Department of
Biochemistry, Microbiology and Immunology

Graduate Student Handbook

for the

Immunology and Microbiology Graduate Program

Revised January 2026

Table of Contents

Welcome from the Chair ..... **Error! Bookmark not defined.**
Purpose of the Handbook ..... **Error! Bookmark not defined.**
Mission Statement ..... **Error! Bookmark not defined.**
Graduate Programs ..... **Error! Bookmark not defined.**
Ph.D. Program Admission, Support and Common Features ..... **Error! Bookmark not defined.**
Admission Requirements ..... **Error! Bookmark not defined.**
Stipend and Benefits ..... **Error! Bookmark not defined.**
Satisfactory Progress ..... **Error! Bookmark not defined.**
Biosafety Training ..... **Error! Bookmark not defined.**
Immunology and Microbiology Ph.D. Program ..... **Error! Bookmark not defined.**
Year One ..... **Error! Bookmark not defined.**
Coursework ..... **Error! Bookmark not defined.**
Seminars ..... **Error! Bookmark not defined.**
Journal Club ..... **Error! Bookmark not defined.**
Research Rotations ..... **Error! Bookmark not defined.**
Oral Preliminary Examinations ..... **Error! Bookmark not defined.**
Choosing a Dissertation Advisor ..... **Error! Bookmark not defined.**
Plan of Work 7
Yearly Review and Individual Development Plan (IDP) ..... **Error! Bookmark not defined.**
Year Two 7
Medical Microbiology Labs 8
Seminars and Research Conferences 8
Ph.D. Candidacy 8
Qualifying Examination and Prospectus 8
Committee Member Selection 8
Written Qualifying Examination 8
Oral Qualifying Examination and Prospectus 9
Year Three and Onward 9
Committee Meetings 10
Ph.D. Dissertation, Final Defense, and Graduation 10
Writing the Dissertation 10
Public Defense 10
Graduation 11
Program of Study before 2025 12
Program of Study after 2025 13
Master of Science (M.S.) Program 14
Introductory Information 14
Overview of the Program 14
Admission Requirements 14
Tuition 14
Program of Study 14
Year One ..... **Error! Bookmark not defined.**4
Seminars and Journal Club ..... **Error! Bookmark not defined.**5
M.S. Thesis Committee and Committee Meetings 15
Yearly Review and the Individual Development Plan (IDP) 15
Year Two and Onward 15
M.S. Thesis Writing, Presentation, and Graduation 15
Writing the Thesis 16
Final Presentation 16
Graduation 16
Program of Study 17
Graduate Student Resources 17
Graduate Student Council 18
Overview 18
Student Invited Speaker 18
Parking 18

Welcome from the Chair

Dear prospective and current BMI students,
Thank you for your interest and participation in our graduate programs.
The Department of Biochemistry, Microbiology and Immunology serves our community, state, nation, and the world by performing world-class, cutting-edge research and providing education and training to graduate and medical students. Our larger goal is to improve the health and wellness of all members of our society.
We accomplish important parts of this goal by providing high quality classroom education that is coupled with opportunities to perform pioneering research. This will enable you to development into a scientific leader in the international biomedical arena.
Our students learn to work independently and collaboratively on multidisciplinary biomedical problems, in the context of high standards in research and scholarship. Our educational programs facilitate development of skills in areas including critical thinking, experimental design, application of classic and modern laboratory methods, development of new, cutting-edge research methods, and data analysis. You will learn to perform research in accordance with the highest ethical standards, and to present your data to a variety of audiences through written and oral formats.
We have a long tradition of students participating in and presenting data at national and international scientific conferences, and of ultimately assuming positions of significant responsibility in academia, industry, government and other scientific venues.
This Handbook provides a roadmap for navigation through your chosen graduate program. Your fellow students and the faculty will be there to fill in the gaps and to provide educational and personal support during the challenging periods that graduate school presents. Your time as a BMI student will be a period of tremendous personal and professional growth for you.
We are in this together, and your success is of ultimate importance to us. BMI students are the heart of our department.

Thank you, and best wishes for the journey,

Jeffrey H. Withey, Ph.D.
Professor and Chair
Department of Biochemistry, Microbiology and Immunology
Wayne State University School of Medicine

Purpose of the Handbook

As a student, you are here first-and-foremost for your education. The role of the Department and the Graduate School, from the viewpoint of the student, should be to foster individual, scientific, and professional growth. That being said, the intent of this handbook is to both guide and protect the students along the path to degree completion. While this guide may not answer all the questions students come upon, it should at least point in the right direction. It is important to note that all students are expected to be familiar with and adhere to the rules and regulations set forth by the Department and the University whether they are contained within these pages or not. I wish you the best of luck as you begin your journey. I know you'll do great.

William L. Close
Graduate Student President, 2015 – 2017

Mission Statement

The Department of Biochemistry, Microbiology and Immunology serves our community, state, nation, and the world by applying the principles of these disciplines to the improvement of health and wellness of all members of our society, including historically underserved populations.

We provide our diverse student body with high quality biomedical scientific education and opportunities to perform pioneering research that will enable their development into scientific leaders in the international biomedical arena.

The Department offers two separate graduate programs: (1) Immunology and Microbiology and (2) Biochemistry and Molecular Biology. Each program offers both Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

Graduates from the Immunology and Microbiology program will have broad understanding of the disciplines of Bacteriology, Immunology, and Virology, and their interrelationships, as well as a high level of expertise in the discipline in which their research is focused.

Learning Outcomes

Fundamental Principles
Students will understand the fundamental principles and be able to evaluate the scientific literature of their disciplines.

Research Skills
Students will be able to design, execute and interpret state-of-the-art experiments in their discipline.

Research Ethics
Students will be familiar with principles and guidelines for ethical conduct of biomedical research, and competent in their application to research in their discipline.

Scientific Communication
Students will develop skills in oral, graphic, and written communication of scientific ideas and data to audiences that range from scientifically naïve to specialists in the areas of the student's research.

Graduate Programs

Two graduate programs are offered by the Department of Biochemistry, Microbiology and Immunology: the Immunology and Microbiology Program and the Biochemistry and Molecular Biology Program. Each program offers both a Doctor of Philosophy (Ph.D.) track and a Master of Science (M.S.) track. Each program has distinct admission requirements, course offerings and graduation requirements. **This Handbook describes the Ph.D. and M.S programs in Immunology and Microbiology.** The Ph.D. and M.S programs in Biochemistry and Molecular Biology are described in a separate Handbook.

Graduate studies in the Department of Biochemistry, Microbiology and Immunology are overseen by the department's Graduate Education Committee. As of January 2018, the committee is chaired by Kevin Theis, Ph.D. The Immunology and Microbiology Ph.D. and M.S. programs are directed by the Immunology and Microbiology Graduate Officer, Raghavendar Thipparthi, Ph.D. The Graduate Officer is responsible for most administrative tasks associated with the program, including reviewing applications, admission decisions, advising first year students and insuring that students complete all Departmental and Graduate School degree requirements in a timely fashion.

Ph.D. Program Admission, Support and Common Features

Admission Requirements

Students interested in Immunology and Microbiology Graduate Programs should address questions concerning the programs to the Graduate Officer, Dr. Raghavendar Thipparthi (ai7741@wayne.edu). Entry into the Ph.D. program is offered once per year at the beginning of Fall semester. Applications should be submitted by February 1, although late applications may be considered. Applicants are required to have a B.S. degree with a minimum grade point average (GPA) of 3.0. Although many majors are accepted, preference will be given to those with degrees in Biology, Biochemistry, Physics, Chemistry, or other science-related coursework. Furthermore, applicants are required to submit three letters of references, and a statement of purpose. GRE is optional, but may help in the application decision. Foreign applicants, in addition to the items listed above, are required to submit a recent TOEFL or IELTS score. TOEFL/IELTS will be waived for students who received a degree from an accredited college/university in a country where English is the main language (for additional information, visit website: https://www.wayne.edu/admissions/international/english-proficiency/). Completed applications will be reviewed and highly ranked applicants will be contacted to arrange an interview, which may be conducted in person or by phone. Final admission decisions will be delivered to all applicants. Scores necessary for consideration of admission into the Ph.D. program are listed in Table 1.

Table 1. Ph.D. Admission Criteria

Item	Requirements[a]
GPA[1]	3.0
GRE	Optional, but recommended
TOEFL/ IELTS[b]	100 6.5

[a] Using a 4.0 scale (4.0 = A, 3.0 = B, 2.0 = C).

[b] International applicants may take either the TOEFL or IELTS tests.

Stipend and Benefits

All students accepted into the doctoral program will be provided with financial support. Presently, the parent Interdisciplinary Biomedical Sciences (IBS) program of the School of Medicine funds Graduate Research Assistantships (GRAs) for the first two years, providing stipend, tuition and full benefits including dental, medical, and vision insurance. In subsequent years, it is the responsibility of thesis advisors to cover the costs of their graduate student's GRA. Students may also be supported by intramural sources, such as Thomas C. Rumble Fellowships from the graduate school, or by other extramural awards and fellowships. If additional resources are required, students may file a Free Application for Federal Student Aid (FAFSA; https://studentaid.gov/) and apply for financial aid from the university.

For the current 2025/2026 academic year, Ph.D. students receive an annual stipend of $33,500 plus benefits. Tuition and fee costs, paid by the School of Medicine or research mentor, cover a total of 22 credit hours per year and are approximately $25,000 for in-state residents during the 2025/2026 academic year. Overall, the complete graduate student support package totals nearly $60,000 per Ph.D. student per year. The $ numbers are subject to change.

Satisfactory Progress

While the focus of attaining a graduate degree is on research and scientific development, formalized classroom instruction is required to lay a strong basis for the continued education. Grades lower than a B are considered unsatisfactory for

graduate work. **To remain in good standing, students must maintain a GPA of 3.0 (A = 4.0, B = 3.0, C = 2.0).** Students whose cumulative GPA is lower than 3.0 will be placed on academic probation by the Graduate School. **Additionally, grades of B or better are required in all letter-graded courses required by the Immunology/Microbiology program. For required courses that are graded Satisfactory/Unsatisfactory, a grade of Satisfactory is required.** Students who fail to maintain a GPA of 3.0 or whose grades in required courses do not meet program standards will be evaluated by the Graduate Officer and Department Graduate Committee to determine whether the student should continue in the program. During this review process, students are encouraged to explain any extenuating circumstances that contributed to their academic difficulties.

Biosafety Training

All the research labs in the Department are at Biosafety Level 2. Incoming students will need to learn all biosafety and laboratory safety rules prior to commencing their research rotations. During the orientation process, students are required to take laboratory safety and biosafety/bloodborne pathogen training classes offered by the Office of Environmental Health and Safety (OEHS). After the initial courses, all students and lab personnel are required to take yearly refresher modules. In addition, many laboratories also use radioisotopes or equipment that requires appropriate safety instruction and documentation before use due to added risks. For details regarding these and other classes, please visit the OEHS website (https://research.wayne.edu/oehs/training/lab).

Immunology and Microbiology Ph.D. Program

Year One

Coursework

The first year of the Ph.D. curriculum lays the foundation for the remainder of a student's graduate development. During Fall semester, students take IBS 7015 (Interdisciplinary Cell and Molecular Biology, 6 cr). In addition, students take IM 7040 (Fundamentals of Research, 2 cr), BMB 7890 (Journal Club, 1 cr), IM 7140 (Critical Thinking, 1 cr) and IM 7060 (Lab Rotations, 1 cr). During Winter semester, students take the Immunology and Microbiology fundamentals courses: IM 7010 (Fundamentals of Immunology), IM 7520 (Molecular Mechanisms of Bacterial Pathogenesis) and IM 7030 (Molecular Biology of Viruses), each of which are 2 credits. During Spring/Summer semester, students take IM 7450 or IM 7650 (Current Trends in Immunology or Current Trends in Host-Microbiome interactions). They also take an additional IBS elective (2 cr), BMB 7890 and IM 7060 (each 1 cr). A typical Ph.D. program of study is shown in Table 2.

Seminars

Immunology and Microbiology Ph.D. students are required to attend all departmental seminars and post-seminar lunch with the seminar speaker regardless of registration in BMB 7890.

Journal Club

Immunology and Microbiology Ph.D. students are required to participate in Journal Club (research data presentations) during Fall and Winter semesters, regardless of whether they are registered for BMB 7990 (Journal Club). During the first year, Ph.D. students present a paper of their choosing using a format similar to Department seminars. In subsequent years, students will instead present their own research and any data they may have. Once the talk is finished and questions have been answered, students' presentation styles are critiqued by faculty members and any areas that need improvement are discussed.

Research Rotations

During the first two semesters, new students will complete three, eight-week long rotations in labs of their choosing. The purpose of rotations are as follows: (i) to gain training and experience in lab research, (ii) to learn a variety of biochemical and molecular techniques, (iii) to expose the new students to other related disciplines, and most importantly, (iv) to find a laboratory mentor for dissertation research. **Therefore, choosing appropriate labs for rotations is one of the most important decisions a student will make in their first year.** Near the beginning of the fall semester, faculty members interested in taking on students will give an overview of their ongoing research in their laboratory. This information should include the focus of the research and a sampling of potential projects for the students to work on.

When deciding which laboratories to choose, there are several key considerations the student must take into account:

- Are the faculty members capable of taking on a student long term or only for a rotation?
- Does the research align with future career goals?
- Is the research interesting enough to work on for several years?
- Does the lab have enough funding to conduct experiments of an appropriate caliber?
- Is the faculty member a suitable mentor in terms of productivity?

During the selection process, it is highly recommended that new students consult with other graduate students and faculty in the department to discuss any concerns, questions, etc. that they may have about specific labs.

Once the laboratories of interest have been identified, the faculty member in charge of rotations will arrange a schedule of rotations with the first generally starting sometime in October. If the student already has an inclination to join a particular lab, requesting to have that rotation last will ease the transition from rotation into dissertation research. The first rotation will conclude at the end of the first semester. The remaining rotations will resume in January and carry on until the conclusion of the winter semester.

Oral Preliminary Examinations

The purpose of the oral preliminary exams is to demonstrate the student's ability to think critically by connecting concepts from various disciplines. **Successful completion of preliminary exams is required for continuance in the program.** Once the second semester classes and rotations have come to an end, students will be given approximately one month away from the laboratory to study for the oral exams, which generally take place the first week of June. Orals consist of three exams corresponding to each of the fundamentals courses taken during the winter semester (Immunology, Bacteriology, and Virology). The exams are one hour each and are spread out over the course of a week. During the exams, a panel of faculty proficient in each of these fields will probe the depths of the student's knowledge into each area. Any and all material taught during the courses is subject to questioning. Upon satisfactory performance, the student is now able to choose a lab for dissertation research. In the event that a student's performance on one or more exams is unsatisfactory, the student will be re-examined in those areas in August. If performance is still unsatisfactory, the Department Graduate Committee will determine whether the student should be assigned remedial work or be dismissed from the program.

Choosing a Dissertation Advisor

Selection of a dissertation advisor (research mentor) is a crucial step Ph.D. education and training. The selection should be based on the student's experiences during their research rotations and requires the agreement of the faculty member. If the choice of an advisor has not been made prior to the Preliminary Examination, it should be made shortly thereafter. The Graduate Officer should be informed of the decision.

Plan of Work

After selecting a research mentor, Ph.D. students must complete a Plan of Work form that describes how they plan to satisfy the coursework and credit requirements of their graduate program and the Graduate School. The Plan of Work form should be reviewed with and signed by their mentor and the program Graduate Officer, then submitted to their Graduate School for final approval. Changes to the Plan of Work require approval by the department.

The Plan of Work form is available here: https://gradschool.wayne.edu/students/phd/forms

Yearly Review and Individual Development Plan (IDP)

Each year, students must meet with the departmental Graduate Officer in a one-on-one meeting to discuss their progression towards their degree. During this time, the Graduate Officer will verify that all benchmarks have been met, all forms have been submitted, and any issues, personal or otherwise, are addressed. As part of this process, the student and Graduate Officer also review the student's Individual Development Plan (IDP). The purpose of the IDP is to help guide students to their degrees by identifying opportunities for growth based on the student's long-term career aspirations. The IDP is first completed by the student after the oral preliminary exams are completed and a dissertation advisor has been chosen. The IDP is reviewed and revised each year thereafter. Once filled out by the student, it must be discussed with their dissertation advisor before being electronically submitted. IDPs must be filed each fall to register for classes in the winter semester. All relevant information can be found at https://gradschool.wayne.edu/students/phd/forms.

Year Two

The goals of the second year are professional development, acclimating to the research environment, and achieving Ph.D. candidacy status by completing of the Qualifying Examination and Prospectus. Additionally, students are strongly encouraged to participate in teaching the medical microbiology labs as teaching assistants. Required coursework is minimal during year 2 but, if students wish, they may take other graduate courses while bearing in mind that research should take precedence.

Medical Microbiology Labs

Students who have passed the preliminary exams are given the option to be teaching assistants for the medical microbiology labs. Assisting with the labs is one of the few opportunities for teaching during graduate coursework and provides interactions with medical students. Working in conjunction with a faculty member, students are responsible for instructing second year medical students in clinical laboratory techniques and practices. In subsequent years, students will have the option to assist with teaching again, often taking on increased responsibilities within the labs.

Seminars and Journal Club

As described above (Year One), all Immunology and Microbiology Ph.D. students are required to attend departmental seminars and seminar lunches, and to participate in Journal Club regardless of registration in BMB 7890.

Ph.D. Candidacy

Achieving Ph.D. candidacy status is a major milestone in the Ph.D. process and is required for registration for the dissertation research series of courses (9991 through 9994). Achieving candidacy status requires filing of a Plan of Work and its approval by the Graduate School, establishment of a dissertation committee and completion of the Qualifying Examination.

Qualifying Examination and Prospectus

The Immunology and Microbiology Qualifying Examination has both written and oral components and is administered by the student's Dissertation Committee. **Students should complete the Qualifying Examination and submit their Prospectus by July 1 of their second year.**

Committee Member Selection

A student's Dissertation Committee is responsible for monitoring progress and providing insight as the student advances towards their degree. Typically, the committee is composed of the student's research mentor, who serves as committee chair, plus three other members, one of whom must be from outside of the Biochemistry, Microbiology and Immunology Department. In the event that the mentor does not hold a primary appointment in the Biochemistry, Microbiology and Immunology Department, a co-chair from that department will be required. If there are co-chairs, a total of 5 committee members are required. The Graduate Officer and the Graduate School must approve of the dissertation committee membership list. Graduate School requirements for Dissertation Committee composition are described here: https://gradschool.wayne.edu/students/phd/forms. There are several criteria for selecting the various members. Potential members of interest include other faculty from our department, faculty from other departments who have expertise and interests relevant to your proposal, clinicians, or statisticians. Committee members should collectively be able to contribute to the intellectual and professional development of the student, provide constructive criticism, and ensure that the student completes their degree in a timely manner.

Written Qualifying Examination

In the Immunology and Microbiology Program, the Written Qualifying Examination consists of a written review, in the form of a review article, of the scientific literature in the student's planned area of research. It is expected that this review will assist the student in understanding the history and background of the research area and help with design of his or her own research project. The review should be written following a similar outline as a grant proposal and should adhere to the following guidelines:

- Double-spaced, size 11, Arial font, 1" margins
- A minimum of 6 pages, exclusive of references
- Contain sections including but not limited to:
    - Title

- Abstract
- Body
- References (typically 15-20)

Once completed, the article should be submitted to the student's Dissertation Committee for approval. **Successful completion of the written qualifying exam is required for advancement to candidacy status.** Note that the Graduate School requires that the Oral Qualifying Examination (see below) be completed within 60 days of the Written Qualifying Examination.

Oral Qualifying Examination and Prospectus

Ph.D. students must complete a written Prospectus that describes the proposed dissertation research, including the scope of the problem, the materials or subjects to be used, the method and design of the study, and the projected results. This should be written in consultation with their research advisor and should be in the form of a grant proposal. The following guidelines should be adhered to:

- Double-spaced, size 11, Arial font, 1" margins (typically 15-20 pages)
- Contain sections including but not limited to:
  - Title
  - Specific Aims
  - Background (key sections of the Written Prospectus Examination may be included)
  - Research aims (rationale, experimental and statistical methods, expected results, potential pitfalls and alternative courses of action)
  - Preliminary data (with accompanying figures, data, etc.)
  - Expected conclusions
  - References (typically 20-30)

Once completed, the student should submit the Prospectus to their Dissertation Committee at least two weeks prior to their Oral Qualifying Examination.

The Oral Qualifying Examination is an oral presentation and defense of the Prospectus to the Dissertation Committee. Information contained within the written document is showcased to the committee members by way of a PowerPoint presentation. The purpose of the presentation is for the student to demonstrate adequate background knowledge, critical reasoning, and experimental aptitude. During the presentation, committee members will ask the student questions regarding the substance of their research proposal. When the presentation is finished, the student is asked to briefly leave the room while the committee members discuss the student's performance. The student is then invited back into the room and the committee addresses the strengths and weaknesses of the proposal as well as any concerns they may have. Finally, the committee informs the student whether satisfactory progress has been made, in which case the student has passed examination. **Continuation towards a degree is contingent on successful completion of the prospectus and oral qualifying exam.** Once the meeting has concluded, the prospectus and associated forms are submitted to the Graduate School office. Upon approval by the Graduate School, the student officially attains the status of Ph.D. candidacy.

Forms to be completed and submitted to graduate office (https://gradschool.wayne.edu/students/phd/forms):

- Prospectus and Record of Approval (with attached copy of student's prospectus)
- Committee Member Conflict of Interest
- Recommendation for Candidacy Status
- Plan of Work

Forms to be completed and submitted to departmental office (https://biochemmicroimmuno.med.wayne.edu/im-ms-phd-requirements):

- Immunology/Microbiology Graduate Student Committee Report

Year Three and Onward

From the third year on, the primary focus is for the student to conduct, present, and complete the research outlined in their prospectus. During this time, the only required coursework students sustain is attending departmental seminars and journal clubs.

Committee Meetings

Committee meetings are an important facet of the Ph.D. curriculum. They ensure that the student maintains a proper course to degree completion while also addressing any concerns related to experimental design, data interpretation, or personal development of the student. **Committee meetings must be held at approximately six month intervals until the student defends their dissertation.** The meetings unfold in a similar fashion to the qualifying examination where the student presents their data to the committee members who then provide guidance. It is important to note that these meetings are status updates, meaning only the minimum amount of necessary background information needs to be included. Throughout the presentation, the focus is on the progress the student has made towards answering the questions laid out in the prospectus. At the conclusion of the presentation, the student is once again asked to leave while the committee members confer. When the student has reentered the room, the committee relays all pertinent information to the student regarding their progress and whether the student has reached a point where they are ready to write and defend their dissertation.

Forms to be completed and submitted to departmental office (https://biochemmicroimmuno.med.wayne.edu/im-ms-phd-requirements):

- Immunology/Microbiology Graduate Student Committee Report (needed every meeting)

Ph.D. Dissertation, Final Defense, and Graduation

After all required coursework has been completed and the dissertation committee confirms that the student is ready to write and defend their dissertation, the student is then able to start planning for their Final Defense. The purpose of the dissertation and public defense is for the student to summarize their research endeavors and communicate what advancements they have made in their field of interest. The process includes writing of the dissertation and the public defense. **The Immunology and Microbiology Programs requires that students have at least one first author paper either submitted and in the review process or published at the time of the defense.** As time draws nearer to the anticipated Final Defense date, there are several deadlines that must be adhered to. Consult the Graduate School's Degree Completion Deadlines and Requirements web page for specific information: https://gradschool.wayne.edu/students/phd/deadlines One must apply for their degree during the semester of the defense https://wayne.edu/registrar/graduation

Writing the Dissertation

The dissertation manuscript is a comprehensive account of the doctoral student's research program. The document generally begins with an extensive section on background information related to the student's research. From here, the content should transition into a format similar to research publications where relevant background information is outlined, the data is presented, important findings are discussed, conclusions are made, limitations are acknowledged, and finally, potential future directions are identified. If needed, the work should be divided up amongst various chapters in a way that makes the information contained within more readily digested by the reader. The final chapter of the dissertation should draw conclusions from all of the student's work discussed in previous chapters to tie them all together into a cohesive package. **The student, their advisor, and their dissertation committee have the discretion to organize the content within the document in a manner that suits the material, however, it is important to note that the Graduate School has very specific formatting instructions which must be followed in their entirety or the dissertation will not be accepted and the student will not be allowed to graduate.** A copy of the guidelines is available at https://gradschool.wayne.edu/final_requirements/format_guidelines.pdf. After the manuscript is written, it should be distributed to the committee members for review at least three weeks prior to the date of the Final Defense. The mentor is responsible for conducting a plagiarism examination of the text with the SafeAssign tool. For more information regarding writing the dissertation, please see the Graduate School website (https://gradschool.wayne.edu/students/phd/requirements#defense).

Public Defense

The Public Defense is the capstone of a Ph.D. candidate's schooling. It is held in a similar fashion to committee meetings in which the student first presents their research and is followed by a discussion with the dissertation committee. One key difference is that the seminar is open to the public, so anyone is welcome to come. This is extremely important to keep in mind as it should influence the format and style of presentation. No matter which facet(s) of their research the student

selects, the talk needs to be less than one hour long, including adequate background information and a unified conclusion. After the student has finished, the public portion of the Defense ends with the audience asking any questions they might have related to the material presented. The room is then cleared leaving only the student and their committee. At this point, the committee will then have their opportunity to ask questions of the student's work and address any issues they had. The student will eventually be asked to leave the room while the committee members discuss the student's performance. Once the student is invited back in, the committee members will inform the student whether they are satisfied with their work and if they have decided to award a PhD. **All PhD students are required to defend their final dissertation through the BMI Department in Scott Hall, regardless of their research laboratory location, to ensure appropriate departmental representation.**

Graduation

Once the student has completed their degree, they are requested, but not required, to participate in the graduation ceremony held at the end of the semester. Caps and garments can be rented or purchased from the University Bookstore. Candidates who attend the ceremony will receive their diploma at that time, otherwise it will be mailed. Specific information regarding regalia rental and other ceremony specifics will be emailed to the student by the Commencement Office prior to the event. https://wayne.edu/commencement

Table 2. Ph.D. Program of Study Prior to Fall 2025

Year	Term	Course No.	Course Title	Credits
Year 1	Fall	IBS 7015*	Interdisciplinary Cell and Molecular Biology	6
		IM 7040*	Fundamentals of Research	2
		IM 7140* BMB 7890*	Critical Thinking Journal Club	1 1
		GS 0900*	Essential Research Practices: Responsible Conduct of Research	0
		☑ Select rotation laboratories, complete first rotation		
	Winter	Choose one*: IBS 7030 IBS 7050 IBS 7100	 Functional Genomics Biomedical Neurobiology Biomedical Neuropharmacology	2 credits each
		IM7010*/ IBS7 090	Fundamentals: Immunology	2
		IM 7030*	Molecular Biology of Viruses	2
		IM 7520*	Molecular Mechanisms of Bacterial Pathogenesis	2
		BMB 7890*	Journal Club	1
		IM 7060	Lab Rotations	1
		☑ Complete second and third laboratory rotations		
	Spring/Summer	IM 7450 or IM 7650	Current Trends in Immunology Current Trends in Host-Microbiome interactions	2
		☑ Hold oral preliminary exams, POW on file, select permanent research laboratory Research credits cannot exceed 30 total toward the degree		
Year 2	Fall[a]	BMB 7890*	Journal Club	1
		IM 7996	Research (or coursework)	6 – 9 (variable)
		IBS 7140	Foundations of Machine Learning and Artificial Intelligence with Python, Scikit-Learn, and PyTorch	3 (optional)
	Winter[a]	MGG 7091*	Scientific Communication II	2
		BMB 7890*	Journal Club	1
		IM 7996	Research (or coursework)	7 (variable)
	Spring/Summer	IM 7996	Research	2
		☑ Select committee members, written review submission & defend prospectus (first committee meeting)		
Year 3	Fall	IM 9991*	Doctoral Candidate Status I	7.5
		BMB 7890*	Journal Club	1
		IM 7996	Research	1.5
	Winter	IM 7996*	Research	1.5
		BMB 7890*	Journal Club	1
		IM 9992*	Doctoral Candidate Status II	7.5
		☑ Hold second committee meeting		
	Spring/Summer			
		IM 7996	Research	2
Year 4	Fall	IM 7996*	Research	1.5
		BMB 7890*	Journal Club	1
		IM 9993*	Doctoral Candidate Status III	7.5
		☑ Hold third committee meeting		
	Winter	IM 7996*	Research	1.5
		BMB 7890*	Journal Club	1
		IM 9994*	Doctoral Candidate Status IV	7.5
		☑ Hold fourth committee meeting		
	Spring/Summer	IM 7996	Research	2
Year 5[b]	Fall[b]			
		BMB 7890*	Journal Club	1
		IM 7996	Research	3
		IM 9995*	Doctoral Candidate Maintenance Status	0
		☑ Write and defend dissertation		

* Required courses for Ph.D. degree
See the University Bulletin for course descriptions https://bulletins.wayne.edu/graduate/school-medicine/programs/

[a] If desired, additional electives from inside or outside of the department may be taken at this time by reducing IM 7996 Research credits to accommodate credit level restrictions.

[b] If more time is required to finish, continue to register for IM 9995 until dissertation is completed.

Table 3. Ph.D. Program of Study Starting Fall 2025

Year	Term	Course No.	Course Title	Credits
Year 1	Fall	IBS 7015*	Interdisciplinary Cell and Molecular Biology	6
		IM 7040*	Fundamentals of Research	2
		IM 7140*	Critical Thinking	1
		BMB 7890*	Journal Club	1
		GS 0900*	Essential Research Practices: Responsible Conduct of Research	0
			BMI Seminar	0
		☑ Select rotation laboratories, complete first rotation		
	Winter	Choose one*: IBS 7030 IBS 7050 IBS 7100	Functional Genomics Biomedical Neurobiology Biomedical Neuropharmacology	2 credits each
		IM7010*/ IBS 7090	Fundamentals: Immunology	2
		IM 7030*	Molecular Biology of Viruses	2
		IM 7520*	Molecular Mechanisms of Bacterial Pathogenesis	2
		BMB 7890*	Journal Club	1
		IM 7060*	Lab Rotations	1
			BMI Seminar	0
		☑ Complete second and third laboratory rotations		
	Spring/Summer	IM 7450 IM 7650 IM 7996	Current Trends in Immunology Current Trends in Host-Microbiome interactions Research	2
		☑ Hold oral preliminary exams, POW on file, select permanent research laboratory Research credits cannot exceed 30 total toward the degree		
Year 2	Fall[a]	BMB 7890*	Journal Club	0
		IM 7996	Research (or coursework)	9 (variable)
		BMB 7140	Foundations of Machine Learning and Artificial Intelligence with Python, Scikit-Learn, and PyTorch (suggested coursework)	3 (optional)
			BMI Seminar	0
	Winter[a]	MGG 7091*	Scientific Communication II	2
		BMB 7890*	Journal Club	0
		IM 7996	Research (or coursework)	7 (variable)
		BMB 7141	Computational Modeling of Cellular Metabolism (suggested)	3 (optional)
			BMI Seminar	0
	Spring/Summer	IM 7450 or IM 7650 or IM 7996	Current Trends in Immunology Current Trends in Host-Microbiome interactions Research	2
		☑ Select committee members, written review submission & defend prospectus (first committee meeting)		
Year 3	Fall	IM 9991*	Doctoral Candidate Status I	9
		BMB 7890*	Journal Club	0
			BMI Seminar	0
	Winter	IM 9992*	Doctoral Candidate Status II	9
		BMB 7890*	Journal Club	0
			BMI Seminar	0
		☑ Hold second committee meeting		
	Spring/Summer	IM *9995	Doctoral Candidate Maintenance Status	2
Year 4	Fall	IM *9995	Doctoral Candidate Maintenance Status	0
		BMB 7890*	Journal Club	0
			BMI Seminar	0
		☑ Hold third committee meeting		
	Winter	IM 9995*	Doctoral Candidate Maintenance Status	0
		BMB 7890*	Journal Club	0
			BMI Seminar	0
		☑ Hold fourth committee meeting		
	Spring/Summer	IM 7996	Research	2
Year 5[b]	Fall[b]	IM 9995*	Doctoral Candidate Maintenance Status	0
		BMB 7890*	Journal Club	0
			BMI Seminar	0
		☑ Write and defend dissertation		

* Required courses for Ph.D. degree. Journal Club and Seminar attendance is required for degree completion.
See the University Bulletin for course descriptions https://bulletins.wayne.edu/graduate/school-medicine/programs/

[b] If desired, additional electives from inside or outside of the department may be taken at this time by reducing IM 7996 Research credits to accommodate credit level restrictions.

Master of Science (M.S.) Program

Introductory Information

Overview of the Program

The M.S. degree in Immunology and Microbiology requires 30 graduate credits and a written thesis based on the successful completion of an original research project. The program typically takes two years to complete. Due to the accelerated time frame required to finish an M.S. degree, students will need to think critically and have a clear goal in mind. Throughout the process, students will experience various disciplines while honing their individual, professional, and scientific acuity.

Admission Requirements

Entry into the M.S. program is offered once per year at the beginning of September. A B.S. degree with a minimum GPA of 2.75 is required. Preference will be given to applicants with a strong background in Biology, Biochemistry, Physics and Chemistry or other related science discipline. Furthermore, applicants are required to submit three letters of references, and a personal statement explaining the rationale for applying to the program. GRE is optional, but may help in the application decision. International applicants are also required to submit either their TOEFL or IELTS scores showing English proficiency (see Ph.D. Admission Requirements section for more information). Well qualified candidates will then be asked to conduct an interview either in person or by phone. Upon review, the graduate committee will submit their recommendations for admission and applicants will be notified of their decision. Minimum requirements for admission into the M.S. program are listed in Table 4. It should be noted that space in the program is limited and not all applicants meeting the minimum requirements can be admitted.

Table 4. M.S. Admission Criteria

Item	Requirements[a]
GPA[b]	2.75
GRE	Optional, but recommended
TOEFL/ IELTS[c]	100 6.5

[a] Listed scores are the minimum necessary for application consideration
[b] Using a 4.0 scale (4.0 = A, 3.0 = B, 2.0 = C).
[c] International applicants may take either the TOEFL or IELTS tests.

Tuition

Currently, the Department of Biochemistry, Microbiology and Immunology does not offer financial assistance to students pursuing an M.S. degree. Students are encouraged to apply for various grants and awards, both inside and outside of the University, to help reduce their cost towards degree. If needed, students may file a FAFSA (https://studentaid.gov/) and apply for financial aid through the University to help finance their degree. Some students also elect to maintain a job outside of schooling to offset living expenses and tuition costs.

Program of Study

A minimum of 30 credit hours are required for M.S. degree completion of which 14 credits must be from research. The first year focuses on classroom instruction and lab acclimatization. From then on, the attention shifts to conducting thoughtful and thorough research in the laboratory and field of their choice. When students are ready to graduate, they are required to submit a written thesis and present a public seminar regarding their research carried out in pursuit of their degree. A typical M.S. plan of work is listed in Table 5. **Note: For those students with outside obligations, jobs, etc., the time to degree can be adjusted as needed if a two-year plan of work is not feasible.**

Year One

M.S. students entering the program in their fall semester should enroll for a total of 8 credit hours. These courses provide general background information for the theoretical and practical aspects of working in a research lab and operating in the scientific community. During this time, students should choose and carry out up to three laboratory rotations to find one suitable for thesis research. The second semester coursework includes department specific lectures designed to broaden the student's knowledge in the fields of immunology and microbiology. At the beginning of the winter semester, students select which of their rotation labs they would like to pursue their M.S. work in and they begin conducting research. Lastly, the thesis committee is chosen and the year concludes with the student holding their first committee meeting.

Seminars and Journal Club

Attendance at seminars and Journal Club (research data presentations in the fall and winter, respectively) is mandatory for all graduate students regardless of registration for credits. M.S. students in their first year will give a talk during the research data presentations in the winter semester. They are still encouraged to present a journal article of their choice to gain experience.

Research Rotations

Laboratory rotations help students select a faculty advisor to supervise their thesis research. **Rotations last for 4 weeks and M.S. students are required to complete at least one with the option of doing up to three.** By the time students finish the research rotations, they should have an idea of which faculty member to do their final thesis research with. At the beginning of the first year, Department faculty able to accept M.S. rotation students give oral presentations regarding ongoing research in their labs. If interested, students can also opt to do their rotations in labs of adjunct faculty who are associated with the department. Because time is limited for the M.S. degree, it is important that the student pick labs with a well-thought-out original project with a defined endpoint. When deciding where to rotate, M.S. students are strongly encouraged to address the questions found in the above section on Ph.D. rotations. At the conclusion of the semester, if a student knows which lab they would like to join, they are encouraged to contact the faculty member and begin planning. In the event more rotations are needed, the student may arrange them in concert with the Graduate Officer. If students are already working in a lab affiliated with the Department and wish to continue their M.S. thesis work there, they may bypass the rotation requirement with the approval of the Graduate Committee.

M.S. Thesis Committee and Committee Meetings

Once students select a permanent lab advisor from the **BMI Department's primary faculty** at the start of the second semester. The next step is to choose their thesis advisory committee. The role of the committee is to help monitor the student's progress, guiding them along towards their short-term and long-term research goals. The composition of the thesis committee is up to the student and their mentor to decide as long as it consists of a total of three members including the lab advisor. The committee should be made of intradepartmental faculty with the option for one member to be from outside of the Department if desired. **Students are required to have a committee meeting each semester beginning Winter semester of the first year, including a pre-defense committee meeting at which the committee must agree the student is ready to defend.** These meetings are important because they ensure that the student is on track, the research being done is of the appropriate quality, and any issues are addressed. For more information on the selection of members and the format of committee meetings, please see the associated Ph.D. section above.

Forms to be completed and submitted to BMI office (https://biochemmicroimmuno.med.wayne.edu/ms-requirements)

- Plan of Work (Should be submitted prior to the completion of 12 credits.
- Immunology/Microbiology Graduate Student Committee Report (needed every meeting)

Year Two and Onward

The second year of study revolves around working in the lab to finish M.S. thesis research. Other than seminars and research conferences, the only obligation a student has is to work towards finishing their project. By the end of the Winter semester during the second year, the primary focus of students should be to wrap up their work and begin writing their thesis. If more time is needed to finish their research but all other requirements for graduation have been met, students may continue to work without the need to register for more credits.

M.S. Thesis Writing, Presentation, and Graduation

The student's advisor, in consultation with the thesis committee, shall decide if the student has completed enough work for completion of their M.S. degree. Upon approval, the student should start to focus on putting their data together and writing their thesis. They will also need to assemble a presentation and give a final seminar demonstrating what they have achieved over the course of their degree. Following successful completion of these tasks, students will have fulfilled their M.S. degree obligations and are allowed to graduate. Important deadlines for graduation are outlined in Table 6.

Writing the Thesis

The thesis is written using a format similar to a research paper and is a complete account of all research carried out by the student in pursuit of the degree. **The content of the thesis is at the discretion of the student and their advisor but the formatting must strictly adhere to guidelines set forth by the Graduate School (**https://gradschool.wayne.edu/final_requirements/format_guidelines.pdf). After it is written, committee members should be given at least two weeks to review the thesis and make the necessary corrections/suggestions before submission for the formatting check. In consultation with the advisor, every effort should be made to incorporate the committee members' suggestions in the final version of thesis.

Final Presentation

The presentation of thesis work consists of an approximately one-hour seminar followed by a question and answer session. After all questions have been answered, the student's thesis committee will convene in a manner similar to a normal committee meeting and decide whether the student has met all of their requirements. If the committee is satisfied, the student must make sure all administrative tasks have been completed prior to graduation. **All Master's students are required to defend their final thesis through the BMI Department in Scott Hall, regardless of their research laboratory location, to ensure appropriate departmental representation.**

Graduation

Once all requirements have been met and the student is finished with their degree, they are able to participate in the graduation ceremony. It is not required but rather strongly encouraged that students participate. Caps and garments can be rented or bought from the University Bookstore. Students who attend the ceremony will receive their diploma at that time, otherwise it will be mailed. Specific information regarding regalia rental and other ceremony specifics will be emailed to the student by the Commencement Office prior to the event. https://wayne.edu/commencement

Table 5. M.S. Thesis Completion Deadlines[a]

Time	Requirements
End of the 4th week of the final semester	☑ Apply for graduation online via Academica https://wayne.edu/registrar/graduation ☑ Reserve a room for the public Final Defense with the BMI Office.
During final semester	☑ Hold final committee meeting and obtain committee's agreement that the research project is completed and the thesis should be written.
2 weeks before defense	☑ Distribute copies of the thesis manuscript to committee members for review ☑ Submit the thesis manuscript electronically to the Graduate School for a formatting check (http://www.etdadmin.com/cgi-bin/school?siteId=101) ☑ Electronically submit an Electronic Thesis and Dissertation Permissions Form (https://www.library.wayne.edu/forms/etd_permissions.php) allowing Wayne State University Libraries to make the dissertation available through DigitalCommons@WayneState
After[b]	☑ Finish all format and content revisions for the submitted dissertation manuscript and resubmit to the Graduate School (http://www.etdadmin.com/cgi-bin/school?siteId=101) ☑ Submit a hard copy of the dissertation title page signed by the advisor and the final defense report to the BMI Office. (https://biochemmicroimmuno.med.wayne.edu/pdfs/m_sfinal_report_bmi.pdf)

[a] Taken from http://www.wayne.edu/gradschool/masters/thesis/
[b] Must be finished by the established completion date for the semester.

Table 6. M.S. Program of Study

Year	Term	Course No.	Course Title	Credits
Year 1	Fall	Choose one*: BMB 7010 or MBG 7010	 General Biochemistry or Molecular Biology and Genetics	4
		IM 7040*	Fundamentals of Research	2
		BMB 7890*	Journal Club	1
		IM 7140*	Critical Thinking	1
		☑ Select rotation laboratories and complete up to three rotations		
	Winter	IM 7010*	Fundamentals: Immunology	2
		IM 7030*	Molecular Biology of Viruses	2
		IM 7520*	Molecular Mechanisms of Bacterial Pathogenesis	2
		IM 7996* BMB 7890*	Research Journal Club	1 1
		☑ Select permanent research lab and thesis committee members		
	Spring/Summer	IM 7450 or IM 7650 or IM 7996	Current Trends in Immunology or Current Trends in Host-Microbiome interactions or Research	2 2 2
Year 2[b]	Fall	BMB 7890*	Journal Club	1
		IM 7996*	Research	2
		IM 8999*	Master's Thesis Research and Direction	5
		☑ Hold first committee meeting		
	Winter	BMB 7890*	Journal Club	1
		IM 8999*	Master's Thesis Research and Direction	3
		☑ Hold pre-defense committee meeting		
		☑ Defend master's thesis		

* Required courses for M.S. degree
See the University Bulletin for course descriptions https://bulletins.wayne.edu/graduate/school-medicine/programs/

Graduate Student Resources

Graduate Student Council

Overview

The Department of Biochemistry, Microbiology and Immunology graduate students maintain a student council to facilitate communication, camaraderie, and carrying out of departmental responsibilities. Elections are held at the beginning of the fall semester and terms are one year in length. Holding office increases student engagement with faculty, exposes students to the inner workings of running a department at a research institution, and encourages students to invest in the betterment of the Department. By holding the various positions, student representatives serve as conduits to communicate our stances

and opinions to the assorted faculty committees in the Department. Table 6 lists the available positions and their associated duties.

Table 7. Graduate Student Council Positions and Duties

Position	Responsibilities
President	• Leads monthly graduate student meetings • Maintains communication between the chair, faculty, and students • Attends monthly **Faculty Meetings** as a representative of the students • Delegates tasks needed for Departmental maintenance
Secretary	• Handles correspondence regarding meetings and events • Maintains student council meeting minutes • Manages Departmental journal collections
Graduate Student Representative	• Acts as student representative for the Departmental **Curriculum Committee** and **Graduate Committee** • Organizes student interactions during interview process for prospective graduate students and provides feedback to Graduate Officer
Seminar Committee	• Participates in the **Seminar Committee** and represents student interests in speaker invitations • Manages communication with local student hosted speakers including sending invitations, arranging visits, setting itineraries, etc.
Social Committee	• Plans monthly student luncheons and outings at local establishments • Plans the New Student Reception (August), Holiday Party (December), and Departmental Picnic (Summer)

Student Invited Speaker

Each year, the departmental graduate students vote on and invite **two** seminar speaker from anywhere within the contiguous United States. It is an invaluable opportunity where students are able to interact with renowned researchers and it also serves as a great opportunity for senior students to network in anticipation of their search for post-graduate work. The only rules are students are limited to one candidate per person to maintain equal representation and the topic must be relevant to the department. Voting takes place at a meeting in the fall and all students interested in inviting a speaker are encouraged to prepare a brief (no more than five minutes) presentation for the meeting describing the research and merits of their candidate. After all presentations have been given, all the students anonymously rank their top three choices and the votes are tallied. The person whose candidate wins the vote is then in charge of planning and facilitating their candidates visit for the end of the winter semester. Visits include dinner with a select group of students the night before the seminar, the seminar the day of, and meetings with faculty and students. It is highly encouraged that all students participate regardless of year. For more information, please see the office staff.

Parking

Students may purchase parking passes from the University to park in Parking Structure #4 or Surface Lot #51, both which are located across from Scott Hall on East Canfield St. Students that are also considered employees of the University can elect to have costs deducted from their paychecks. For more information, please see the parking and transportation website (https://parking.wayne.edu/).