups to ensure that the Course is being conducted in a respectful environment which is fostering learning and growth.

### **MPH0707 Humanitarian Aid in Complex Emergencies**

Course Director: Annie Sparrow, MD

To be Announced

3 credits

This is an upper level global health course informed by the course director's field experience and ongoing role as advisor to the Director-General of the World Health Organization. This course will explore current public health and humanitarian crises and address the tensions between aid practitioners and academics, between countries and international agencies, health and human rights using historical and current case studies.

How should international medical and relief efforts respond to modern humanitarian emergencies that have become chronic, expensive, political and unpopular with governments increasingly focused on populism and protectionism to open borders and empathy? In armed conflicts, how do officials delivering humanitarian aid ensure that in-kind assistance is meeting the needs of people affected rather than providing a source of subsistence to warring factions? How should aid efforts address a crisis like the Ebola outbreak in the Democratic Republic of Congo when parts of the local population see the international response as more a source of jobs than medical care? Can international public-health efforts develop the trust needed to succeed in such situations if they focus primarily on those diseases seen as a threat to threaten the global North -- Ebola, polio, pandemic flu rather than those that are the biggest killers in the global South - TB, malaria, and HIV? For the Covid-19 pandemic, are public-health officials striking the right balance in the global South between a reliance on technical innovations and the need to develop basic health care? Does that balance shift as we consider future pandemic threats such as anti-microbial resistance? Is the World Health Organization fit for purpose in addressing emerging threats, and if not, what modifications would make it more effective? In particular, what would make the WHO more effective in addressing the instinct of many governments to cover up unusual outbreaks of infectious diseases? For the first time, people understand what public health means, what human rights are, and the relationship between health and human rights. The pandemic has also brought into sharp relief the limitations of our current response -- surveillance, contact tracing and vaccinations. This course will examine the international public-health response to a range of humanitarian crises, including those related to outbreaks, armed conflict, natural disaster,

and climate change. Other issues it will examine include the politicization of the international response and the role of international organizations such as the World Health Organization and other United Nations agencies, of non-governmental organizations such as International Committee of the Red Cross (ICRC), Doctors without Borders. Students will develop critical thinking and hone communication skills in particular writing skills such as opinion pieces in order to inform and engage in public debate.

### **MPH0710      Global Environmental Change**

Course Director: Cappy Collins, MD, MPH  
Spring I Term

3 credits

Climate change is not a single problem, but a lens through which to view myriad changes to our environment that will determine the future for humans on this planet. Changes to biodiversity, hydrological systems, land use, waste management, energy production, distribution of environmental toxicants; these and more are all part of the larger category of global environmental change.

This course will focus on how global environmental change is affecting human health, presenting major challenges to physicians, scientists, institutions, governments and communities. There are solutions, and public health messengers must be informed to bring those solutions to the decision-makers in our neighborhoods and around the world.

### **MPH0713      Health and Human Rights: Human Rights Abuses, Torture & Its Consequences**

Course Director: Schuyler W. Henderson, MD, MPH  
Fall Term

2 credits

Human rights abuses are pervasive and have both obvious and subtle health consequences. They also need to be understood from different angles: how they affect individual health (including psychological health) as well as population and community health; how human rights abuses involve ethical, scientific, political, social, and cultural considerations; and how the field of public health can address human rights abuses in multiple ways, including advocacy and testimony, influencing health-related practices, education, documentation and accumulation of data.

This course is designed to raise students' awareness of human rights abuses and their effects on health; to describe how human rights abuses adversely impact health; to introduce the epidemiology of human rights abuses; and to consider how disciplines within Public Health can address (and sometimes participate in) human rights abuses. The course covers the ethical and political foundations of Human Rights, how we know human rights abuses are occurring (especially the epidemiology of human rights abuses), and specific health ramifications of pandemics, torture, forced migration and disparities. In addition, public health implications of human rights abuses will be discussed around special topics: pandemic response, children, gender, human rights law, and the role of health care providers in human rights abuses (from overt examples of participation in torture and genocide to more complex realms where public health imperatives may conflict with human rights, as with some forms of public health surveillance).

## **MPH0717    Global Reproductive and Maternal Health**

Course Directors: To be Announced  
To be Announced

3 credits

This course introduces the student to the challenges that perpetuate high rates of maternal and childhood morbidity and mortality in low and middle-income countries. This includes not only discussion of the health issues that drive this mortality, such as HIV/AIDS, malaria, diarrheal disease, obstetric complications and malnutrition, but also the respective health system and structural barriers that limit access to quality health services and contribute to the vulnerability of women and children. Approaches to improve maternal and child survival, including facility and community-based interventions, will be examined as well. The course is case-based and students will be involved in intensive small group problem solving exercises through which they will learn the necessary skills to address problems facing mothers and children in low and middle-income countries. The course emphasizes participatory learning, in-class discussion, self-directed research, and small group exercises. Registration is limited to 20 participants on a first come (register) first served basis.

Pre-requisite: MPH0700 Introduction to Global Health

## **MPH0720    Preparation for Global Health Field Work**

Course Directors: To be Announced  
To be Announced

2 credits

“There is no health without mental health.” While millions of people struggle with mental disorders, sufferers in resource-limited areas receive little or no treatment. This course will describe how to strategically approach global mental health planning and implementation for scaling up mental health services within a public health framework. It will rely on a model known as the Wheel of Global Mental Health, which encompasses seven interdependent elements that together encompass the goals, resources, and dynamics integral to scaling up. Questions raised by the COVID-19 pandemic can also be expected to shape this year's course.”

## **MPH0795    Public Health Conference**

Course Directors: Nils Hennig, MD, PhD, MPH  
Spring II Term

1 credit

The Public Health Conference provides students with the opportunity to delve deeper into public health topics presented at the annual Public Health Research Day at ISMMS. Students will be required to attend and be active participants during the full day of events, which includes a keynote lecture, oral presentations, poster sessions, and networking opportunities. Course requirements include a 2-page reflection paper and a critical analysis of 3 poster presentations.

## BIostatISTICS

### **MPH0801 Introduction to Probability**

Course Director: To be Announced  
Fall Term

3 credits

This course provides an introduction to probability models emphasizing applications in public health and medicine. In addition to presenting basic probability theory and models, a variety of topics important in statistics will be covered, including: random variables; discrete and continuous probability distributions; conditional probability, joint probability, expectation and variance; independence; sampling distributions, combinatorics, and permutations.

### **MPH0802 Statistical Computing with SAS**

Course Director: John Doucette, PhD  
Fall, Spring I Terms

2 credits

This course provides students with the skills needed to utilize SAS systems for data management in order to prepare datasets for statistical analysis. In addition, procedures that are used to conduct basic statistical analyses and produce graphical output will be covered. Students will be given hands-on training using sample data provided by the instructor as well as (optionally) data from their own work.

Recommended Pre-requisite: MPH0300 Introduction to Biostatistics

### **MPH0812 Applied Linear Models I**

Course Director: John Doucette, PhD  
Spring I Term

3 credits

Regression analysis is a widely used set of methods for exploring the relationships between response variables and one or more explanatory variables. This course provides an introduction to regression methods for a single continuous response variable. Both linear and curvilinear regression models are considered. Model assumptions, and regression diagnostics for assessing those assumptions, are explored in detail. Strategies for model selection are presented. The emphasis is on concepts and application rather than on underlying theory. As mathematical results are presented without proof, students are not required to be proficient in calculus or matrix algebra.

Pre-requisites: MPH0300 Introduction to Biostatistics



## **MPH0822    Applied Linear Models II**

Course Director: Elena Colicino, PhD  
Spring II Term

3 credits

This course provides a comprehensive overview of regression methods for analysis of categorical (binary and count) data and survival data, with applications to epidemiological and clinical studies. Topics discussed include logistic regression analysis, log linear model for contingency tables, Poisson regression, and survival regression. The emphasis is on concepts and application rather than on underlying theory. As mathematical results are presented without proof, students are not required to be proficient in calculus or matrix algebra.

Pre-requisite: MPH0812 Applied Linear Models I

## REGISTRATION CODES FOR DIFFERENT DEGREE REQUIREMENTS

Please refer to specialized guides related to completing the MPH Applied Practice Experience, the Culminating Experience, and/or the MS in Epidemiology Thesis/First-Author Manuscript requirements.

### MPH0092 Applied Practice Experience

3 credits

The MPH Applied Practice Experience provides the student with an opportunity to translate theory into practice within a public health setting. The Applied Practice Experience Proposal must be submitted to the Office of Public Health Practice for approval prior to the beginning the experience. Students may register for MPH0092 after receiving approval on the APE Proposal.

This registration is not a course that meets, instead it is a registration reflecting the time, energy, and advisement involved in the degree requirement.

Pre-requisites:

- Applied Practice Experience Proposal
- Students should complete at least 15 credits of MPH coursework before starting the Practicum.

### MPH0097 Culminating Experience

3 credits

The Culminating Experience provides the student with an opportunity to synthesize, integrate and apply the skills and competencies they have acquired to a public health problem. Students may choose to complete a Thesis, First Author Manuscript or Capstone to satisfy the Culminating Experience. Students who are completing a First Author Manuscript or Capstone should register for MPH0097 Culminating Experience (students who are completing a Master's Thesis should register for MPH0099 only).

Please refer to the MPH or MS in Epidemiology Culminating Experience Guide as a resource for the steps that need to be taken to fulfill the Culminating Experience requirement.

### MPH0099 Thesis

3 credits

The Thesis provides the student with an opportunity to synthesize, integrate and apply the skills and competencies they have acquired to a public health problem. Only students who are completing a Thesis should register for MPH0099.

Please refer to the MPH or MS in Epidemiology Culminating Experience Guide as a resource for the steps that need to be taken to fulfill the Culminating Experience requirement.

## UNIQUE REGISTRATIONS

### **MPH0000    Transfer Credits for Public Health**

1 – 12 credits

Credit transfers must be approved by the Program Director. Students may be able to transfer up to 10 credits from courses taken at other institutions as long as they were not counted towards another degree. The courses for transfer credit must be considered appropriate to public health and have been completed with a grade of B or better at an institution of established academic reputation. All transfer credits will be assigned a grade of SC (Satisfactorily Completed). See Student Handbook for more information.

### **MPH0091    Ambulatory Care Clerkship Transfer for Public Health (MD/MPH Students only)**

4 credits

The Ambulatory Care Clerkship course is taken by medical students during Year 3 and has an emphasis on Clinical Preventive medicine as well as population medicine. These credits are transferrable to the MPH degree. Upon completion of the Clerkship, medical students must register for MPH0091 to complete the transfer of credits.

### **MPH0095    Independent Study**

1 – 3 credits

An Independent Study is an elective option, providing the student with an opportunity to delve more thoroughly into an area of public health that is of specific interest to him/her. An Independent Study must be a unique experience. Material covered during an independent study project should be highly targeted and not simply a review of the regularly offered coursework. Each student may complete no more than two independent study projects.

An Independent Study Proposal **must** be submitted at least six weeks prior to the anticipated start of the proposed project/course of study. This is to ensure that the goals meet the overall objectives of the Graduate Program in Public Health before a student commits any time and energy. An Independent Study Proposal submitted less than six weeks of the anticipated start of the project/course of study may not be approved and the student is responsible for assuming any risk that this may entail. Approval, when granted, is conditional upon the student completing all of the outlined requirements. The student must submit a Postscript Report and request that the Faculty Sponsor the Independent Study submit an Evaluation Form before awarded the Independent Study credits. Final credits are awarded at the end of the project by approval of the Academic Program Office.

An Independent Study can be valued at one, two, or three credits. Each credit represents approximately 45 hours of work. Three credits are the maximum number of credits that may be awarded to any Independent Study. Please note that while the total hours committed to the pursuit of the Independent Study may be sufficient for more than three credits or more than one elective, students will not receive any more than three credits for one project/course of study.

**Eligibility** - Students with more than one outstanding Incomplete at the time of the proposal submission may not be eligible to complete an Independent Study.

**Restrictions** - It is important to note that independent study projects should not be attempts to take MPH courses that are offered routinely during the academic year at times that are more convenient for the student. Independent study projects cannot exempt students from core course requirements.

### **Steps towards formalizing an Independent Study**

1. Identify and meet with your Faculty Sponsor to discuss and plan the Independent Study.
2. Complete the Independent Study Proposal Form.
3. Submit the Independent Study Form to the Academic Program Office for approval.
4. Once approved, complete the project/course of study.
5. Complete the Independent Study Postscript Report.
6. Request that your Faculty Sponsor review the Postscript Report and complete the Independent Study Evaluation Form.
7. Submit completed Postscript Report and Evaluation form to the Academic Program Officer.

### **MPH0096 InFocus Curriculum (MD/MPH Students only)**

1-8 credits

MD-MPH students may apply InFocus Weeks toward MPH general elective credits. InFocus Curriculum transfer credits are valid for between 1-8 MPH credits. Please contact the Program Office for the transfer credit process.

### **MPH8001 Maintenance of Matriculation**

To maintain matriculation, students must either register for at least one credit-bearing course or register for MPH 8001 Maintenance of Matriculation for every term up until degree conferral. Maintenance of Matriculation allows students continued eligibility to earn their degree while not pursuing coursework. The MPH 8001 Maintenance of Matriculation registration is \$333 per term for students in trimester programs. Please see the full Maintenance of Matriculation policy in the Student Handbook.