

CURRICULUM

| 60 credits total | Fall (20 credits) | Winter (10 credits) | Spring (30 credits) | Summer (10 credits) | |
|---------------------------------|---|-------------------------------------|---|---|---------------------------------------|
| Year 1 | GC550 (Foundations of Biomedical Science-10 credits) | | IMP 505A (Immunology-2 credits) | IMP505B (~8 wks) (advanced immunology- 2 credits) | |
| | | | IMP600A (Microbiology-2 credits) | | |
| | | | IMP600B (Virology-3 credits) | | |
| | | | | IMP722 (Journal club-1 credit) | IMP732 (Journal Club-1 credit) |
| | IMP710 (Seminar-1 credit) | | IMP720 (Seminar-1 credit) | | IMP730 (Seminar-1 credit) |
| | GC 760 (Rotation 3 credits) | | GC 770/780 (Rotation 3 credits) | | GC 750 (Rotation 3 credits) |
| | IMP910 (Research – Variable) | IMP940 (Research - Variable) | IMP920 (Research - Variable) | | IMP930 (Research- Variable) |
| | | GC 640 (Ethics- 1 credit) | | | |

| 60 credits total | Fall (15 wks) | Winter (4 wks) | Spring (16 wks) | Summer (16 wks) | |
|---------------------------------|--|--|--|--|--|
| Year 2 | IMP 530 (Infection and Immunity-3 credits) | | GC730 (Grant writing-1 credit) | GC 675 (cancer immunology-2 credits) | |
| | | | NS 740 (statistics-2 credits) | Prelim Exam | |
| | IMP 712 (Journal club- 1 credit) | | IMP 722 (Journal club-1 credit) | | IMP 732 (Journal club-1 credit) |
| | IMP710 (Seminar – 1 credit) | | IMP720 (Seminar – 1 credit) | | IMP730 (Seminar – 1 credit) |
| | IMP910 (Thesis research – variable credits) | IMP940 (Thesis research – variable credits) | IMP920 (Thesis research – variable credits) | | IMP930 (Thesis research – variable credits) |

| 60 credits total | Fall (15 wks) | Winter (4 wks) | Spring (16 wks) | Summer (16 wks) | |
|---------------------------------|---|---|---|---------------------------|--|
| Year 3 | IMP 712 (Journal club- 1 credit) | | IMP 722 (Journal club-1 credit) | | IMP 732 (Journal club-1 credit) |
| | IMP710 (Seminar – 1 credit) | | IMP720 (Seminar – 1 credit) | | IMP730 (Seminar – 1 credit) |
| | IMP910 (Thesis research– variable credits) | IMP940 (Thesis research- variable credits) | IMP920 (Thesis research– variable credits) | | IMP930 (Thesis research – variable credits) |

IMP505A- Immunology

Through participation in this course, the students will learn the basic mechanisms underlying the functioning of a normal immune system and how the immune system eradicates infectious disease and develops long-lasting immunity.

IMP505B- advanced immunology

This course builds upon the basic knowledge of the workings of the immune system provided to the students in IMP505A. The sessions will include didactic education as well as more Socratic interaction with the presenter centered around classical discoveries in the field and new developments not covered in the textbook. Individual sessions will be focused on how immunity develops to different types of infectious pathogens, immune system-pathogen interactions, certain clinical manifestations of immune system function, and how diseases can result from lack of appropriate regulation of the functioning of the immune system.

IMP530- Infection and Immunity

IMP530 is a highly interactive course. The goals of this course are to increase students' knowledge about infection, immunity, and host-pathogen interactions; practice teaching various topics of microbiology and immunology; and gain some experience writing and presenting short scientific articles in a style accessible to a broad audience. With these goals in mind and under close guidance and mentoring by the course directors and instructors, students will give lectures to their classmates, and write and present a mini-review summarizing the importance and caveats of recent high impact papers. Lectures will focus on immune responses to infectious agents; how infectious agents evade responses; and how immunization protects against infection. Infectious agents ranging from viruses and bacteria to protozoa, helminths, and arthropods will be studied.

IMP600A- Microbiology

The objective of IMP600A is to introduce all aspects of "microbial world" excluding Virology - (see IMP600B). This course will enable students to understand the basic biology and pathogenesis of micro- and macro-organisms, and will facilitate a more thorough understanding of various aspects of immunology discussed in IMP505A and IMP505B.

IMP600B- Virology

This class provides an overview of virology from a general perspective. Students will obtain an understanding of the different types of viruses that infect humans, how those viruses infect, replicate and cause disease, and the obstacles they must overcome to reproduce and spread. The format of the class is "flipped": students will review lecture materials online and come to class ready for discussions, which will be led by an assigned student and facilitated by a faculty member. The course will conclude with a group problem-solving session based on the content of the course and focused on experimental design and interpretation.

IMP710/720/730- Seminar

The Seminar series alternates talks by Departmental Faculty, outside speakers and Research in Progress by students and postdocs. This course will allow students to listen and network with outstanding scientists in various areas of research and the opportunity to present their work in a formal setting.

IMP712/722/732- Journal club

The Journal club is designed to familiarize students with cutting-edge research in the field and to highlight approaches for investigating questions in immunology, tumor immunology, microbiology, and microbial pathogenesis. This course will also help students to evaluate and discuss published data critically.

IMP910/920/930/940- Research

The PhD thesis research involves conducting independent biomedical research with a focus on investigating novel questions, critical thinking and executing ideas in the laboratory through the use of sound scientific method. Students are guided by their mentors and a selected thesis research committee, which meets at least twice a year throughout the training experience. Students are given many opportunities to present their work in oral and written forms and are expected to produce written manuscripts describing the results of their investigations. Collectively, this research experience will help students develop independence, critical thinking, and leadership in their scientific field, preparing students for a successful career as independent researcher in an academic, industrial or teaching setting.