

**MICR303 Immunology
Fall 2021**

INSTRUCTORS

Dr. Lisa Reynolds (LAR; she/her; lisareynolds@uvic.ca); course co-ordinator and instructor
Assistant Professor, Department of Biochemistry and Microbiology, University of Victoria

Dr. Brad Nelson (BHN; bnelson@bccrc.ca); instructor
Distinguished Scientist and Director, Deeley Research Centre, BC Cancer, Victoria
Professor, Department of Biochemistry and Microbiology, University of Victoria

PREREQUISITES

Complete all of MICR200A and MICR200B.

PRE- OR COREQUISITES

Complete or concurrently enrolled in 1 of: BIOC299/BIOC300A.

INCLUSIVITY

We consider our classroom and office hours to be places where you will be treated with respect, and we welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, abilities and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. We will gladly honor your request to address you by an alternate name (to that listed in our class list) or to use a particular pronoun when referring to you. Please advise us of this desire early in the semester so that we may make appropriate changes to our records.

TERRITORY ACKNOWLEDGEMENT

We acknowledge and respect the ɫək^wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

COURSE DATES AND TIMES

Mondays and Thursdays, 11:30am-12:50pm. Sept 9th- Dec 6th 2021.

There will be no class on the following dates:

Thurs Sept 30th 2021 (National Day for Truth and Reconciliation)

Mon Oct 11th 2021 (Thanksgiving)

Mon Oct 17th 2021 (No class but Midterm I to be completed on this day, online)

Thurs Nov 11th 2021 (Remembrance Day and Reading Break)

Thurs Nov 18th 2021 (No class but Midterm II to be completed on this day, online)

ROOM NUMBER AND A NOTE ON IN-PERSON ATTENDANCE

Lectures will be held in room A240, Human and Social Development building.

We understand that some students will have reservations about attending class in person, and that some will likely be required to stay away from campus due to sickness during the semester. Unless you are otherwise informed, you can expect that our live lectures will be recorded and posted on the course BrightSpaces page by the end of the day of the lecture. **If you show any symptoms associated with COVID-19, you MUST NOT attend class in person. Masks are required in indoor public spaces/common areas on campus, including the lecture theatre.**

Should we (your instructors) need to avoid campus due to illness, students will be notified via email and a BrightSpaces announcement and lectures for this period will be provided remotely.

OFFICE HOURS AND QUESTIONS

Office hours will be held virtually, via Zoom. The meeting details and times will be announced in class. If posted office hour times do not work with your schedule, then email lisareynolds@uvic.ca to make an appointment.

You are strongly encouraged to ask lots of questions! This is a particularly important time to be studying immunology, and we understand you may have lots of questions, or topics you would like to see addressed. If attending class in person, please feel free to ask questions in class (we will give you lots of opportunities), and/or, email your questions to lisareynolds@uvic.ca. Depending on the nature of your question, we will answer via email, encourage you to attend office hours for a discussion, or we will anonymize your question and address it in class, if we think the answer is something the whole class will benefit from.

IMPORTANT DATES

Last day for adding courses for this semester: Sept 24th 2021

Last day for dropping courses without penalty of failure: Oct 31st 2021

COURSE OBJECTIVES

This course provides an overview of the mammalian immune system and its function during health and disease. Students will learn the key components of the immune system, how diverse pathogens or substances are recognised, how pathogen-specific effector responses are generated, how immunological memory is generated, how immune responses are kept in check, how inappropriate immune responses can lead to disease, and how the immune system can be harnessed therapeutically. Examples of experimental approaches used to probe the function of the immune system will be included throughout the course.

By the end of this course, students should be able to:

- Describe key components of the immune system, and how they work together to mount an appropriate defence against particular pathogens
- Describe mechanisms which limit the opportunity for the generation of self-directed or inappropriate immune responses
- Describe how specific immune effector responses are initiated and controlled
- Generate hypotheses about the immune responses that infection with a particular pathogen will elicit
- Design and interpret experiments that explore immune system function

TEXTBOOK

Janeway's Immunobiology, 9th Edition. Textbook reading is recommended to reinforce information discussed in class, and to provide additional details for those that are interested. Students will not be examined on information in the textbook or on other source material that is not covered in class.

COURSE CONTENT

A single topic may (and often will) span multiple lectures.

Depending on questions that come up in class, the order of delivery of the Topics may differ slightly to that presented below.

Topic	Description	Instructor
1. Introduction	Overview of immune system. Principles of innate and adaptive immunity	LAR
2. Innate immunity	Anatomical barriers, antimicrobial molecules, complement, innate cell types and effector mechanisms	LAR
3. Adaptive immunity	Antigens and antigen presentation, generation of lymphocyte antigen receptors, T cell activation, T cell subsets and effector mechanisms, antibodies and antibody production	LAR
4. Generation of tolerance and regulatory mechanisms	B and T cell development, central and peripheral tolerance	LAR
5. Tumor immunology	Tumor immune environment, immunotherapy	BHN
6. Immunological memory	Memory B and T cells	LAR
7. Vaccination	Types of vaccine and implications for immunity generated, COVID-19 vaccinations	LAR
8. Autoimmunity	Disorders associated with the immune system attacking self, risk factors for autoimmunity	LAR

9. Immunity at mucosal surfaces	Mucosal immunology, host-microbiota interactions	LAR
10. Hypersensitivity and allergy	Allergy and allergic diseases, relationship with the microbiota	LAR
11. Immunity to infectious pathogens and pathogen evasion strategies	Immunity to bacterial, parasitic and viral pathogens, mechanisms by which pathogens evade the immune system	LAR

ASSESSMENT OF STUDENT PERFORMANCE

(1) Techniques to be used:

- Examinations will include true or false, multiple choice, and written answer questions, and a numerical mark will be assigned to each question based on your answer. Students are assessed on their ability to relay information, apply information, interpret data and design experiments.
- Exams are based on material and concepts covered in class. Lectures are based on information from the course textbook and other sources. Textbook reading is recommended to reinforce information discussed in class, and to provide additional details for those that are interested. Students will not be examined on information in the textbook or on other source material that is not covered in class.
- Midterm examinations I and II will be completed online via Brightspace. The midterms are “open-book (consulting class material and textbook is permitted), but students are expected to study as if they were writing in class in order to complete the midterms within the designated time frame and not spend the majority of time searching for answers. Students must write the midterms independently, without the assistance of others. Once the midterm exams are initiated on BrightSpaces, they have to be completed within 3 hours. Each midterms is designed to be completed within 1.5 hours, but extra time is provided in case technical difficulties are experienced. Each midterm will be available for 24 hours to allow for flexibility for initiation of the exam, but all answers must be submitted by the indicated deadline.
- The final examination will be held in person, date to-be-announced. No class notes, additional materials, or electronic devices will be permitted during the final exam.

(2) Evaluation and weighting:

Component	Date	Contribution to final grade
Midterm exam I (online, open book)	Exam available from Mon 17th Oct 2021 at 9am. All answers <u>must be submitted</u> by Tues 18 th Oct 2021 at 9am. Once open you have 3 hours to complete [designed to take 1.5 hrs]).	25%

Midterm exam II (online, open book)	Exam available from Thurs 18th Nov 2021 at 9am. All answers <u>must be submitted</u> by Fri 19 th Nov 2021 at 9am. Once open you have 3 hours to complete [designed to take 1.5 hrs]).	25%
Final exam (in person, no notes permitted)	Date to be announced (within Fall final exam period)	50%

(3) UVic Grading Scheme:

A ⁺	90 - 100	B ⁺	77 - 79	C ⁺	65 - 69	F	< 50
A	85 - 89	B	73 - 76	C	60 - 64	N **	< 50
A-	80 - 84	B-	70 - 72	D	50 - 59		

** N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

Midterm exam I, midterm exam II, and final exam

Failure to complete one or more of these elements will result in a grade of “N” regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student’s GPA as 0. The maximum percentage that can accompany an N on a student’s transcript is 49.

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University’s policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.
2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for the purpose of connecting and engaging with the class.
3. No recordings of live lectures are permitted without permission of the instructor. However, lectures in this course will be recorded by the instructor for accessibility for students unable to attend. If you do not wish to be captured in recordings, contact your instructor to determine if alternative arrangements can be made.
4. Students and instructors are expected to assess their health daily and avoid campus if they are ill.

5. Course materials, such as lecture recordings, notes, quizzes, or examinations, may not be redistributed without the explicit written permission of the instructor.

6. Students are expected to be available for all exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction. Although students do not require documentation, students must contact their instructor and BCMB office (biocmicr@uvic.ca) with the reason for their absence within 48 hours after the midterm exam. The Department will keep a record of the absences. It is the responsibility of the student to ensure all required components are complete, and to arrange deferred exams/assignments with the instructor, which normally should occur within one week of the original exam date.

7. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking an examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). Students must abide by UVic academic regulations and observe standards of scholarly integrity (no plagiarism or cheating). Online exams must be taken individually and not with a friend, classmate, or group, nor can you access notes, course materials, the internet, or other resources without the permission of the instructor. You are prohibited from sharing any information about the exam with others. Use of unauthorized electronic devices and accessing the internet and class material during exams is prohibited unless permission is granted by the instructor. Instructors may use Browser Lockdown Software to block access during classes and exams.

8. Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor.

9. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.

10. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.

11. Supplemental exams or assignments will not be offered to students wishing to upgrade their final mark.

12. Anonymous participation in online classes is not permitted without permission of the instructor.

Important note about COVID-related stress

The current pandemic is placing added stressors- financial, mental, and physical- on everyone. Your wellbeing is of foremost importance. If you are experiencing difficulties coping, the

University has resources to help. Please reach out to Counselling Services, the Centre for Academic Communication, or Learning Assistance Program for assistance.

Centre for Accessible Learning

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Centre for Accessible Learning (CAL) as soon as possible in order to assess your specific needs. <https://www.uvic.ca/services/cal/index.php>

Course Experience Survey (CES)

We value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your [CES dashboard](#). You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. We will remind you nearer the time but please be thinking about this important activity.