

# MOLECULAR MICROBIOLOGY & IMMUNOLOGY, SCM

## Introduction

The goal of the ScM program in MMI (<https://publichealth.jhu.edu/academics/scm-dept-of-molecular-microbiology-and-immunology/>) is to provide a solid foundation in the biomedical sciences for a select group of students interested in addressing outstanding issues underlying infectious and immunologic diseases of public health importance. It aims to equip students with a diversity of disciplinary concepts and methodological tools to solve specific disease-related problems. This holistic approach requires a common core of knowledge of the population, clinical, cellular and molecular aspects of disease. ScM training is provided through coursework, laboratory research, and participation in other Department activities. Successful completion of a Departmental Comprehensive Examination is required of all ScM students.

## The ScM in MMI

The Department offers the Master of Science (ScM) program for students who wish to obtain, in addition to coursework, rigorous training in laboratory research. The ScM program includes most elements of the MHS program combined with an additional laboratory component. Successful completion of a Departmental Comprehensive Exam is required of all ScM students.

**Educational Objectives:** Key educational objectives for ScM students include: 1) develop knowledge through coursework in the areas of immunology and microbiology; 2) develop skills for the critical evaluation of scientific literature; 3) develop literature-based analytical and research skills; and 4) develop the ability to communicate scientific information orally and in writing. Additional educational objectives for ScM students include development of laboratory and analytical skills required to effectively conduct laboratory research.

## Academic Adviser

Each new student is assigned an MMI faculty member as their academic adviser. The academic adviser will assist the student in the selection of appropriate courses for the first year, act as the student's source of information concerning school and departmental policies and procedures, and help the student with problems they may encounter. A student who wishes to change their assigned academic adviser should contact the Student Coordinator who will consult the Graduate Program Committee (GPC.)

## ScM Thesis Mentors

Selection of a thesis adviser takes place after completion of the required laboratory rotation (see below). After consultation with the prospective thesis adviser, the student should submit a completed Thesis Adviser Selection Form (available on the MMI web portal or from the Student Coordinator), signed by the prospective adviser, to the departmental Student Coordinator for approval by the Department Chair. Requests for extra time to identify a thesis adviser must be submitted to the GPC. When appointed, a thesis adviser becomes the student's Primary Adviser.

Approval of thesis adviser selection will take into account the interests of the student, the faculty, and the availability of resources in the faculty member's laboratory (e.g., funds, space, faculty time). Every effort will be made to accommodate a student's request to work with a specific faculty

member for their thesis research. The Department, however, cannot guarantee that a student will be able to work in the laboratory that they select as a first choice. In the event that a student's first choice cannot be met, an alternative will be arranged in consultation with the student.

With the specific approval of the GPC, ScM students may conduct thesis research in laboratories outside of MMI (for example, in departments other than MMI or in the School of Medicine). Requests to conduct thesis research outside the department will be noted on a Thesis Adviser Form that includes acknowledgment from the proposed extra-departmental thesis adviser that MMI will provide no financial support for the student, a detailed research topic and timetable, and an agreement by a faculty member with a primary appointment in MMI (see Core Faculty list, page 2) to act as co-adviser. (Fieldwork conducted off-campus under the direction of an MMI faculty member does not need to be approved by the GPC.)

## Coursework

Masters students must register for a minimum of **16 credits** each term. (The maximum allowed per term by the School is 22 credits.) These credits include didactic courses, special studies, thesis research, seminars, etc. (A minimum of 64 credits are required by the School for a Master's degree.) Course requirements and suggestions for electives are summarized in the next section.

In core courses, Master's students must receive a 'C' or higher. A student who earns a grade below that threshold in a course listed as a core requirement must, at the next opportunity, make a second attempt to complete the core course by repeating the same course or by completing another course that has been approved by the GPC Chair. A grade below the threshold on the second attempt may be grounds for dismissal and must be reported to the School's Committee on Academic Standards. To remain in good academic standing, Master's students must maintain a minimum grade point average of 2.75. If a student's GPA falls below the requirement, the student will be placed on academic probation. School policy states that a Master's student cannot graduate with a GPA lower than 2.75.

## Program Requirements

### Degree Requirements

There are several requirements for the completion of degree programs: those set by the school, those set by the department, and those set by the thesis advisor (for ScM students). The degree requirements for all programs, established by the School are contained in Policy and Procedure Memoranda available at <https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/Pages/default.aspx>. Students will need to log in with their BSPH email username and password to have access to these pages.

The Departmental requirements for Molecular Microbiology and Immunology (MMI) are explained below. A student's thesis advisor generally will set requirements regarding the preparation for, and completion of, the thesis or dissertation project. A brief summary with an approximate timetable of the requirements of the school and of the department is included at the end of this section.

**Residency:** Minimum duration of two academic years in full-time residence (including the Summer Term between the first and second years). Completion, including the requirement of an Advisor-approved written thesis, is required within four calendar years of matriculation. Most students complete their degrees in two years.

## Minimum Credit and Grade Requirements

Master's students must register for a minimum of 16 credits each term. (The maximum a student can register for is 22 credits per term, but this is not recommended.) These credits include didactic courses, special studies, seminars, etc. A minimum of 64 credits are required by the School for a Master's degree. Course requirements and suggestions are summarized in the "ScM Curriculum" section. International students have additional requirements dictating how many courses can be taken online vs in-person, and they should contact OIS to confirm they meet current Visa requirements.

In core courses, Master's students must receive a 'C' or higher. A student who earns a grade below that threshold in a course listed as a core requirement must, at the next opportunity, make a second attempt to complete the core course by repeating the same course or by completing another course that has been approved by the Graduate Program Committee (GPC) Chair as a replacement. A grade below the threshold on the second attempt may be grounds for dismissal and must be reported to the School's Committee on Academic Standards. To remain in good academic standing, Master's students must maintain a minimum grade point average of 2.75. If a student's GPA falls below the requirement, the student will be placed on academic probation. School policy states that a Master's student cannot graduate with a GPA lower than 2.75.

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

## ScM Curriculum

Listed below are courses required of all ScM students, as well as a selection of elective courses that ScM students have found useful.

Course	Title	Credits
<b>First Term</b>		
<b>Summer</b>		
	Introduction to Online Learning: <a href="https://courseplus.jhu.edu/core/index.cfm/go/course.home/cid/90">https://courseplus.jhu.edu/core/index.cfm/go/course.home/cid/90</a> ( <a href="https://courseplus.jhu.edu/core/index.cfm/go/course.home/cid/90/">https://courseplus.jhu.edu/core/index.cfm/go/course.home/cid/90/</a> ) (noncredit)	0
<b>Required</b>		
PH.260.623	Fundamental Virology <sup>2</sup>	4
PH.260.653	Molecular Biology Literature <sup>3</sup>	2
PH.552.6XX	Cells-to-Society (p. 3)	Varies
PH.260.701	Anatomy of Scientific Error, Anatomy of Scientific Error - Meta-Science in Research Practice	3
PH.260.822	Seminars in Research in Molecular Microbiology and Immunology	1
PH.260.821	Research Forum in Molecular Microbiology and Immunology	1
PH.550.860	Academic & Research Ethics at BSPH (non-credit) <sup>5</sup>	0
<b>Suggested Electives</b>		
PH.260.700	How Do We Know? - Theory, History, and Practice of Science (R3)	
PH.260.707	Evidence-Based Teaching in the Biomedical and Health Sciences: Foundations (R3)	
PH.140.611	Statistical Reasoning in Public Health I	
PH.180.609	Principles of Environmental Health	
PH.550.630	Public Health Biology	

PH.220.601	Foundations of International Health	
PH.120.600	Biochemistry I: Protein Structure and Enzyme Catalysis <sup>4</sup>	
PH.120.602	Concepts of Molecular Biology <sup>4</sup>	
PH.260.636	Evolution of Infectious Disease	
<b>Credits</b>		<b>11</b>
<b>Second Term</b>		
<b>Required</b>		
PH.260.611	Principles of Immunology I <sup>1</sup>	4
PH.260.635	Biology of Parasitism <sup>2</sup>	5
PH.260.654	Current Literature in Microbial Immunity <sup>3</sup>	1
PH.552.6XX	Cells-to-Society (p. 3)	Varies
PH.260.822	Seminars in Research in Molecular Microbiology and Immunology	1
PH.260.821	Research Forum in Molecular Microbiology and Immunology	1
<b>Suggested Electives</b>		
PH.260.709	Evidence-Based Mentoring	3
PH.260.710	Communication Practice for Health Science Professionals (R3)	
PH.340.627	Epidemiology of Infectious Diseases	
PH.223.662	Vaccine Development and Application	
PH.183.631	Fundamentals of Human Physiology	
PH.140.612	Statistical Reasoning in Public Health II	
PH.120.601	Biochemistry II: Major Metabolic Pathways	
PH.180.610	Applied Environmental Health Practice	
PH.380.642	Child Health and Development	
<b>Credits</b>		<b>15</b>
<b>Third Term</b>		
<b>Required</b>		
PH.260.627	Pathogenesis of Bacterial Infections <sup>2</sup>	4
PH.260.650	Vector Biology and Vector-Borne Diseases <sup>2</sup>	3
PH.260.855	Pandemics of the 20Th Century <sup>3</sup>	1
PH.552.6XX	Cells-to-Society (p. 3)	Varies
PH.260.822	Seminars in Research in Molecular Microbiology and Immunology	1
PH.260.821	Research Forum in Molecular Microbiology and Immunology	1
<b>Suggested Electives</b>		
PH.260.700	How Do We Know? - Theory, History, and Practice of Science (R3)	
PH.260.704	Critical Dissection of the Scientific Literature: Taking the Scalpel to Journal Articles (R3)	
PH.260.624	Advanced Virology	
PH.180.640	Molecular Epidemiology and Biomarkers in Public Health	
PH.260.656	Malariaology	
PH.260.700	How Do We Know? - Theory, History, and Practice of Science (R3)	
PH.340.612	Epidemiologic Basis for Tuberculosis Control	
PH.340.654	Epidemiology and Natural History of Human Viral Infections	

PH.140.615	Statistics for Laboratory Scientists I	
<b>Credits</b>		<b>10</b>
<b>Fourth Term</b>		
<b>Required</b>		
PH.260.657	Vector Biology and Disease Ecology Literature <sup>3</sup>	1
PH.260.822	Seminars in Research in Molecular Microbiology and Immunology	1
PH.260.821	Research Forum in Molecular Microbiology and Immunology	1
<b>Suggested Electives</b>		
PH.260.601	Vector-Borne Disease Control	
PH.260.701	Anatomy of Scientific Error, Anatomy of Scientific Error - Meta-Science in Research Practice (R3)	
PH.260.710	Communication Practice for Health Science Professionals (R3)	
PH.260.717	Graduate Immunology: the Immune Response	
PH.260.656	Malariology	
PH.183.631	Fundamentals of Human Physiology	
PH.340.618	Epidemiology: the Basics	
PH.340.651	Emerging Infections	
PH.340.653	Epidemiologic Inference in Outbreak Investigations	
PH.140.616	Statistics for Laboratory Scientists II	
<b>Credits</b>		<b>3</b>
<b>Total Credits</b>		<b>39</b>

<sup>1</sup> The required Immunology course for ScM students is Immunology, Infection, and Disease (PH.260.631 Immunology, Infection and Disease) offered in the 2nd term. While PH.260.611 Principles of Immunology I & PH.260.612 Principles of Immunology II are not recommended for ScM students, those who wish to substitute this two-term series for IID are required to gain permission from the course director Dr. Scott. Topics in Immunology I & II are only available to doctoral students.

<sup>2</sup> ScM students are required to take at least two of the following four core courses in the area of microbial pathogenesis:

- PH.260.623 Fundamental Virology
- PH.260.627 Pathogenesis of Bacterial Infections
- PH.260.650 Vector Biology and Vector-Borne Diseases
- PH.260.635 Biology of Parasitism

<sup>3</sup> At least one literature course is required. Selection made in consultation with the academic advisor.

<sup>4</sup> Students with little or no Molecular Biology or Biochemistry background are strongly encouraged to take at least one or both of these courses, offered by the Department of Biochemistry and Molecular Biology.

<sup>5</sup> As a School-wide requirement, all students must take Academic and Research Ethics in the first term of their enrollment (PH.550.860 Academic & Research Ethics at BSPH).

Health Knowledge Learning Objectives. It is important to emphasize that this is a School-level requirement of all degree programs.

The School's Committee on Academic Standards approved 12 online, 0.5 credit, mini-courses, graded S/U (satisfactory/unsatisfactory) that will cover each of the 12 Learning Objectives (see table below). Each of the mini-courses consists of 3-5, 30-40 minute presentations with an accompanying assessment. **Note:** Certain learning objectives can be fulfilled by taking an MMI course that covers this material instead of the mini-course. See notes in the table below.

Each of the C2S mini-courses will be offered multiple times starting in the summer term and extending through terms 1, 2, and 3. NOTE: In the 4<sup>th</sup> term, only C2S LO #12 will be offered. The 2022-2023 schedule is here: <https://publichealth.jhu.edu/academics/course-directory/schedule-of-cells-to-society-course-offerings> (<https://publichealth.jhu.edu/academics/course-directory/schedule-of-cells-to-society-course-offerings/>)

Please note that for the presentation of these mini-courses, each term has been split into an A section covering the first 4 weeks of the term and a B section that covers the second 4 weeks of the term.

**These 12 mini-courses must be completed by the end of the first academic year.**

Code	Title	Credits
PH.552.601	Foundational Principles of Public Health	0.5
PH.552.602	The Role of Quantitative Methods in Public Health (or take any of the following courses: 140.611-12 (term 1 and 2) or 140.615-16 (term 3 and 4) or 260.705 (term 3 or term 4))	0.5
PH.552.603	The Role of Qualitative Methods and Science in Describing and Assessing a Population's Health (or take 260.700 (term 1 or term 3))	0.5
PH.552.604	Causes and Trends in Morbidity and Mortality (or take 260.600 (summer, credit in term 1) or 260.844 (term 2 or term 4))	0.5
PH.552.605	The Science of Primary Secondary and Tertiary Prevention in Population Health	0.5
PH.552.606	The Critical Importance of Evidence in Advancing Public Health Knowledge (or take 260.700 (term 1 or term 3))	0.5
PH.552.607	Essentials of Environmental Health	0.5
PH.552.608	Biologic, Genetic and Infectious Bases of Human Disease (or take 260.600 in summer (credit in term 1))	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 (or take 260.844 (term 2 or term 4))	0.5
PH.552.611	Globalization and Population Health	0.5
PH.552.612	Essentials of One Health	0.5
<b>Total Credits</b>		<b>6</b>

### Additional Course Requirements for ScM Students

The School requires ScM students to complete 12 credits in formal courses outside of their own department, at least 6 of which are within the Bloomberg School of Public Health. These courses must be taken

### Cells-to-Society Requirements for All Degree Programs

The Council on Education for Public Health (CEPH) requires didactic coursework covering and assessing 12 CEPH-defined Introductory Public

during the first year. All 12 credits must be taken for a grade (Pass/Fail is not acceptable).

Required courses for all MMI graduate students are listed below.

Code	Title	Credits
PH.260.822	Seminars in Research in Molecular Microbiology and Immunology (all terms 2nd year)	1
PH.260.821	Research Forum in Molecular Microbiology and Immunology (all terms 2nd year)	1
PH.552.6XX	Cells-to-Society	

## Additional Course Information

Many university-wide courses can be used to fulfill specific requirements. Consult the catalogues of the various university divisions available for viewing online:

1. Bloomberg School of Public Health catalogue—see interdepartmental programs.
2. School of Medicine catalogue.
3. School of Arts and Sciences (Homewood Campus) catalogue.

## Winter and Summer Institute Courses

Tuition for these courses is charged separately by the registrar and is not covered by tuition paid during the academic year. An exception to this rule is taking Cells-to-Society courses or 550.630 *Public Health Biology* during the summer just prior to matriculation. In this case, these courses count toward Term 1 courses and credits and are covered by Term 1 tuition.

## Certificate Programs

There are several certificate programs offered by the School in specific areas of public health that have fewer course requirements than formal degree programs. Certificate programs are focused academic training programs designed to appeal to students seeking targeted education in a specific area of public health. Educational objectives, admission requirements, courses of study, and other information are provided for each certificate program and can be found at <https://publichealth.jhu.edu/academics/academic-programs/certificate-programs> (<https://publichealth.jhu.edu/academics/academic-programs/certificate-programs/>).

### R3 CERTIFICATE

The MMI-based R3 Center for Innovation in Science Education (R<sup>3</sup>ISE) is unique to the BSPH and aims to help students develop outstanding scientific thinking, analysis, and ethical decision-making, as well as professional skills for being role models in a wide range of science-based careers. R3 stands for Rigor, Reproducibility, and Responsibility, which are the cornerstones of good scientific inquiry. The MMI department offers the R3 Certificate the required and elective courses that center around the philosophical underpinnings of how science works from bench research to public health. Suggested R3 courses counting towards the certificate are indicated in the sample curriculum list above. The full R3 certificate completion requirements can be found here: <https://e-catalogue.jhu.edu/public-health/certificates/rigorreproducibilityandresponsibilityinscientificpractice/#newitemtext>.

### Tropical Medicine CERTIFICATE

This MMI-based certificate program is designed to provide training in tropical medicine and related public health issues through a multidisciplinary approach. It is also designed to prepare participants for working with current and emerging health problems in developing

countries and health problems of travelers. This program focuses broadly on issues of tropical health and on clinical tropical medicine. Toward the program's conclusion, students will have acquired a strong scientific basis for preventing, diagnosing, treating, and controlling tropical health problems. The full Tropical Medicine Certificate completion requirements can be found here: <https://e-catalogue.jhu.edu/public-health/certificates/tropical-medicine/>.

## Departmental Seminars

Departmental Seminar is held at 12:00 pm on Thursdays during the academic year, and **all students are required to attend**.

**Research Forum** is held at 12:00 pm on Mondays, and **all students are required to attend**.

## Laboratory Rotations

Rotation periods in a series of laboratories broaden a student's knowledge of laboratory techniques and skills, expose them to a variety of research areas, help them to select a laboratory for thesis research, provide the student an opportunity for interaction with several faculty members, and develop their ability to carry out a research project. During a laboratory rotation, a student is given a specific research problem of limited scope as his/her rotation exercise. This provides close interaction with the faculty member who supervises the rotation. It is not expected that a student necessarily completes the assigned project. At the end of the laboratory rotation term, the student will give a short oral presentation of his/her research project at the Research Forum in Molecular Microbiology and Immunology (see below). The rotation supervisor will submit a written evaluation of the student's performance to the Student Coordinator and will assign a grade of Pass or Fail. The form is available here: <https://my.jhsph.edu/sites/MMI/academic-forms/default.aspx>. Failing grades will be given for not having spent sufficient time in the laboratory or for unsatisfactory performance in the laboratory.

All ScM students must conduct at least one laboratory rotation before formal selection of a Thesis Adviser. The required rotation should be performed in the first rotation period and students should register for 260.851, Laboratory Rotation, in the second term. If desired, a second rotation may be performed; register again for 260.851 in the third term. See the table below for rotation period dates.

**The selection of laboratory or laboratories for rotation(s) is the responsibility of the student.** Students (with the assistance of their academic adviser) should identify potential laboratories for their rotations and consult with the faculty members in charge of these laboratories to arrange a rotation for a particular period. To assist students in identifying the research interests of the faculty, each faculty member has prepared a short summary of their ongoing projects, which can be found on their official school web pages: <https://publichealth.jhu.edu/departments/w-harry-feinstone-department-of-molecular-microbiology-and-immunology/people/faculty> (<https://publichealth.jhu.edu/departments/w-harry-feinstone-department-of-molecular-microbiology-and-immunology/people/faculty/>).

## 2023-2024 MMI Laboratory Rotation Schedule

Rotation Period	Dates	Register in Term
First	11/7/23 - 1/19/24	2
Second	1/22/24 - 3/15/24	3

ScM students must present reports after each laboratory rotation during weekly Departmental Research Forum. Presentation dates are assigned by the Course Director; rotation reports generally will be



scheduled 1 to 3 weeks after the completion of the rotation. In preparing a rotation report, students should keep in mind that it is most important to provide sufficient background and a sufficiently good explanation of the experimental rationale to make the rotation project and its objectives understandable to a diverse audience. As noted above, it is not required that students successfully complete their assigned rotation project, and many rotation reports cannot include firm conclusions. This is not a shortcoming if the presentation is clear, intelligible, and presents good analyses of any difficulties encountered. Once a lab is chosen, ScM students should register for thesis research credits in subsequent terms.

## ScM Comprehensive Examination

The ScM Comprehensive Examination constitutes a comprehensive inquiry into the student's grasp of the subject matter disciplines underlying MMI's main areas of research. The exam tests the student's understanding of scientific principles and methods, as well as substantive knowledge of major subjects and related areas. At approximately mid-year, first year ScM students are furnished with a list of about fifty questions from which the comprehensive exam will be drawn. The questions cover the five main areas of research in MMI: virology, bacteriology, parasitology, vector biology, and immunology. Students are encouraged to consider essay-format responses to these questions that demonstrate a firm grasp of the principles and relevant details addressed by the question. The exam will be administered at the end of the fourth term (**Thursday, May 25, 2023**) and will consist of two questions each from the five different MMI subject areas (Virology, Bacteriology, Vector Biology, Parasitology, and Immunology). Students are required to select one of the immunology questions and two other questions from two of the remaining topic areas. The exam is closed book and 3 hours in length. Student responses to the three exam questions are graded independently. Students who fail only one exam question must retake both questions from the original exam in that topic area and pass both questions, submitting written answers within two weeks for reassessment. Failing marks on two or more of the questions from the original exam results in retaking the exam with a new series of questions within a month. Failure of the exam twice may result in dismissal from the ScM program.

## ScM Thesis

The ScM thesis is the culminating product of a student's ScM studies and provides a permanent record of a student's intellectual contribution to the field. Unlike published papers that might result from the same work, the thesis requires and provides the opportunity for the student to creatively place their work in the broadest possible context, explore implications, and speculate on where the future of the field lies. Preparation of a thesis requires the greatest care both in thought and execution.

Most students find that writing a thesis requires much more time and effort than expected. For that reason, students are encouraged to write as they go, rather than wait for the final few weeks of their graduate careers. Students are also encouraged to work closely with their advisors on thesis organization, scope, and content. To facilitate these recommendations, the Department requires that a student follow the timetable below.

In addition to the primary reader (typically the thesis adviser), a secondary reader from a different laboratory must be chosen. Preparation Requirements for ScM theses, including additional instructions for the selection of thesis readers, details on the format of the final version of the thesis, procedures for thesis submission and approval, and deadlines are available from the School of Public Health Registrar's office and online at:

- <https://my.jhsph.edu/Offices/StudentAffairs/RecordsRegistration/MastersCandidateInformation/Pages/default.aspx>
- [https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic\\_Programs\\_10\\_Master\\_of\\_Science\\_Degree\\_071417.pdf](https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/PolicyProcedureMemoranda/Academic_Programs_10_Master_of_Science_Degree_071417.pdf)
- <https://www.library.jhu.edu/library-services/electronic-theses-dissertations/>

## Thesis Advisers

Faculty from outside MMI are eligible to supervise ScM students, but the research project must be within the scope of MMI's core research areas (immunology, bacteriology/microbiome, parasitology, virology, mycology, and/or vector biology). If a student chooses to join a lab outside of MMI, a co-adviser with a primary appointment in MMI is required. A student's thesis adviser generally will set requirements regarding the preparation for, and completion of, the thesis or dissertation project.

## Thesis Presentation

As part of the requirements of the ScM degree, each student must defend their completed thesis orally, late in the fourth term. The ScM thesis presentations for second year students will be held during the week of May 15-19, 2023.

## ScM Thesis Submission Deadlines

Date	Description
2/9/2024 (or earlier)	Students should meet with the student coordinator to go over transcripts and make sure all other degree requirements have been met.
3/08/2024	1st draft of thesis is due to thesis advisor.
3/15/2024 (or earlier)	Deadline for submitting the Thesis Readers and Final Examination form to the registrar
3/29/2024	Final draft of thesis is due to the secondary reader.
4/08/24	Secondary reader returns comments
4/15/24	Revisions to secondary reader (if needed)
5/01/2024 (or earlier)	Final deadline for submitting final copies of ScM thesis and all readers' letters. <b>Note: the thesis and letters should be submitted several days ahead of the final deadline to ensure their receipt and allow for processing.</b>

For a full list of program policies, please visit the ScM in MMI page where students can find our handbook.

## Academic Performance

### Academic Performance and Academic Probation

**Master's students are required to maintain a 2.75 grade point average or better.** Students who do not satisfy this and other academic requirements will be placed on Academic Probation by the Graduate Program Committee. Formal notification of Academic Probation generally will be accompanied by conditions that the student must fulfill in order to be returned to good academic standing. Students who fail to meet

those conditions may be dismissed from the program. Students cannot graduate with a GPA lower than 2.75

### Criteria for Dismissal from the ScM Program

Students may be dismissed from the MMI ScM program for reasons that include (but are not limited to) failure to satisfy conditions specified for removal from academic probation, failure to maintain an adequate GPA, failure of the Departmental Comprehensive Examination, failure to make satisfactory progress in thesis research, violations of academic or professional ethics, and failure to adhere to School and Departmental time limitations.

### Academic Ethics and Responsible Conduct of Research

MMI requires students to adhere rigorously to the School's standards for Academic Ethics and Responsible Conduct of Research in all activities. Violations of these standards are ground for dismissal from the program. Policies are detailed in Policy and Procedures Memoranda (PPMs) "Students 01 Academic Ethics" and (for research, including student research) "Faculty 07 Scientific Misconduct." A lecture introducing students to these topics will be presented during the first term. The time and location will be announced by the Student Coordinator. Attendance is required. Each student is also required to complete the online module on Academic and Research Ethics in their first term of enrollment (PH.550.860 Academic & Research Ethics at BSPH).

### Student Conduct Code

The fundamental purpose of the JHU's regulation of student conduct is to promote and protect the health, safety, welfare, property, and rights of all members of the University community, as well as to promote the orderly operation of the University and to safeguard its property and facilities. As members of the University community, students accept certain responsibilities that support the educational mission and create an environment in which all students are afforded the same opportunity to succeed academically and professionally. The JHU Student Conduct Code is outlined at: <https://studentaffairs.jhu.edu/policies-guidelines/student-code> (<https://studentaffairs.jhu.edu/policies-guidelines/student-code/>).

### Vacation/Holiday Policy

Graduate student holiday and vacation schedules traditionally have been flexible to accommodate the varied demands of individual research projects. Guidelines that reflect the Department's expectations are outlined below. These guidelines are not intended to eliminate flexibility in the scheduling of holidays and vacations and do not replace any conditions that might be imposed by fellowships/funding agencies. These guidelines also do not restrict legitimate academic or research activities conducted off-campus, such as attendance at scientific meetings and fieldwork. Students are generally entitled to the following holidays and vacation time:

- University holidays
- Spring break
- The period between the last day of 2nd term and the first day of winter intersession
- A fortnight vacation in the second and subsequent years as scheduled by arrangement with the adviser.

Graduate students are expected to be present during winter intersession and summer term or as required by their experimental protocols.

### Leave of Absence

A leave of absence (LOA) is for students who are forced to take a temporary break from their programs of study due to reasons beyond their control, such as illness, military service, financial exigency, or pressing personal reasons justifying an interruption of their graduate studies. A leave of absence is an officially recognized inactive student status that is entered on a student's academic record. LOA cannot be used by a student working on a thesis who has completed all other degree requirements. LOA is limited to one academic year except for military service.

Application for LOA must be made on a form available from the Student Coordinator. Students should discuss any potential LOA with their mentor and the Student Coordinator.

Please review the BSPH Schoolwide Policy (<https://e-catalogue.jhu.edu/public-health/policies/academic/academic-leave-absence/>).

### Employment as a Full-Time ScM Student

Full-time ScM students can be employed by faculty, including by their PI, to conduct part-time work **not directly related to their thesis**. Hours worked per week from all sources at JHU **must not exceed 20 hours**.

### Learning Outcomes

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/>).

Key educational objectives for ScM students include:

1. Graduates will be able to address current and future issues in public health related to the biology, ecology, molecular biology, biochemistry, and genetics of infectious diseases and their vectors.
2. Graduates will be able to address current and future issues in public health related to immunology, immunization, and pathogenesis of infectious diseases.
3. Graduates will be able to design and conduct experiments to acquire new knowledge of host-pathogen interactions.
4. Graduates will be able to format and organize scientific rationales, experimental data, and conclusions for presentation in written form and orally at venues such as scientific meetings, seminars, and journal clubs.
5. Graduates will be able to evaluate the ethical implications of scientific research and conduct scientific activities in an ethical and responsible manner.