

Microbiology 402

Advanced Immunology

Purpose:

This course is a follow-up to MICB 302 (Introductory Immunology). Using the information in MICB 302 or similar undergraduate immunology courses as a starting point, this course will focus on major concepts and current research relating to the function of the immune system in health and disease.

Prerequisites:

Micb 302 or equivalent (Biol 334 or Biol 335 recommended)

Instructors:

Dr. Ken Harder (course coordinator), Office 3509 Life Sciences Centre (kharder@mail.ubc.ca)

Other Instructors will be selected to discuss their individual research projects and other select immunology research topics. For 2022 other lecturers include Drs. Megan Levings and Manish Sadarangani.

Location:

Returning to in person lectures in Biol 2200 for 2022 (see below for **Covid Safety in the Classroom** guidelines). Note that lectures will not be recorded.

Course Outline and Schedule:

September 8th- November 3rd -- Dr. Harder

The overall organization of the immune system. Topics may include the role of the innate immune system and the microbiota in intestinal homeostasis as well as protective and pathological inflammation. The immune system in tumour immunity and tumour subversion of immune system function. How the innate immune system interacts with the adaptive immune system in protective and pathological immune responses. Systems immunology and strategies used by researchers to study the immune system. The first half of the course is run in a journal club like format where current scientific discoveries are discussed and experimental results presented in research articles are examined. Methodological approaches used in modern immunology are also discussed.

November (mid) – December -- Various researchers from campus and affiliated research hospitals and centres.

Topics may include; human immunology, cancer immunotherapy, vaccines, autoimmunity

Learning Objectives:

At the end of the course, the students will have a current and in-depth understanding of the key aspects of how the immune system functions in health and disease. They will read and understand primary research articles and become familiar with modern methodological approaches used by immunologists. They will see how these techniques and knowledge are being applied by researchers to decipher the genetic control of immune system development/function, creation of immune therapies for disease and the design of vaccines. They will also gain valuable insight into how modern practitioners of immunological theory utilise their knowledge in the clinic. The course will require students to integrate new material with prerequisite immunology courses and concepts in cell biology, microbiology and genetics that they have learned in other courses. The lectures will focus on both the conceptual

flow of scientific ideas as well as the experimental methods used by researchers to investigate these areas of immunology. The students will learn to obtain information from review articles in scientific journals and to read primary research papers. The exams will focus on the ability to analyze data, generate hypotheses, and propose experimental tests of those hypotheses.

Website:

The course website will be used to post lecture notes as well as papers discussed in class. Recordings of lectures may be available for students who can't attend lectures for health reasons. It is the student's responsibility to print out and read the papers that will be discussed in class. The website address is canvas.ubc.ca. You will require a Campus Wide Login (CWL) to access the site. Lectures will also be recorded and accessible to those students who for health reasons can not attend the lectures.

Grading:

Midterm: The two-part midterm will be based entirely on Dr. Harder's section of the course and will be worth 50% of the final grade.

The first part of the midterm usually consists of short essay questions and will require students to propose experiments to answer hypothetical research questions. Student will be asked to recall ideas, concepts and experimental approaches they have learned during the first half of the course to answer questions. The take-home exam can be answered by groups of students working together and will be worth 25% of the course grade. The second part of the midterm will consist of short essay questions based on the material discussed in class (includes papers presented as a “journal-club”) or additional assigned reading.

Final:

50% of the course grade will be based on the second half of the course with questions based on the content provided by the other lecturers. The final exam is scheduled by the Registrar's Office and will be given during the December exam period. Students are reminded that the exam session runs from early through mid/late December and that they should not book flights out of Vancouver until their exam schedule is completed. Re-scheduling of the exam to accommodate the student's travel schedule will not be considered.

Please note: Only students that have a documented medical illness or documented family emergency will be eligible to write a make-up midterm or final exam (**see COVID-19 specific information below**). A doctor's note will be required within one week of the scheduled exams. No other excuses (e.g., additional exams scheduled at this time, reports due for other courses, etc.) for writing a make-up exam will be considered.

COVID-19 specific information: If you're sick, it's important that you stay home –no matter what you think you may be sick with (e.g., cold, flu, other). If you think you might have Covid symptoms and/or have tested positive for Covid: You can do a self-assessment for Covid symptoms here: <https://bc.thrive.health/covid19/en> Do not come to class if you are sick, have Covid symptoms, have recently tested positive for Covid. This precaution will help reduce risk and keep everyone safer.

See link for UBC mask policy: <https://broadcastemail.ubc.ca/2022/06/27/masks-no-longer-required-in-ubc-public-indoor-spaces-after-june-30/>