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

Important resources:
- EHS Department website
- Official MSPH handbook

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

For a detailed academic calendar for 2021-22, 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 here.
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MPH In Environmental Health Sciences

The MPH program 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, the impact of climate change on human health, creating, implementing, and assessing environmental health policy, and the population health as it relates to the environment and other related settings.

For 2-year MPH students, the Department offers five specialty Certificates:

- Toxicology
- Molecular Epidemiology
- Environmental Health Policy
- Climate and Health
- EHS Global Health

Students are encouraged to select one of the Certificates offered in EHS. Students who elect to apply for Certificates in another department must schedule a meeting with Dr. Freyer to discuss.

All EHS MPH students must also complete a field or lab practicum. All of our MPH academic programs are offered full-time for a total of 2 years.
Advising and Administrative Resources

**Faculty Advisor**

Each student is assigned an EHS faculty advisor at the start of the program. 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. If students elect to complete a Thesis (note: for full-time MPH students, the **Thesis is optional**, but can be completed **in addition to** the required Capstone course.), students must contact their advisor to discuss the details prior to registering for the Master’s Essay course and they must meet the Thesis deadlines (see page).

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 Programs 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.

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.

**2nd Year MPH Peer Mentors**

All incoming EHS MPH students are assigned a 2nd year MPH student mentor from the EHS Department. Mentors are available to provide support and assistance to 1st year students by answering questions, offering advice, and recommending resources – academic and otherwise. EHS will host a lunch meeting each semester for peer mentors and mentees to have an opportunity to connect.
Teaching Assistant (TA) Opportunities for EHS Department-based Courses

Any EHS student may request to be a TA for an EHS course by contacting Nina Kulacki. Typically, spring TA assignments are made in the prior fall semester. Fall TA assignments are often made in the prior spring semester, although fall TA assignments often continue during the summer.

*Please note: Students in their first semester are NOT eligible to TA.*

**Requirements for consideration:**

- Confirm that you’re registered as a full-time student
- Participate in the assigned/needed CourseWorks/Canvas training session(s)
- 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 available 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 Education Space (also called TA) office space should be requested by sending an email to Brandy Coleman.

**Compensation:**

- TA compensation for the 2021-22 academic year is $4,000 for a full TA position and $2,000 for a ½ TA position.

**To be considered for an EHS TA position:**

- Respond to the call for applications – sent by Nina Kulacki with the details of the requested course and semester offering.
- Nina Kulacki will confirm all TA appointments via email. Students will then be directed to the EHS Business Office to fill out the proper payroll documents prior to the semester in which they will serve as a TA.

**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 and should reply to that request at that time.
EHS MPH Degree Requirements

1. Core curriculum (School-wide)
2. EHS Departmental Core course requirements
3. Certificate coursework (based on selected Certificate)
4. EHS Departmental electives
5. Practicum requirement
6. Required participation in EHS events
7. Capstone course requirement

Core Curriculum (School Wide)

For more information on the School Core, 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:

Semester 2
- P8322 Environmental Determinants of Human Health II (3 Cr)
- P6360 Analysis of Environmental Health Data (3 Cr)
- P6320 Fundamentals of Toxicology for Health-related Disciplines* (3 Cr)
  - Or (can take P8312 – see semester 3)
- P8321 Introduction to Data Science for Environmental Health – (1.5 Cr)

Semester 3
- P8312 Principles of Toxicology*
  - (Required for students in the Toxicology Certificate but other students can opt to take this instead of Fundamentals of Toxicology) (3 Cr)
- P8325 Risk Assessment and Communication (1.5 Cr)

Semester 4
- P9300 Capstone: Critical Thinking and Analysis in Environmental Health Sciences (3 Cr)

Any Semester:
- Any EHS course not in the Departmental Core (3 cr)

*Students take EITHER P6320 OR P8312 – but not both.

Certificate Coursework

Please refer to this site for the official and most up-to-date coursework requirements for your selected Certificate.
**EHS Departmental Electives**

All EHS Certificates list 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 is typically 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 completed hours must fall between 150 – 300 hours total. The practicum may take a variety of forms, depending on the student’s area of interest such as: participation in an ongoing research or evaluation project; working with a government agency; or working in a community-based organization. There are multiple sources from which to find practicum opportunities.

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

- Obtain 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 *(link to form is sent via email in Fall of year 2).*
- Formal presentation of practicum experience to the Department *(this takes place in Fall of year 2).*
- Submission of formal deliverable at the end of the practicum. *(This will be discussed with all students in future meetings so there is plenty of guidance on this.)*

**Note:** EHS students in the **Global Health Certificate** complete their practicum with a 3-month internship abroad that also takes place during the summer between year one and year two.

**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.

Attendance at Professional Development, Seminars, and Other Required Student Meetings

Every Wednesday, all first year master’s students in EHS meet for the Professional Development Series (both in Semesters 1 and 2). This seminar/discussion offers students an opportunity to interact with faculty members and current students in EHS. Additionally, these meetings are used for training in professional development, career development, and networking. Attendance is taken each week. **All first year students must attend at least 3 of these meetings per month.** If it is necessary to miss a seminar, the student must email Nina Kulacki prior to that date.

Required Meetings:

• All master’s student meetings
  o *Typically, once per semester*
• Casual Conversations attendance
  o *Year 1: Semester 1 and Semester 2*
• Practicum experience presentation
  o *Year 2: Fall Semester*
• EHS Speed Networking event
  o *Spring semester, both year 1 and year 2*
• EHS Alumni Panel
  o *Spring semester, both year 1 and year 2*

EHS Capstone Course Requirement

All 2-year and dual EHS MPH students are required to take P9300: Capstone Course Critical Thinking & Analysis in EHS in semester 4 (Year 2, Spring semester).

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. 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.

Planning:

In addition to the Capstone requirement and other coursework in the spring, students typically begin the process of applying for jobs and graduate programs. All of these activities combined are time-consuming and should be taken into account when planning a possible thesis, additional work and/or TA positions, etc.

Students interested in receiving official credits for their Master’s Thesis must meet with their advisor prior to registering for this. **Note: Not all students who complete a thesis are required to formally register for this, as it’s not a requirement of the program.**
### Guidelines and Expectations for the Written Thesis

<table>
<thead>
<tr>
<th>Section</th>
<th>Content</th>
<th>Pages</th>
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</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>• A hypothesis should be included in the abstract section that states the problem and results from the study</td>
<td>1 – 2 pages</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>• Include major sections and subsections</td>
<td>1 page</td>
</tr>
<tr>
<td>Introduction</td>
<td>• A review of current relevant literature</td>
<td>10 – 15 pages</td>
</tr>
<tr>
<td>Methods</td>
<td>• A detailed description of methods used in the study</td>
<td>5 – 8 pages</td>
</tr>
<tr>
<td>Results</td>
<td>• This reveals relevant data generated from the study</td>
<td>10 – 15 pages</td>
</tr>
<tr>
<td>Discussion</td>
<td>• A discussion of how the data supports or contradicts the stated hypothesis and future directions</td>
<td>5 – 10 pages</td>
</tr>
</tbody>
</table>

### Suggested MPH Thesis Timeline

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Student Submission Deadlines (to Advisor)</th>
<th>Deadlines for Advisor Feedback (to Student)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outline</td>
<td>Friday, February 11, 2022</td>
<td>Wednesday, February 16, 2022</td>
</tr>
<tr>
<td>Introduction</td>
<td>Friday, February 18, 2022</td>
<td>Wednesday, February 23, 2022</td>
</tr>
<tr>
<td>Results/ Data</td>
<td>Friday, March 4, 2022</td>
<td>Wednesday, March 9, 2022</td>
</tr>
<tr>
<td>Methods</td>
<td>Friday, March 18, 2022</td>
<td>Wednesday, March 23, 2022</td>
</tr>
<tr>
<td>Discussion/ Abstract</td>
<td>Friday, March 25, 2022</td>
<td>Wednesday, April 6, 2022</td>
</tr>
<tr>
<td>Final Draft to 2nd Reader*</td>
<td>Friday, April 15, 2022</td>
<td>Wednesday, April 27, 2022</td>
</tr>
<tr>
<td>Final Paper to Advisor for Grade</td>
<td>Friday, May 6, 2022</td>
<td>Wednesday, May 11, 2022</td>
</tr>
</tbody>
</table>
*All papers MUST have a second reader.* This can be a faculty member in Mailman or someone the student worked with on this paper/the practicum. *The final reader/final approval MUST come from the student’s EHS advisor.*

Friday, May 13th is the final deadline for faculty to submit grades (via email) to Nina Kulacki.

**Note:** This is the required timeline if a student registers for a grade. If the student opts to complete a thesis without registering, this is a suggested timeline for completion.

**SAMPLE Thesis Course registration details:**
*(Students must work with their faculty advisor to identify the best course of action for this process.)*

P9361 Research Master’s Thesis I in Environmental Health Sciences
P9362 Research Master's Thesis II in Environmental Health Sciences

The following deadlines are associated with these courses for students to meet appropriate deadlines and for advisors to assign a grade (See next page for the 2021 MPH Thesis Deadlines):

- **P9361:** 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:** 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 compete 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.
CLIMATE AND HEALTH CERTIFICATE

EHS Climate & Health Certificate Director:
Dr. Jeffrey Shaman
Professor
jls106@cumc.columbia.edu

Program Description

Climate variability and change pose complex risks to human 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 disrupted. 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 the adverse health consequences of climate variability and change.

Learning Objectives

Upon completion of the program, students 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 Director:
Dr. Darby Jack
Associate Professor
dj2183@columbia.edu

Program Description

The Global Health Certificate (GHC) is an interdisciplinary program at the Mailman School of Public Health 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 three-month practicum experience working overseas enables students to apply classroom concepts in a real-world setting.

Students 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 three-month international 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
Global Health Certificate Requirements

For EHS Global Health Certificate course requirements, please visit the Global Health Certificate website. EHS GH students 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 GH 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, 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. 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.

This thesis 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 thesis topics involving original data analysis should be discussed with the student’s practicum sponsor, faculty advisor, and Departmental Certificate Director this will 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:

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

Students may also propose an thesis 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 before the end of their 2nd 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 during the EHS Global Health Seminar.

**Guidelines for critical Literature Review**

This is a critical analysis of the literature on a topic relevant to Environmental Health Sciences that has a global perspective. This includes an investigation of multiple studies related to the field and a critical analysis of the data. This is an intensive self-directed research course completed in the final semester and should build upon the reading completed during the practicum experience.

<table>
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<tr>
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<td>1 pages</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>• Include major sections and subsections</td>
<td>1 page</td>
</tr>
<tr>
<td>Introduction</td>
<td>• Frame the debate in the literature, linking, to the extent possible, to the practicum experience</td>
<td>2 – 5 pages</td>
</tr>
</tbody>
</table>
| Literature Review | • Detailed description and assessment of evidence presented in relevant papers organized by which sides of the argument they support  
                   | • Assess the implications of the evidence for global health practice    | 30 – 50 pages |
| Discussion        | • Present critical analysis of the papers                                | 5 – 10 pages |
|                    | • Build argument for your conclusions                                   |         |
| Conclusion        | • Based upon the critical analysis of the research, present your conclusions. What is the basis of why you support one side of the argument? | 2 – 5 pages |
| References        | • Complete references                                                   | 20 pages |

**Global Health Certificate Course Requirements**

For Global Health Certificate course requirements, please visit the Global Health Certificate website.
ENVIRONMENTAL HEALTH POLICY CERTIFICATE

EHS Policy Certificate Director:
Dr. Darby Jack
Associate Professor
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 relationship is significant 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.

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, state, 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. For over 25 years, we have remained at the forefront of innovative environmental health research thanks to the exceptional creativity, productivity, and collaborative nature of our faculty. The Mailman School 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 such 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.
Molecular Epidemiology Certificate

Molecular Epidemiology Certificate Director:
Dr. Julie Herbstman
Associate Professor
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.
TOXICOLOGY CERTIFICATE

Toxicology Certificate Director:
Dr. Greg Freyer
Professor
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. 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.
Graduation Procedures

To receive the MPH degree, students must:

- Send final course and program details to Nina Kulacki for review (a meeting might also be requested to discuss this).
- Submit a graduation application using the link that is directly emailed to them from OSA in the Spring semester.

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 walk at graduation.

If a student applies 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, we request that students provide the following information to Nina Kulacki (typically requested via a survey/form):

- Forwarding US mailing 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.