

**MICR303: IMMUNOLOGY  
COURSE OUTLINE SUMMER 2019**

**INSTRUCTOR**

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**OFFICE HOURS**

Mon, Thurs, 11:30-12:30  
Petch 183

**COURSE LOCATION**

Engineering Comp Science Bldg 104  
Mon, Thurs: 8:30-11:20

**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.

**TEXTBOOK:** Janeway's Immunobiology, 9th Edition.

**LECTURE NOTES:**

Notes will be made available on the CourseSpaces site prior to lectures. Notes are arranged by topic, and a single topic may span multiple lectures. **Lecture notes are not complete**, and students will be responsible for all materials covered in the lectures.

**COURSE CONTENT**

**Part I: The Immune System and its components**

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| <b>1. Introduction to the Immune System</b> | Principles of innate and adaptive immunity (Ch.1)                                                                                                                                                           |
| <b>2. Innate Immunity</b>                   | Anatomical barriers; antimicrobial peptides complement; innate cell types and effector mechanisms; pattern recognition. (Ch. 2,3)                                                                           |
| <b>3. Adaptive Immunity I:</b>              | Antigen and antigen-presentation; generation of lymphocyte antigen receptors; T cell activation; T cell subsets and effector mechanisms; antibodies and antibody production. (Elements of Ch. 4,5,6,7,9,10) |
| <b>4. Adaptive immunity II:</b>             | Immunological memory; Memory B/T cells (Ch. 11)                                                                                                                                                             |

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## Part 2: The Immune System in Health and Disease

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|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5. Vaccination</b>                                                      | Strategies; roles of memory cells (Ch. 16)                                                                                                                                       |
| <b>6. Immunity to infectious pathogens and pathogen evasion strategies</b> | Immune responses to select bacterial, parasitic and viral (HIV) pathogens; mechanisms by which pathogens evade the immune system. (Ch. 13)                                       |
| <b>7. Tumor immunology</b>                                                 | Tumor immune environment, immunotherapy.<br><b>Guest lecturer: Julian Smazynski<br/>PhD candidate, Dr. Brad Nelson Laboratory<br/>Deeley Research Center, B.C. Cancer Agency</b> |
| <b>8. Generation of tolerance and regulatory mechanisms</b>                | B, T cell development, central and peripheral tolerance and mechanisms preventing auto-reactivity. (Ch. 8)                                                                       |
| <b>9. Autoimmunity</b>                                                     | Disorders associated with the immune system attacking self; underlying factors, including defects in tolerance. (Ch. 15)                                                         |
| <b>10. Immunity at mucosal surfaces</b>                                    | Immunology of the mucosal system, and the importance of host-microbiota interactions. (Ch. 12)                                                                                   |
| <b>11. Hypersensitivity and Allergy</b>                                    | Allergy and allergic diseases; relationship with the microbiota. (Ch. 14)                                                                                                        |

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### **ASSESSMENT OF STUDENT PERFORMANCE**

#### **(1) Techniques to be used:**

- Grading of short answer and longer answer exams and quiz questions on material presented in the course, and assignment of a numerical mark to each question.
- Exams are based on material covered in lectures (slides, board, discussions). Lectures are based on information from the text and other sources. Textbook reading will be 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 that is not covered in class.

#### **(2) Evaluation and weighting:**

| Component  | Date                  | Contribution |
|------------|-----------------------|--------------|
| Midterm I  | May 27                | 25%*         |
| Midterm II | June 13               | 25%*         |
| Quizzes    | May 23,<br>June 6, 20 | 5%**         |
| Final Exam | June 27               | 45%          |

\*Of the 2 midterms: the lowest and highest grade will contribute 15 and 35 marks, respectively.

\*\*Of the 3 quizzes, the best 2 will count towards the total quiz grade (2.5% each).

**No deferrals granted for missing a quiz**

**(3) Grading Scheme:**

|                      |          |                      |         |                      |         |             |      |
|----------------------|----------|----------------------|---------|----------------------|---------|-------------|------|
| <b>A<sup>+</sup></b> | 90 - 100 | <b>B<sup>+</sup></b> | 77 - 79 | <b>C<sup>+</sup></b> | 65 - 69 | <b>F</b>    | < 50 |
| <b>A</b>             | 85 - 89  | <b>B</b>             | 73 - 76 | <b>C</b>             | 60 - 64 | <b>N***</b> | < 50 |
| <b>A<sup>-</sup></b> | 80 - 84  | <b>B<sup>-</sup></b> | 70 - 72 | <b>D</b>             | 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 1, Midterm 2, 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.

Students are responsible for ensuring that they are properly registered in the course. Students are expected to have met all pre/co-requisites for the course.

**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 unless being used for a purpose relevant to the class. Students having a cell phone, tablet, or computer on their person during an exam will be assumed to have it for the purpose of cheating.
3. Any recordings of lectures may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.
4. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.
5. Students are expected to be present for the midterm and final exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. 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 a deferred examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). 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. Deferred final exams for spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

6. Multiple choice scan sheets for machine scoring (bubble sheets) are considered the authentic exam answer paper and will be retained by the department for 1 year.
7. Professors may refuse to review/remark exams not written in indelible ink. In addition, requests for review/remark of a midterm exam must be made within one week of the exam being returned. Students are expected to promptly pick up midterm exams after marking has been completed, either in class or from the instructor.
8. Examination papers that have pages removed, or are mutilated will not be marked.
9. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.”

### **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 me regarding the course and my 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. The instructor will remind you nearer the time but please be thinking about this important activity.