

# GRADUATE TRAINING PROGRAMS IN CLINICAL INVESTIGATION, MHS

## Graduate Training Programs in Clinical Investigation, MHS

The MHS degree (<https://publichealth.jhu.edu/academics/mhs-graduate-training-programs-in-clinical-investigation/>) is a nine-month, full-time training program for physicians or other healthcare professionals with an advanced medical degree who desire rigorous training in patient-oriented research. This degree is appropriate for Johns Hopkins Medical Institution (JHMI) junior faculty or post-doctoral clinical fellows who cannot accommodate the three-year PhD commitment due to departmental constraints or other issues. It is also appropriate for professionals who do not hold an academic appointment within JHMI and for medical students who desire intensive training in clinical investigation.

Thesis research is not required.

## Requirements for completion of the MHS Degree

Course location and modality is found on the BSPH website (<https://publichealth.jhu.edu/courses/>).

The MHS degree is a non-research requiring degree that is awarded to students who specifically apply for this non-research track and fulfill the following requirements:

- 70 credits of coursework (53 credits of required foundational coursework + 17 credits of pathway-specific elective courses)
- Must earn a C or better in all required courses and maintain a minimum 2.75 GPA
- MHS capstone experience - a grant identical in structure to an NIH K grant
- Comprehensive examination at the end of the academic year

MHS students must commit to a nine-month, full-time pursuit of completing the coursework so the benefits begin to accrue in clinical research activities.

When the coursework requirements are completed satisfactorily and the comprehensive exam has been passed, the program will recommend approval of the MHS degree.

## MHS Capstone Experience

This is a grant identical in structure to an NIH K grant- a mentored career development award consisting of the standard NIH grant sections (specific aims, significance, innovation, and approach) in addition to the 'candidate section.' Students participate in and are graded on their final submission during a mock study section (again, designed to simulate a standard NIH study section). Each grant is assigned 4 reviewers (2 student reviewers and 2 instructors) and grades are based on the comments and scores of the reviewers.

The grant-writing course is a two-term course. All students are given the detailed instructions available for K awards at the beginning of the course

(these are summarized here (<https://grants.nih.gov/grants/how-to-apply-application-guide.html>) and the instructions for K awards here (<https://grants.nih.gov/grants/how-to-apply-application-guide/forms-g/career-forms-g.pdf>) with a particular focus on pages K-81 to K-98, which provide detailed instructions on how to fill out each of the grant sections). Over the 16 weeks, each section of the grant for each student is reviewed by 3 reviewers (2 other students and a faculty member), and the students are provided real-time verbal and written feedback about that section that allows them to modify it for the subsequent class. This iterative process allows students to develop their grants using a structured approach and to utilize the skills they acquired in biostatistics, epidemiology, and biomedical ethics. It also affords students the opportunity to enhance their skills in critiquing the validity of scientific data and debating scientific principles using a professional and constructive approach. The course culminates in a mock NIH study section as described above.

## Comprehensive Examination

Taken after successfully completing the core coursework. It is a 4-hour, in-person, open-notes exam, distributed at the end of the 4<sup>th</sup> term.

## Foundational GTPCI Courses (required coursework)

Completion of Introduction to Online Learning (<https://courseplus.jhsph.edu/core/index.cfm/go/course.home/cid/90/>) is required prior to beginning 1st term.

According to the requirements of the Council on Education for Public Health (CEPH) (<https://e-catalogue.jhu.edu/public-health/ceph-requirements/>), all BSPH degree students must be grounded in foundational public health knowledge. The courses below meet these requirements: 552.601, 552.603, 552.607, 552.608, 552.609, 552.610, 552.611, 552.612.

These foundational courses below are required, and equal 53 credits. To reach 70 credits, pathway-specific electives must be chosen. For curriculum details of pathway-specific courses, please email [BSPH.gtpci@jhu.edu](mailto:BSPH.gtpci@jhu.edu).

Code	Title	Credits
PH.390.750	Introduction to Clinical Research (Optional in Summer prior to matriculation)	2
PH.552.601	Foundational Principles of Public Health	0.5
PH.552.603	The Role of Qualitative Methods and Science in Describing and Assessing a Population's Health	0.5
PH.552.607	Essentials of Environmental Health	0.5
PH.552.608	Biologic, Genetic and Infectious Bases of Human Disease	0.5
PH.552.609	Psychological and Behavioral Factors That Affect A Population's Health	0.5
PH.552.610	The Social Determinants of Health	0.5
PH.552.611	Globalization and Population Health	0.5
PH.552.612	Essentials of One Health	0.5
PH.550.600	Living Science Ethics - Responsible Conduct of Research	1
PH.550.860	Academic & Research Ethics at JHSPH	
PH.390.751	Seminars in Clinical Investigation	2
PH.390.752	Seminars in Clinical Investigation II	2
PH.390.710	Biomedical Writing I	2

PH.390.673	Emerging Ethical and Regulatory Issues in Clinical Research (Emerging Ethical and Regulatory Issues in Clinical Research)	3
PH.390.711	Biomedical Writing II	2
PH.390.721	Grant Writing and Scientific Presentation Skills I	2
PH.390.722	Grant Writing and Scientific Presentation Skills II	4
PH.140.621	Statistical Methods in Public Health I (or 140.651)	4
PH.140.622	Statistical Methods in Public Health II (or 140.652)	4
PH.140.623	Statistical Methods in Public Health III (or 140.653)	4
PH.140.624	Statistical Methods in Public Health IV (or 140.654)	4
PH.340.751	Epidemiologic Methods 1	5
PH.340.752	Epidemiologic Methods 2	5
PH.340.753	Epidemiologic Methods 3	5
Biostatistics 140.650 series is acceptable alternate to Biostatistics 140.620 series		

In addition to the Schoolwide policies (<https://e-catalogue.jhu.edu/public-health/policies/>), current students can view all GTPCI MHS program policies in the GTPCI Student Handbook (<https://publichealth.jhu.edu/academics/academic-program-finder/graduate-training-programs-in-clinical-investigation/degree-programs/>).

**Upon successful completion of the Master of Health Science degree, students will have mastered the following competencies:**

- Generate and present valid research questions that address topics of public health importance.
- Recognize assumptions inherent in a particular statistical model and the corresponding limitations of the statistical method.
- Appraise scientific data for bias, confounding, and other sources of error.
- Recognize basic principles of data science including artificial intelligence and machine learning and basic principles of health services research.
- Characterize the fundamentals of informed consent from the ethical, legal, and regulatory perspectives and apply ethical and regulatory principles to research proposals.

According to the requirements of the Council on Education for Public Health (CEPH), all BSPH degree students must be grounded in foundational public health knowledge. Please view the list of specific CEPH requirements by degree type (<https://e-catalogue.jhu.edu/public-health/ceph-requirements/>).