

# Milken Institute School of Public Health

THE GEORGE WASHINGTON UNIVERSITY

## Department of Environmental & Occupational Health Department of Global Health

### Master of Public Health Global Environmental Health 2020-2021

Note: All curriculum revisions will be updated on the GWU SPH website

#### Program Director

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#### Mission

The Mission of the Global Environmental Health MPH program – a joint program between the Departments of Global Health and Environmental and Occupational Health – is to educate individuals who are committed to working in resource-poor settings and applying analytic skills to prevent or mitigate the adverse impact of environmental hazards on human health. The program has a particular focus on traditional environmental health hazards—that is, health risks that are a consequence of a lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

#### Goals

Our graduates will hold a multidisciplinary knowledge base and skill set that will provide them a framework for addressing environmental health issues from environmentally mediated disease in the poorest performing regions of the world. They will understand the scientific and cultural foundations of environmental health in order to:

- ◆ Assess environmental exposures and understand the effects of these exposures on human health;
- ◆ Interpret epidemiologic and other research findings related to global environmental health risks; and
- ◆ Assume leadership roles in designing, implementing and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national and/or global levels.

#### Course Requirements

All Milken Institute School of Public Health (SPH) MPH students who select the Global Environmental Health program enroll in Core Courses (19 credits), Program-Specific Courses (17 credits), and Electives (9 credits). The Core Courses include a Practicum (2 credits) and a Culminating Experience (2 credits) where students apply their didactic education in a real world setting.

#### Program-Specific Competencies

Upon Completion of the MPH Program in Global Environmental Health, students should possess the following functional competencies.

#### Epidemiology & Biostatistics

- *Critically assess existing epidemiologic research.*
  - Summarize goals, design, methods, and results of published research. Relevant Courses: PUBH 6121, 6131, 6400, 6411, 6137
  - Identify biases and evaluate the extent to which they threaten study validity. Relevant Courses: PUBH 6121, 6131, 6411
  - Apply statistical principles to interpret epidemiologic data. Relevant Courses: PUBH 6121, 6131
- *Design appropriate studies for investigating EOH problems.*
  - Identify appropriate resources and databases to plan and conduct studies. Relevant Courses: PUBH 6121, 6128, 6400, 6411, 6137
  - Given a research question, identify appropriate study design, choose appropriate study populations, describe relevant exposure assessment methods, identify appropriate data collection instruments and

processes, and describe procedures for protecting human subjects. Relevant Courses: PUBH 6121, 6126, 6131, 6411, 6137

- *Conceptualize and carry out data analysis to address study goals.*
  - Conceptualize research questions. Relevant Courses: PUBH 6121, 6128, 6411, 6137
  - Utilize appropriate approaches to manage and analyze data. Relevant Courses: PUBH 6131, 6411, 6137

### **Assess Global Environmental and Occupational Risks**

- *Assess environmental and occupational exposures.*
  - Describe the principle of operation, capability, and limitations of assessment instrumentation. Relevant Courses: PUBH 6126
  - Assess severity of potential hazards and select the appropriate instrument and measurement method. Relevant Courses: PUBH 6126
  - Interpret exposure measurements to assess the severity of a chemical, physical, or biological hazard. Relevant Courses: PUBH 6126, 6435
  - Compare exposure data against established occupational & environmental health standards and guidelines. Relevant Courses: PUBH 6126, 6128
  - Evaluate the strengths and weaknesses of epidemiologic exposure assessments. Relevant Courses: PUBH 6121, 6128
- *Recommend strategies to prevent and control environmental and occupational exposures.*
  - Recommend appropriate control strategies, such as; environmental health interventions, protective equipment, behavior change campaigns, to mitigate health hazards. Relevant Courses: PUBH 6126, 6128, 6400, 6435

### **Global Environmental Health Policy Analysis**

- *Synthesize scientific evidence in order to inform global environmental health policy and reduce and prevent environmental health related disease and injury.*
  - Describe the authority and approaches of global environmental health agencies. Relevant Courses: PUBH 6128, 6435.
  - Apply the risk assessment, risk management, and Source-to-Effect frameworks. Relevant Courses: PUBH 6126, 6128
  - Explain the role of scientific, economic, ethical, and political interests in development and implementation of global environmental health policy. Relevant Courses: PUBH 6126, 6128, 6400, 6435.
- *Conduct policy analysis relevant to global environmental health problems.*
  - Discuss interventions used in global environmental health. Relevant Courses: PUBH 6126, 6128, 6400, 6435.
  - Analyze approaches used in global environmental health policy development. Relevant Courses: PUBH 6128, 6400, 6435.
  - Analyze the role of global environmental health policies and politics in promoting sustainability. Relevant Courses: PUBH 6128, 6435.

### **Design, Implement, Monitor and Evaluate Global Environmental Health Programs**

- *Synthesize relevant information in order to assess and manage environmental and occupational risks.*
  - Characterize political, social, cultural, religious and economic context to determine feasible interventions. Relevant Courses: PUBH 6128, 6400, 6435.
  - Given a specific context, design a plan to collect relevant information to fully characterize global environmental health hazards and related human health effects. Relevant Courses: PUBH 6121, 6128, 6435.
  - Evaluate data to characterize potential global environmental health hazards, potential for human exposure and health effects. Relevant Courses: PUBH 6121, 6128, 6400, 6411, 6435.
  - Recommend possible approaches to reduce the risk and/or impact of exposure to global environmental health hazards, and evaluate these approaches with regard to ethical issues, technical feasibility, resource requirements, and policy context. Relevant Courses: PUBH 6126, 6128, 6400, 6435.
  - Communicate with relevant stakeholder groups about environmental and occupational health issues and recommendations, using appropriate terminology and data. Relevant Courses: PUBH 6128, 6435, 6138.

**Potential Culminating Experiences (actual projects completed and underway, as well as illustrative examples):**

- ❖ Exploring Changes in Open Defecation Rates in Sub-Saharan Africa based on National Level Indices
- ❖ Cookstoves, Greenhouse Gasses, and Global Climate Change: A Case Study in sub-Saharan Africa
- ❖ Water Collection in Rural Sub-Saharan Africa: Do Increases in Access to Protected Sources Lead to a Decrease in Water Collection Times? A Study of 19 Sub-Saharan African Countries
- ❖ Examining Household Barriers to Latrine Access in Rural Tanzania
- ❖ Integration of WASH Interventions into HIV Treatment Programs in Sub-Saharan Africa
- ❖ Changes in Access to Sanitation and Water Supply in 31 Cities of Sub-Saharan Africa: A Study of Contributing Factors
- ❖ Evaluation of a Clean Cookstove Intervention in Nigeria
- ❖ Examining the Role of the Health Sector in Reducing Time and Energy Spent Collecting Solid Fuel and Mitigating Health Outcomes Associated with Indoor Air Pollution
- ❖ Factors Determining Success or Failure of Market-based Technologies for Environmental Health Hazards in Low-income Countries
- ❖ The Economics of Collecting, Transporting, and Treating Human Excreta from On-site Sanitation Systems in Urban Settings
- ❖ Assessing the Microbial Risks Associated with Animal Wastes from Concentrated Animal Feeding Operations
- ❖ Water Quality Assessment of Streams Impacted by Large-scale Poultry Operations

**Please see the curriculum sheets that follow.**

*Begin Planning Your Culminating Project 11-12 Months Prior to Program Completion*

**Required Core Courses and Culminating Experience (19 credits)**

Required Core Course		Credits	Semester Offered	Grade
PUBH 6002	Biostatistical Applications for Public Health	3	Fall, Spring, Summer	
PUBH 6003	Principles and Practice of Epidemiology	3	Fall, Spring, Summer	
PUBH 6007	Social and Behavioral Approaches to Public Health	2	Fall, Spring, Summer	
PUBH 6009	Fundamentals of Program Evaluation	2	Fall, Spring, Summer	
PUBH 6011	Environmental & Biological Fundamentals of Public Health	3	Fall, Spring, Summer	
PUBH 6012	Fundamentals of Health Policy	2	Fall, Spring, Summer	
PUBH 6021*	Essentials of Public Health Leadership & Practice 1: Leading Self and Teams in Public Health	1	Fall, Spring, Summer	
PUBH 6022	Essentials of Public Health Leadership & Practice 2: Managing Organizations and Influencing Systems in Public Health	1	Fall, Spring, Summer	
PUBH 6023	Interprofessional Education Experience	0	Fall, Spring, Summer	
PUBH 6137	EOH Culminating Experience Part 1	1	Fall	
PUBH 6138	EOH Culminating Experience Part 2	1	Spring	

**Required EOH Courses (11 credits)**

Required EOH Specific Courses		Credits	Semester Offered	Grade
PUBH 6121	Environmental and Occupational Epidemiology	3	Fall	
PUBH 6126	Assessment and Control of Environmental Hazards	3	Fall	
PUBH 6128	Global Environmental and Occupational Health	2	Online Spring I, Summer	
PUBH 6131	Quantitative Methods in Environmental and Occupational Health	3	Spring	

**Required GH Courses (6 credits)**

Required GH Specific Courses		Credits	Semester Offered	Grade
PUBH 6400	Global Health Frameworks	2	Fall	
PUBH 6411	Global Health Qualitative Research Methods	2	Spring, Summer	
PUBH 6435	Global Health Program Development & Implementation	2	Spring, Summer	

**Elective Courses (Select 9 credits from this sample list, or any PUBH graduate level course)**

PUBH 6123	Toxicology: Applications for Public Health Policy	3	Spring	
PUBH 6127	Germes: An Introduction to Environmental Health Microbiology	2	Spring	
PUBH 6130	Sustainable Energy and Environment	2	Fall	
PUBH 6132	Design, Implementation & Evaluation of Global Water, Sanitation and Hygiene (WASH) Programs	2	Online Fall, Spring II	
PUBH 6133	Social Dimensions of Climate Change and Health	3	Online Fall, Spring II	
PUBH 6135	Researching Climate Change and Health	2	Online Fall, Spring II	
PUBH 6140	Global Climate Change and Air Pollution	2	Summer	
PUBH 6199	Any EOH Special Topics course	Variable	Variable	
PUBH 6262	Introduction to Geographic Information Systems	1	Summer, Fall, Spring II	
PUBH 6271	Disaster Epidemiology: Methods and Applications	1	Summer	
PUBH 6441	Global Health Organizations and Regulations	3	Fall	
PUBH 6480	Public Health in Humanitarian Settings	2	Fall	
PUBH 6612	Food Systems in Public Health	2	TBD	
<b>Total</b>		<b>45</b>		

\* In PUBH 6021 and PUBH 6022, the Applied Practice Experience (Practicum) will be introduced and guidelines and tools for fulfilling this requirement will be provided. Upon completion of the 120-hour required practicum, students will receive credit for PUBH6022.

**NOTE: Always see your advisor for course scheduling and sequencing strategies, but remember that proper course selection, fulfilling requirements, and on-time graduation are your responsibilities.**

The Master of Public Health (MPH) curriculum consists of four types of courses:

- Required core courses (PUBH 6002, 6003, 6007, 6009, 6011, 6012, 6021, 6022, 6023) - 17 credits
- Required program-specific courses in EOH and Global Health - 17 credits
- Electives chosen from a list of program-relevant courses - 9 credits
- A required Culminating Experience (PUBH 6137 and 6138) - 2 credits

As an accredited School of Public Health, students in all GWSPH MPH programs are also required to fulfill both an interprofessional team experience and an applied practice experience. GWSPH has incorporated these requirements into the curriculum as follows:

Interprofessional Education (IPE) Experience (PUBH 6023):

- Following (or simultaneous to) enrollment in PUBH 6021 *Essentials in Public Health Practice & Leadership 1: Leading Self and Teams* (1-credit), students will be required to select an IPE experience from a host of options provided throughout your enrollment as an MPH student to participate in a one-time, case-based or activity-based learning experience. The IPE experience is a way to experience working with people from other professions/programs outside of public health. Students will have many opportunities to register for this zero-credit (no fee) IPE 'class' and will receive credit upon successful completion.

Applied Practice Experience (Practicum) (PUBH 6022):

- The applied practice experience allows each student to individually demonstrate attainment of public health competencies. Information about the Practicum will be introduced in PUBH 6021 so students may begin planning for their practice experience. As a part of the content of PUBH 6022 *Essentials in Public Health Practice & Leadership 2: Managing Organizations & Influencing Systems* (1-credit), detailed information and an introduction to the necessary tools will be provided. Students are required to fulfill all requirements of the 120 hour Practicum experience to receive credit for this PUBH 6022.

The MPH core courses are designed to provide students with a broad public health context as well as a critical foundation for subsequent coursework. Early completion of these core courses ensures that students will have the base of knowledge to successfully complete the program specific courses and to get as much as possible out of them. As such, entering students are expected to enroll in MPH core courses in accordance with the following guidelines:

- We expect MPH students to complete the MPH core courses in their first year of graduate study (fall/spring/summer), with the exception of the Culminating Experience courses (PUBH 6137 and 6138).
- For Global Environmental Health MPH students who are full-time, it is important to take PUBH 6002 *Biostatistical Applications for Public Health*, 6003 *Principles and Practices of Epidemiology*, 6011 *Environmental and Biological Fundamentals of Public Health*, and 6021 *Essentials in Public Health Practice & Leadership 1: Leading Self and Teams* in the first semester.

Part-time students (who generally take 5 to 7 credits per semester) will typically concentrate on taking just core courses in their first year, and then take program-specific courses in their second and third years.

In order to help assure that all students complete core courses in the first year of study, Milken Institute SPH will offer all core courses during all three semesters (fall, spring, and summer). This will allow students who wish to complete their MPH degree within two years to do so, and will allow every student to make steady progress toward completing the MPH degree.

We recognize that there may be exceptional circumstances that make it difficult for a student to complete core courses in the first year as outlined above. Any such student should discuss this situation with his or her academic advisor.

For additional information and resources regarding registration, course descriptions, schedule of classes, etc. follow this link: <http://publichealth.gwu.edu/academics/>.

Table 1 presents a sample course schedule for full-time Global Environmental Health MPH students. It is noteworthy that fully 45 credits are required, including core courses (17 credits), required program specific courses, including 11 EOH and 6 GH credits, elective credits chosen from a list of program-relevant courses (9 credits), and the Culminating Experience (2 credits).

**Course Descriptions and Registration** information can be found on the website: <http://publichealth.gwu.edu/academics/>.

# Graduation Requirements

## MPH

1. **Graduate Credit Requirement:** 45 graduate credits are required.
2. **Course Requirements:** Successful completion of the Core Courses and the Program-Specific Courses are required.
3. **Grade Point Requirement:** A 3.0 (B average) overall grade point average is required.
4. **Time Limit Requirement:** The degree must be completed within five years.
5. **Practicum Requirement:** Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
6. **Interprofessional Education Experience (IPE):** Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
7. **Transfer Credit Policy:** Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MPH upon approval. Credits must have been earned from an accredited institution in the last 3 years with a grade point of 3.0 or better.
8. **CITI Training requirement:** All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA). To fulfill this requirement, you must complete the Collaborative IRB Training Initiative (CITI) Course in The Protection of Human Research Subjects.
9. **Integrity Quiz & Plagiarism requirement:** All students are required to review the George Washington University Code of Academic Integrity and take the quiz within their first semester of study. The Code of Integrity and step-by-step instructions can be found here: <http://publichealth.gwu.edu/integrity>
10. **Professional Enhancement requirement:** Students must participate in 8 hours per degree program of Public Health-related lectures, seminars, and symposia, related to your field of study. Professional Enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. Opportunities for professional enhancement are regularly publicized via the Milken Institute SPH Listserv and through your department or advisor. Students must submit documentation of Professional Enhancement activities to the Office of Student Records. The documentation consists of the Professional Enhancement Form <http://publichealth.gwu.edu/academics/forms> (which includes a prior approval signature from the student's advisor, a description of the program agenda, and proof of attendance. Remember to submit your documentation before you apply to graduate!

## Milken Institute School of Public Health

### MPH in Global Environmental Health (45 credits)

Sample Schedule for 2-Year completion (Fall start / May completion<sup>+</sup>). All course times are tentative.

Semester	Credit	Course #	Course Name	Time (subject to change)
Fall 1 <sup>st</sup> year 12 credits	3	PUBH 6002	Biostatistical Applications for Public Health	Mon 3:10 – 6:00 pm or Wed 6:10 – 9:00 pm
	3	PUBH 6003	Principles and Practice of Epidemiology	Tues 6:10 – 9:00 pm or Weds 3:10 – 6:00 pm
	3	PUBH 6011	Environmental & Biological Fundamentals of Public Health	Tues 3:10 – 6:00 pm
	1	PUBH 6021	Essentials of Public Health Leadership & Practice 1	Mon or Thurs 6:10 – 7:00 pm
	2	PUBH 6400	Global Health Frameworks	Thurs 4:10 – 6:00 pm
Spring 1 <sup>st</sup> year 10 credits	2	PUBH 6007	Social & Behavioral Approaches to Public Health	Mon 6:10 – 8:00 pm
	2	PUBH 6012	Fundamentals of Health Policy	Tues 3:30 – 6:00 pm
	1	PUBH 6022	Essentials of Public Health Leadership & Practice 2	Tues 6:10 – 7:00 pm or Wed 5:10 – 6:00 pm
	2	PUBH 6128	Global Environmental and Occupational Health	Several options
	3	PUBH 6131	Quantitative Methods in EOH -- Plan Practicum --	Thurs 3:10 – 6:00 pm / Lab Thurs 6:00 – 8:00 pm
Summer 1 <sup>st</sup> year 4 credits	2	PUBH 6009	Fundamentals of Program Evaluation	
	2	Electives*	(View Course Map)	
Fall 2 <sup>nd</sup> year 10 credits*	3	PUBH 6121	Environmental & Occupational Epidemiology	Thurs 5:10 – 8:00 pm
	3	PUBH 6126	Assessment & Control of Environmental Hazards	Mon 5:10 – 8:00 pm
	1	PUBH 6137	EOH Culminating Experience Course Part 1	Wed 3:10 – 5:00 pm
	3	Electives*	(View Course Map)	
Spring 2 <sup>nd</sup> year 9 credits	2	PUBH 6411	Global Health Qualitative Research Methods	Tues 4:10 – 6:00 pm
	2	PUBH 6435	Global Health Program Development & Implementation	Tues 6:10 – 8:00 pm
	1	PUBH 6138	EOH Culminating Experience Course Part 2	Wed 3:10 – 5:00 pm
	0	PUBH 6023	Interprofessional Education Experience	TBD
	4	Electives*	(View Course Map)	

\*Your program includes 9 credits of electives to be chosen from the list above. With guidance from your advisor, complete these 9 credits in any combination during your second year.

<sup>+</sup> Make sure that you complete Practicum training and start planning your Practicum the semester before you wish to conduct it.



Sample Schedule for 3-Year completion (Fall start / May completion+). All course times are tentative.

Semester	Credit	Course#	Course Name	Time (subject to change)
Fall 1 <sup>st</sup> year 7 credits	3 3 1	PUBH 6002 PUBH 6011 PUBH 6021	Biostatistical Applications for Public Health Environmental & Biological Fundamentals of Public Health Essentials of Public Health Leadership & Practice I	Mon 3:10 – 6:00 pm or Wed 6:10 – 9:00 pm Tues 3:10 – 6:00 pm Mon or Thurs 6:10 – 7:00 pm
Spring 1 <sup>st</sup> year 7 credits	3 2 2	PUBH 6003 PUBH 6007 PUBH 6128	Principles and Practice of Epidemiology Social & Behavioral Approaches to Public Health Global Environmental and Occupational Health	Thurs 3:10 – 6:00 pm Mon 6:10 – 8:00 pm Wed 5:10 – 6:30 pm
Summer 1 <sup>st</sup> year 4 credits	2 2	PUBH 6009 PUBH 6012	Fundamentals of Program Evaluation Fundamentals of Health Policy	Mon & Wed 9:10 – 11:30 am Mon 6:10 – 8:40 pm
Fall 2 <sup>nd</sup> year 5 credits	3 2	PUBH 6126 PUBH 6400	Assessment and Control of Environmental Hazards Global Health Frameworks	Mon 5:10 – 8:00 pm Thurs 4:10 – 6:00 pm
Spring 2 <sup>nd</sup> year 6 credits	1 3 2	PUBH 6022 PUBH 6131 Electives*	Essentials of Public Health Leadership & Practice 2 Quantitative Methods in EOH (View Course Map) <b>- Plan Practicum -</b>	Tues 6:10 – 7:00 pm or Wed 5:10 – 6:00 pm Thurs 3:10 – 6:00 pm
Summer 2 <sup>nd</sup> year 3 credits	3	Electives*	(View Course Map)	
Fall 3 <sup>rd</sup> year 8 credits	0 3 1 4	PUBH 6023 PUBH 6121 PUBH 6137 Electives*	Interprofessional Education Experience Environmental and Occupational Epidemiology EOH Culminating Experience Course Part 1 (View Course Map)	Wed 5:10 – 8:00 pm Wed 3:10 – 5:00 pm
Spring 3 <sup>rd</sup> year 5 credits	1 2 2	PUBH 6138 PUBH 6411 PUBH 6435	EOH Culminating Experience Course Part 2 Global Health Qualitative Research Methods Global Health Program Development & Implementation	Wed 3:10 – 5:00 pm Tues 4:10 – 6:00 pm Tues 6:10 – 8:00 pm

\*Your program includes 9 credits of electives to be chosen from the course map. With guidance from your advisor, complete these 9 credits in any combination during your third year.

+ Make sure that you complete Practicum training and start planning your Practicum the semester before you wish to conduct it.