



**COLUMBIA**  
UNIVERSITY

**MAILMAN SCHOOL**  
of **PUBLIC HEALTH**

**ENVIRONMENTAL**  
**HEALTH SCIENCES**

# **MPH Student Handbook**

2016 – 2017 Academic Year

*This handbook has been created to ensure EHS students are familiar with Department and School procedures and protocol.*

*Our Department website is also an important source for the latest department information. Students should also refer to the official School handbook.*

*Questions should be directed to Nina Kulacki or Dr. Greg Freyer.*

*For a detailed academic calendar for 2016-17, please see the Mailman Academic Calendar.*

**Academic Honesty & Honor Code:** All candidates are expected to adhere to the required standards for academic and scientific integrity, which can be found in the GSAS statement on Academic Honesty.

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## ADVISING AND ADMINISTRATIVE RESOURCES

### *Faculty Advisor*

Each student is assigned an EHS faculty advisor at or before Orientation. Students are expected to meet with their advisor at least *once per semester* to review their course plan prior to the end of the add/drop period. It is important for students to be proactive in scheduling these meetings and checking in with their advisor periodically. If students elect to complete a Thesis (note: a Thesis is optional), they must contact their advisor to discuss the details prior to registering for the Thesis course and they must meet the Thesis deadlines on page 28.

Regardless of one's assigned faculty advisor, students are welcomed and encouraged to meet with any faculty member in the Department and with [Nina Kulacki](#). Questions or requests to change an assigned faculty advisor should be directed to Ms. Kulacki.

### *Academic Affairs Office in EHS*

The Faculty Director, [Dr. Greg Freyer](#), and the Academic Director of Academic Programs, [Nina Kulacki](#), are the primary points of contact in the Department for administrative issues related to the academic program that cannot be addressed directly by the faculty advisor. If an advisor is unavailable for any reason, the next step should be to reach out to Nina Kulacki.

The Faculty Director and Academic Director implement policies established by the Columbia University Mailman School of Public Health (CUMSPH) and by the Department of Environmental Health Sciences (EHS). They can provide information about the curriculum, required and elective courses, and other administrative processes.

### *2<sup>nd</sup> Year MPH Peer Mentors*

All incoming EHS students are assigned a 2<sup>nd</sup> year MPH student mentor from the EHS Department. Mentors are available to provide support and assistance to 1<sup>st</sup> year students by answering questions, offering advice, and recommending resources – academic and otherwise. The Department will schedule a lunch event early in the semester for mentors and mentees to become acquainted.

## *Teaching Assistant (TA) Opportunities for EHS Department-based Courses*

Any EHS student may request to be a TA in an EHS Departmental course by contacting [Nina Kulacki](#) a few months prior to the start of the fall or spring semester to discuss TA opportunities and to confirm eligibility. *Please note: Students in their first semester are **not** eligible to TA.*

### *Requirements:*

- TA's must be registered as full-time students
- TA's must participate in the appropriate CourseWorks training session(s)
- Priority is given to students who have already taken the course they wish to TA and received an A or A+.
- TA's must be able to devote up to 20 hours per week to the TA-ship. This may include, but is not limited to:
  - Time spent in class (students should be willing and able to sit in the course for the duration of the semester).
  - Time spent outside of class for: scheduled office hours, grading, and preparation of teaching materials (which might also include time prior to the semester in which the course is scheduled).
    - Note: All students must be available to hold office hours outside of the regular course meeting time if this is required for the course. Use of the EHS TA office space should be scheduled with Nina Kulacki.

### *Compensation:*

- TA compensation for the 2016-17 academic year is \$4,000 for a full TA position and \$2,000 for a ½ TA position.

### *To request a TA position:*

- Email Nina Kulacki with the details of the requested course and semester offering.
- Nina Kulacki will confirm all TA appointments via email as the semester approaches. At that time, students will be directed to the EHS Business Office to fill out the proper payroll documents.

### *Other TA opportunities in the School*

There are also School-wide TA opportunities available in the Core courses. These TA positions are managed by the Office of Educational Programs. All students will receive notification of these opportunities through School-wide emails. Please contact [Paul McCullough](#) for more information.

## **MPH IN ENVIRONMENTAL HEALTH SCIENCES**

The MPH Health degree in Environmental Health Sciences (EHS) is designed to prepare students for employment in settings concerned with environmental and occupational exposures to chemical and physical agents. Because the field of environmental health sciences is broad, the Department offers five specialty Certificates: Molecular Toxicology, Molecular Epidemiology, Environmental Health Policy, Climate and Health, and EHS Global Health. Students may select one of the EHS Certificates, or they are welcome to apply for Certificates in other departments. More information about Certificates offered in the School is listed [here](#). Students in this program must also complete a field or lab practicum. All of our MPH academic programs are offered full-time for a total of 2 years. A part-time option is available for this program. Students who wish to complete the program on a part-time basis should meet with [Nina Kulacki](#) to discuss this option.

# EHS MPH Degree Requirements

- Core curriculum (School-wide)
- EHS Departmental Core course requirements
- Certificate coursework (*based on selected Certificate*)
- EHS Departmental electives
- Practicum requirement
- Additional EHS program requirements
  - Casual Conversations attendance (*Year 1: Semester 1 and first half of Semester 2*)
  - Practicum experience presentation (*Year 2: Fall semester*)
- Capstone requirement

## ***Core Curriculum (School-wide)***

All students in EHS are required to take School-wide courses as part of an integrated curriculum. The Core curriculum consists of 6 broad areas of study that include: Foundations of Public Health; Determinants of Health; Public Health Interventions; Health Systems; Research Methods and Applications; and Global and Developmental Perspectives.

In addition to the integrated Core coursework, all Mailman students must take the Leadership Development course and the interdisciplinary “case-based” course called Integration of Science and Practice (ISP). For more information on these School requirements, use [this link](#).

## ***EHS Departmental Course Requirements***

All EHS students, regardless of Certificate selection, are required to take the following core classes associated with the field of Environmental Health Sciences:

### Spring Semester year 1

P8322 – Environmental Determinants of Human Health II

P8325 – Risk Assessment and Communication

P6360 – Analysis of Environmental Health Data

### Fall Semester year 2

P8312 – Fundamentals of Toxicology (*Note: Global Health students will substitute another course for this one*)

### Spring Semester year 2

P9300 – Capstone: Critical Thinking and Analysis in Environmental Health Sciences

## ***EHS Departmental Electives***

Each EHS Certificate lists departmental elective credits. These requirements can be fulfilled by taking any EHS course not already listed as a Departmental core course requirement.

## ***Practicum Requirement***

Master of Public Health students are required to complete a practical experience requirement (practicum). This requirement typically takes the form of a one-term practicum completed during the summer between the first and second year. However, some students request approval to fulfill this requirement during the school year. The range of completion hours must fall between 150 – 300 hours total. The practicum may take a variety of forms, depending on the student's area of interest: participation in an ongoing research or evaluation project, working with a government agency, or working in a community-based organization.

All MPH students must meet the following practical experience requirements in order to graduate:

- Obtaining approval from a faculty advisor prior to accepting a position
- Submission of the [Scope of Work \(SOW\) form online](#)
- Submission of the Practicum Completion form online
- Formal presentation of practicum experience to the Department (*this is scheduled for the Fall of year 2*).

*Note: EHS students in the Global Health Certificate complete their practicum with a 6 month internship abroad that spans the first summer through the fall of Year 2.*

### ***EHS Practicum Competencies***

The EHS practicum experience should meet *one or more* of the following competencies:

- Apply the principles of exposure assessment to evaluate human exposures to environmental and occupational hazards.
- Apply and synthesize content learned through coursework in environmental health sciences that can be applied to practice in a professional setting.
- Demonstrate an understanding of the complexities of the EHS field and how major stakeholders collaborate with the goal of informing public and private constituency groups of environmental outcomes.
- Involve a topic that is relevant to EHS such as exposure assessment, climate change, environmental policy or toxicology. They can include laboratory studies, field studies, data analysis or study design. The practicum can take place in academia, a government agency, private companies or non-government agencies.
- Identify biological mechanisms whereby environmental and/or occupational agents adversely affect human health.
- Identify factors that affect susceptibility to adverse human health effects of environmental and/or occupational agents.
- Recommend interventions for reducing human exposures to environmental and occupational hazards.

- Communicate effectively, in writing and orally, knowledge of environmental hazards to other professionals and the public, including effective risk communication.
- Knowledge within the area of Molecular Epidemiology, Toxicology, Occupational Health, Industrial Hygiene, Climate Change or Environmental Policy.

### ***Practicum experience poster presentation***

Each student is required to present a poster about their practicum at a session (date TBD in the Fall of Year 2). This session is an opportunity to share the details of each student's practicum and what they learned. This also serves as an opportunity for first year students to learn about the practicum experience. Faculty, staff, and students from EHS and other MSPH departments, as well as practicum supervisors, will be invited to attend this presentation.

### ***Certificate Coursework***

Please refer to [this site](#) for the official and most up-to-date coursework requirements for your selected Certificate.

### ***Additional EHS Program Requirements***

#### ***Attendance at Casual Conversation Seminars***

Every Wednesday from 11:30a – 1p, all first year students in EHS meet for Casual Conversations (I & II). This is a seminar/discussion function that offers students an opportunity to interact with faculty members and current students in EHS. Additionally, these meetings are used for training in professionalism, career development, and networking. Attendance is taken each week. *All first year students must attend at least 3 Casual Conversations per month. If it is necessary to miss a seminar, the student must email [Nina Kulacki](#) to alert her prior to that date.*

### ***EHS Capstone Course Requirement***

All EHS MPH students are required to take P9300: Capstone Course Critical Thinking & Analysis in EHS.

This course is taken in semester 4 (Year 2, Spring semester).

*\*\*The only exception to this Capstone requirement is for EHS GLOBAL CERTIFICATE students. Global students fulfill a practicum abroad and register for Global Research Master's Thesis I and II (P9350 & P9351) to fulfill their capstone and practicum (refer to Global Certificate Course*

*Guidelines).*

## ***Thesis (Optional)***

In addition to the required Capstone course, EHS students have the option of completing a thesis. It is critically important that students begin their thesis work as soon as possible. It is recommended that they identify a thesis project in the Spring of their first year and begin thesis work over the summer. Typically, the major work is accomplished in the Fall of year 2 with the final written thesis being completed in the Spring of year 2.

Students should be aware that, in addition to the Capstone requirement and other coursework in the Spring, students begin the process of applying for jobs and graduate programs which is time-consuming and should be taken into account when planning thesis work.

Students interested in registering to complete a Master's Thesis must meet with Dr. Freyer prior to registering for the Thesis course (*P9361 Research Master's Thesis I in EHS & P9362 Research Master's Thesis II in EHS*).

### *P9361 Research Master's Thesis I in Environmental Health Sciences*

Prerequisites: Permission Only – Students must meet with Dr. Freyer to obtain approval prior to registering for this course. Students then confirm approval via email and forward this to Nina Kulacki in order to register for the course. This also means that the student should meet with faculty prior to the start of the semester to solidify a general research topic and faculty advisor. The student first registers for this one-semester course (Master's Essay in Environmental Sciences I) to develop a proposal in consultation with a faculty supervisor. The Research Master's Essay topic includes generating primary data which can be based on laboratory studies, designing epidemiological studies or a new analysis of pre-existing data.

The following deadlines have been implemented to help confirm meetings between faculty Master's Essay advisor and student:

*Fall draft thesis deadline – end of October.*

This will be an outline of the thesis project with a timeline of completion of specific targets such as data collection and writing deadlines.

### *P9362 Research Master's Thesis II in Environmental Health Sciences*

*(Note: See Appendix A for the 2016 MPH Thesis Deadlines)*

Prerequisites: P9361 After the successful completion of P9361 Master's Essay in Environmental Health Sciences I, students register for P9362 Master's Essay in Environmental Health Sciences II to complete the thesis work and write the thesis under the guidance of a supervisor. The supervisor reviews the Master's Essay.

*Spring draft proposal deadline – beginning of mid-term break.*

The abstract and introduction should be completed and in final form. The methods section should be near final and results should be well along. A final complete thesis needs to be presented to your mentor two weeks before the end of the semester. You should be working with your mentor on your written thesis, throughout the semester.

Guideline for the written thesis is given in the table below.

<b>Section</b>	<b>Content</b>	<b>Pages</b>
Abstract	<ul style="list-style-type: none"> <li>• A hypothesis should be included in the abstract section that states the problem and results from the study</li> </ul>	1 – 2 pages
Table of Contents	<ul style="list-style-type: none"> <li>• Include major sections and subsections</li> </ul>	1 page
Introduction	<ul style="list-style-type: none"> <li>• A review of current relevant literature</li> </ul>	10 – 15 pages
Methods	<ul style="list-style-type: none"> <li>• A detailed description of methods used in the study</li> </ul>	5 – 8 pages
Results	<ul style="list-style-type: none"> <li>• This reveals relevant data generated from the study</li> </ul>	10 – 15 pages
Discussion	<ul style="list-style-type: none"> <li>• A discussion of how the data supports or contradicts the stated hypothesis and future directions</li> </ul>	5 – 10 pages

*P9360 Critical Literature Review Master's Essay in Environmental Health Sciences*

Prerequisites: Students must meet with Dr. Freyer to obtain approval prior to registering for this course. Students then confirm approval via email and forward this to the Associate Director of Academic Affairs in order to register for the course. The student must confirm a faculty supervisor before registering for this course. This is a rigorous self-directed research course completed in one semester. A critical literature review entails a critical analysis of the literature on a topic relevant to the field of Environmental Health Sciences. This includes a thorough review of multiple studies related to the field and a critical analysis of the data. The essay topic should explore inconsistencies or contradictions within a specific area of research.

Guidelines for completion of the master's essay are given below.

<b>Section</b>	<b>Content</b>	<b>Pages</b>
Abstract	<ul style="list-style-type: none"> <li>• State the problem or contradiction that exists in the literature</li> </ul>	1 – 2 pages
Table of Contents	<ul style="list-style-type: none"> <li>• Should include major sections and subsections</li> </ul>	1 page
Literature Review	<ul style="list-style-type: none"> <li>• Detailed description of data presented in relevant papers organized by which sides of the argument they support</li> </ul>	30 – 50 pages
Discussion	<ul style="list-style-type: none"> <li>• Present critical analysis of the papers and build argument for your conclusions</li> </ul>	5 – 10 pages
Conclusion	<ul style="list-style-type: none"> <li>• Based upon the critical analysis of the research, present your</li> </ul>	2 – 5 pages

	conclusions. What is the basis of why you support one side of the argument?	
References	<ul style="list-style-type: none"><li>• Complete references including titles</li></ul>	As needed

## **CERTIFICATE DECLARATION**

The Office of Educational Programs oversees the Certificate selection process.

The schedule for Certificate declaration is as follows:

<b>Topic or Action Item</b>	<b>Dates</b>	<b>Notes</b>
Certificate information meetings	Month of November	Students will receive email notifications about certificate information sessions/office hours
Emails about Certificate Declaration Process	Month of November	OEP will send emails to explain the overall process for certificate declaration
<i><b>Enrollment Period</b></i>	November 20 – December 4	There will only be one enrollment period for certificates

# MOLECULAR EPIDEMIOLOGY CERTIFICATE

## *Molecular Epidemiology Certificate Co-Directors:*

Dr. Frederica Perera  
Professor  
[fpp1@columbia.edu](mailto:fpp1@columbia.edu)

Dr. Julie Herbstman  
Assistant Professor  
[Jh2678@columbia.edu](mailto:Jh2678@columbia.edu)

## *Program Description*

What is the role of air pollutants in causing asthma? Which household pesticides increase a child's risk of neurodevelopmental disorders? How do exposures to environmental toxins damage DNA in ways that set the stage for cancer? Do environmental toxicants, nutritional factors, and social stress interact to increase risk? What about gene-environment interactions? Answering questions like these is the realm of molecular epidemiology, a fast-growing field that evolved out of the integration of epidemiology and molecular biology.

The Molecular Epidemiology Certificate teaches students this important discipline as a valuable tool in the identification of vulnerable populations at risk, assessment of risk, and prevention and treatment of disease. Capitalizing on the groundbreaking work done by faculty in this area, the program introduces students to the principles and practices in molecular epidemiology with examples from the current literature and from ongoing Mailman School studies being conducted at the local, state, national, and global level.

## *Learning Objectives*

Upon completion of the Program, students will be able to:

- Incorporate and apply knowledge of molecular epidemiology studies of disease causation;
- Interpret the results of molecular epidemiologic studies in terms of disease risk and prevention;
- Describe regulatory and other mechanisms for controlling environmental health risks and understand the application of molecular epidemiologic data to risk assessment;
- Apply molecular epidemiologic techniques to policy or clinical interventions;
- Track the efficacy of intervention using molecular epidemiology and biomarkers;
- Use biomarkers in determining exposure to environmental agents and risk related to those exposures;
- Understand the role of genetics in disease.

## ***Molecular Epidemiology Certificate Course Requirements***

For Molecular Epidemiology Certificate course requirements, please visit the [Molecular Epidemiology Certificate website](#).

# ENVIRONMENTAL HEALTH POLICY CERTIFICATE

## *EHS Policy Certificate Director:*

Dr. Darby Jack  
Assistant Professor  
[dj2183@columbia.edu](mailto:dj2183@columbia.edu)

## *Program Description*

The Environmental Health Policy Certificate provides rigorous training in both environmental health science and policy analysis and gives students a framework for working at the boundary between scientific research and environmental policy.

Public health professionals operate at the boundary between science and policy. This is particularly true in the domain of environmental health. The human health risks posed by environmental exposures are complex, poorly understood, and hotly contested. Societies around the world need leaders who are fluent in both environmental health sciences and in policy analysis.

The Environmental Health Policy Certificate aims to produce such leaders. What differentiates this program from many other environmental policy masters programs is the strong focus in scientific research, in addition to policy training. This combination provides skills needed in environmental health science and policy at the local, national, and global levels.

Our department is well positioned to train students in environmental health policy and to study how environmental exposures affect human biology. The key strength of the department is the exceptional creativity, productivity and collaborative nature of the faculty. For over 25 years, we have remained at the forefront of innovative environmental health research. These unmatched scientific resources sit in the middle of a university with extraordinary depth in public affairs. The Mailman School, and Columbia University more broadly, offers a rich array of courses in health policy, environmental policy, and environmental economics. Policy certificate students can take courses in other Mailman School departments such as Health Policy and Management and outside of Mailman, such as at Columbia's School of Public and International Affairs (SIPA).

## *Learning Objectives*

Upon completion of the Program, students will be able to:

- Understand the mechanisms of toxicity of environmental contamination and communicate them to the public;
- Describe the consequences of environmental contamination;

- Assess new scientific research linking environmental exposures to health outcomes;
- Describe core paradigms of environmental health policy, and comment on the strengths, weaknesses, and appropriate application of each;
- Describe steps that scientists can take to generate salient, credible and legitimate information that can cross the boundary from research to action;
- Formulate scientifically grounded policy proposals in response to new environmental health risks.

### ***Environmental Health Policy Certificate Requirements***

For Environmental Health Policy Certificate course requirements, please visit the [Environmental Health Policy Certificate website](#).

# TOXICOLOGY CERTIFICATE

## *Toxicology Certificate Director:*

Dr. Greg Freyer

Professor

[gaf1@columbia.edu](mailto:gaf1@columbia.edu)

## *Program Description*

Whether it's through air pollution, water pollution, hazardous waste, contaminated food and consumer goods, regardless of the precautions that individuals take, exposures to environmental toxins are inevitable. And the daily introduction of new chemicals into our environment only adds to the challenges that face environmental health scientists in their pursuit of understanding the long-term impact of environmental exposures on population health. In fact, researchers have estimated that a new chemical is introduced for industrial and consumer use every 9 seconds.

The Toxicology Certificate educates students on the biological mechanisms of toxic exposure, on recognizing and evaluating associated risks, and applying this knowledge to developing environmental health policy, implementing strategies and understanding how to better protect the health of individuals. The breadth of knowledge demanded by this complex field requires an interdisciplinary grounding in chemistry, biochemistry, biology, molecular biology, toxicology, environmental sciences, and medicine.

## *Learning Objectives*

Upon completion of the Program, students will be able to:

- Apply methods of chemistry, biochemistry, molecular biology and physiology to elucidate mechanisms of action of environmental chemicals in biologic systems.
- Analyze toxicologic interactions at the tissue, cellular and molecular levels on the basis of specific exposures and specific organ system effects.
- Quantify toxicologic interactions through toxicokinetic analysis; Incorporate biologic markers into toxicologic evaluations of human populations.
- Recognize, evaluate and control specific sources of toxic exposures, including air pollution, water pollution and hazardous waste.

## *Toxicology Certificate Course Requirements*

For Toxicology Certificate course requirements, please visit the [Toxicology Certificate website](#).

# CLIMATE AND HEALTH CERTIFICATE

## **EHS Climate & Health Certificate Director:**

Dr. Jeffrey Shaman  
Associate Professor  
jls106@columbia.edu

### ***Program Description***

Climate variability and change pose complex risks to our health. Dramatic examples can be found in the headlines: a powerful tropical storm sweeps in with such force that hundreds of thousands are left homeless and sanitation systems are destroyed. Less dramatic but equally troubling is the gradual impact of long-term change: warming trends, for example, that bring shifts in infectious disease transmission patterns and more frequent heat waves.

Designing public health interventions to address climate-related health issues like these has been hampered by a shortage of professionals possessing the ability to translate climate and health science into action. The Climate and Health Certificate aims to help fill that training gap.

This dynamic program - rare in schools of public health - will provide a new generation of interdisciplinary researchers and practitioners the tools needed to understand, anticipate, and prevent adverse health consequences from climate variability and change.

### ***Learning Objectives***

Students graduating with a certificate in Climate and Health will be able to:

- Apply the tools of epidemiology and risk assessment in analyzing health risks from climate change.
- Assess factors that enhance population vulnerability to health risks of climate change.
- Analyze how climate can be linked to health responses over different time scales.
- Target adaptation strategies by integrating knowledge on the linkages of climate change and health.
- Apply interdisciplinary approaches to the analysis of the linkages between climate change and health.
- Communicate the co-benefits for health of strategies directed at reducing greenhouse gas emissions.

## ***Climate and Health Certificate Course Requirements***

For Climate & Health Certificate course requirements, please visit the [Climate and Health Certificate website](#).

# EHS GLOBAL HEALTH CERTIFICATE

## *EHS Global Health Certificate Co-Directors:*

Dr. Darby Jack  
Assistant Professor  
[dj2183@columbia.edu](mailto:dj2183@columbia.edu)

## *Program Description*

The Global Health Certificate (GHT) is an interdisciplinary program at the Mailman School of Public Health (MSPH) for students from the departments of Epidemiology, Environmental Health Sciences, Health Policy and Management, Population and Family Health, and Sociomedical Sciences. The Certificate is intended to meet the needs of students who are interested in both the theory and practice of global health and who are committed to becoming practitioners within their areas of primary public health interest.

The program's interdisciplinary focus steeps students in environmental aspects of traditional global health priorities such as environmental exposures disproportionately associated with poverty, measurement of environmental contributors to neonatal and child morbidity in order to inform preventative strategies, environmental contributors to spread of infectious diseases, and waste management and water sanitation; while also addressing new priorities including urbanization, rising rates of chronic diseases and obesity, climate change, aging populations, and the health consequences of environmental toxins in situations of conflict. Students will be equipped to address health problems that transcend borders due to globalization and increasing migration. A six-month practicum experience working overseas enables students to apply classroom concepts in a real-world setting.

Graduates will attain primary expertise in environmental health sciences through the completion of the requirements of the departmental program. The Global Health Certificate core curriculum will enable students to apply their specialized public health skills to the global context. Finally, the Certificate's six-month overseas practicum provides students the opportunity to translate classroom skills into practice. The results of the practicum experience are submitted in the form of a Global Master's Essay (Capstone Paper). Each of these Certificate elements—coursework, practicum and Capstone Paper—is described next on the following pages.

## *Learning Objectives*

Upon completion of the Program, students will be able to:

- Improve the health of populations in developing and transitioning economies by making effective decisions guided by the findings of appropriately selected and interpreted research in environmental health sciences;

- Advance the health of these populations through the development of soundly assessed and appropriate environmental policies and programs;
- Communicate and collaborate effectively with individuals, communities, and institutions utilizing appropriate methods informed by the dynamics of diversity and power;
- Create and advocate for opportunities that empower individuals and communities to improve their own health.

### ***Certificate Requirements***

As with all Certificates in the Department, EHS Global Health students are required to take departmental courses as well as courses listed as Certificate requirements. Global Health Certificate students in EHS are also required to attend the Global Health Seminar that will meet in Spring of both Year 1 and Year 2.

### ***Global Master's Essay (Capstone Paper)***

All EHS Global Health Certificate students must complete a culminating assignment – the Capstone Paper. The content of this assignment is drawn from the practicum and the specialized knowledge acquired in GH and EHS courses. Students should register for P9350 Global Master's Essay I while abroad in Fall 2nd year and then for P9351 Global Master's Essay II in the final spring semester.

### ***P9350 - Global Master's Essay I***

During the fall semester of Year 2, while at their practicum site, students register for a one-semester, 1-point course, Global Master's Essay I, to develop their proposal in consultation with a faculty supervisor. This proposal will be submitted to the Departmental Certificate Advisor for approval. Because this is a two-semester process, the first semester involves writing and revising an outline draft reflecting new information encountered during the practicum experience. The initial outline is expected to be modified as a result of the experiences encountered and the literature reviewed as part of the practicum experience. The final outcome of this semester's work is a detailed outline of the proposed essay that is written during the second semester. It is not uncommon for the topic itself to be modified substantially as a result of the student's practicum experience. The essay is read and graded by their primary essay faculty advisor.

The essay should represent a literature review of a globally relevant Environmental Health Sciences topic related to the student's practicum experience, in which there are inconsistencies, controversies, and/or substantial debate regarding the underlying science and/or implications for global health practice. We expect that most students will opt for the critical literature review.

Alternatively, Global EHS students can propose a fresh analysis of data arising from their practicum work. Proposals for essays involving original data analysis should be discussed with the student's practicum sponsor, faculty advisor, and Departmental Certificate Director in order

to ensure sufficient guidance and appropriate permissions – including, in most instances, IRB approvals both from Columbia University and local partners – for utilizing the data. In the fall semester, students opting for the data analysis approach must submit:

- 1) Detailed description of the data to be analyzed
- 2) Power calculations
- 3) Analysis plan
- 4) Proof of IRB and other relevant approvals or a detailed timeline for obtaining them.

Students may also propose an essay that is tailored to their specific interests and practicum experience. Students who wish to propose a novel approach must obtain approval from the Departmental Certificate Director prior to the end of their 2<sup>nd</sup> semester.

***P9351 - Global Master's Essay II (2 points)***

After the successful completion of P9350 Global Master's I, students should register for P9351 Global Master's essay II to carry out the actual writing of the essay with the guidance of the faculty advisor. This is a graded course. All students will also be expected to present various elements of their thesis within the EHS Global Health Seminar.

*Guidelines for critical Literature Review*

A critical literature review is a critical analysis of the literature on a topic relevant to Environmental Health Sciences. For Global Certificate students, the topic should also have a global perspective. This includes an investigation of multiple studies related to the field and a critical analysis of the data. *The essay topic should explore inconsistencies or contradictions in a specific area of research.* This paper should contain an abstract (1 – 2 pages), table of contents, literature review (30 – 50 pages) and a discussion and conclusion section (total of 7 – 15 pages). There should be no less than 20 references.

This is an intensive self-directed research course completed in the final semester and should build upon the reading completed during the practicum experience.

<b>Section</b>	<b>Content</b>	<b>Pages</b>
Abstract	<ul style="list-style-type: none"> <li>• State the problem or contradiction that exists in the literature</li> </ul>	1 page
Table of Contents	<ul style="list-style-type: none"> <li>• Should include major sections and subsections</li> </ul>	1 page
Introduction	<ul style="list-style-type: none"> <li>• Frame the debate in the literature, linking, to the extent possible, to the practicum experience</li> </ul>	2 – 5 pages
Literature Review	<ul style="list-style-type: none"> <li>• Detailed description and assessment of evidence presented in relevant</li> </ul>	30 – 50 pages

	<p>papers organized by which sides of the argument they support</p> <ul style="list-style-type: none"> <li>• Assess the implications of the evidence for global health practice</li> </ul>	
Discussion	<ul style="list-style-type: none"> <li>• Present critical analysis of the papers</li> <li>• Build argument for your conclusions</li> </ul>	5 – 10 pages
Conclusion	<ul style="list-style-type: none"> <li>• Based upon the critical analysis of the research, present your conclusions. What is the basis of why you support one side of the argument?</li> </ul>	2 – 5 pages
References	<ul style="list-style-type: none"> <li>• Complete references including titles</li> </ul>	As needed

## **CERTIFICATES OUTSIDE OF EHS**

EHS Students that have selected a Certificate outside of the Department should become familiar with their respective Certificate Director. The student's primary advisor will always be in EHS. The Certificate Director is the primary contact for any Certificate-related questions. Information about all Certificates can be found at:

<http://www.mailman.columbia.edu/academics/degree-offerings/mph/full-time-mph/certificates>

## **TRANSFERRING TO EHS FROM ANOTHER MSPH DEPARTMENT**

For information on the School-wide policy on how to change Departments after Matriculation, please [refer to this link](#).

- Students who would like to transfer into the Department of EHS should complete the following steps:
  - Obtain the Request to Deviate from Academic Plan Form using the above link
  - Obtain signatures from advisor/current Department on the form
  - Submit a brief statement of intent to [Nina Kulacki](#)
  - Bring the form to Nina Kulacki (ARB Room 1112) for review and signature
  - Once the form is signed, take this to Lillian Morales in OSA for processing

# GRADUATION PROCEDURES

In order to receive the MPH degree, students must:

- Schedule a meeting with Nina Kulacki to review their transcript in detail
- Submit an [application found at this link](#).

Form submission deadlines are:

August 1 for October degrees  
December 1 for February degrees  
**February 1** for May degrees

The Mailman School of Public Health convenes one commencement ceremony annually. All graduates from that academic year are invited to participate in the May ceremony. However, only those students who have fully completed all degree requirements may march at graduation.

If a student submits an application for graduation but does not meet degree requirements in time, they cannot reapply for graduation until all requirements are fully completed and grades recorded. In this case, the student should request a meeting with Nina to review and confirm the plans for successful program completion.

## ALUMNI INFORMATION

### *Contact with the Department:*

Upon completion of the program, students should provide the following information to Nina Kulacki:

- Forwarding US mail address
- Forwarding (non-Columbia) email address
- Details of next position (if known)

### *Important information about your Columbia email address upon graduation:*

Upon graduation, email addresses are slated for termination. If students would like to continue using their Columbia email address after graduation, they should [submit a request using this link](#).

## APPENDIX A

### MPH Thesis Deadlines for Spring, 2017

Milestone	Student Submission Deadline (to Advisor)	Deadline for Advisor Feedback (to Student)
Outline	Friday, February 17, 2017	Wednesday, February 22, 2017
Introduction	Friday, February 24, 2017	Wednesday, March 01, 2017
Results / Data	Friday, March 10, 2017	Wednesday, March 22, 2017
Methods	Friday, March 24, 2017	Wednesday, March 29, 2017
Discussion / Abstract	Friday, March 31, 2017	Wednesday, April 05, 2017
Final Draft to 2nd Reader*	Friday, April 14, 2017	Wednesday, April 26, 2017
Final Paper to Advisor for Grade	Friday, April 28, 2017	Wednesday, May 10, 2017

\* All papers MUST have a second reader. This can be a faculty member in Mailman of someone you've worked with on this paper/your practicum. The final reader /final approval MUST come from your EHS advisor.

**Wednesday, May 10th is the final deadline for faculty to submit grades (via email) to Nina.**