



CUMMING SCHOOL OF MEDICINE
GRADUATE COURSE OUTLINE

| COURSE TITLE: Cellular and Molecular Immunology | | | |
|---|---|--------------|--|
| Course | MDSC 639.02 | | |
| Pre/Co-Requisites | CMMB 527 or equivalent. Permission to register in this course must be obtained from the course coordinator. | | |
| Faculty | Cumming School of Medicine, Graduate Science Education | | |
| Instructor Name(s) | Dr. Nathan Peters | Email | ncpeters@ucalgary.ca |
| Office Location | HRIC 4A20 | Office Hours | Tuesdays 10:30am-11:30am |
| Instructor Email Policy | | | |
| Telephone No. | (403) 210-7731 | | |
| TA Name, if applicable | | Email | |
| Class Term, Days | Fall 2020, Tuesdays and Thursdays | | |
| Class Times | 9:00am – 10:30am | | |
| Class Location | See Schedule | | |

In person

This course is offered in a face-to-face format. When unable to participate live and in person due to the time difference or unforeseen circumstances, inform the instructor in advance and propose and implement propose an alternative participation activity

| COURSE INFORMATION/DESCRIPTION OF THE COURSE |
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| MDSC 639.02 is an advanced course in cellular and molecular immunology intended for students registered in the Immunology Graduate Program (MDIM) or related disciplines. The course is intended for students with a pre-existing foundation in immunology. The focus of the course is on immune cell development and regulation, lymphocyte activation, effector mechanisms, autoimmunity, immunodeficiencies and immunomodulatory therapies. The class has an emphasis on primary source material (i.e. published manuscripts). |
| LEARNING RESOURCES/REQUIRED READING |
| Janeway's Immunobiology 9th edition 2016, Garland Science as a general reference resource. Recommended: Kuby's Immunology 7th edition. |



COURSE OBJECTIVES/LEARNING OUTCOMES

At the successful completion of this course, students should be able to:

1. Identify and describe the development, selection, organization and activation of the adaptive immune system.
2. Integrate the information regarding each of the basic adaptive immune components to generate a functional understanding of how an immune response is initiated and regulated.
3. Understand how basic immunological processes function within the context of clinical autoimmune disease and immunodeficiencies.
4. Demonstrate effective communication skills through oral presentation and written assignments.
5. Read and understand primary source material.

CUT POINTS FOR GRADES

This course adheres to the grading system outlined in the University of Calgary, Faculty of Graduate Studies Calendar. Grades of A+ and A are not distinguished in the calculation of GPAs. Percentage/letter grade conversion used for this course is as follows

| Grade | Grade Point Value | Percentage Conversion | Graduate Description |
|-------|-------------------|-----------------------|--|
| A+ | 4.00 | 95-100 | Outstanding |
| A | 4.00 | 90-94 | Excellent – superior performance showing comprehensive understanding of the subject matter |
| A- | 3.70 | 85-89 | Very Good Performance |
| B+ | 3.30 | 77-84 | Good Performance |
| B | 3.00 | 72-76 | Satisfactory Performance |
| B- | 2.70 | 68-71 | Minimum Pass for Students in the Faculty of Graduate Studies |
| C+ | 2.30 | 63-67 | All grades below ‘B-’ are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements |

Assessment Components: The University policy on grading related matters is outlined in the [2020-2021 Calendar](#).

| Assessment Methods | Description | Weight | Due Date and Time |
|--------------------|-------------|--------|-------------------|
|--------------------|-------------|--------|-------------------|



| | | % | |
|------------------------------|-------------------------------------|----|----------------------------------|
| Essay #1 | Written Assignment | 10 | Sep. 15, 9:00am |
| Group Presentation | Oral Presentation and Oral Critique | 20 | Sep. 24, Oct. 8, Oct. 15, 9:00am |
| Literature Manuscript Review | Written Group Assignment | 20 | Sep. 24, Oct. 8, Oct. 15, 9:00am |
| Midterm Exam | Examination | 20 | Oct. 29, 9:00am |
| Essay #2 | Written Assignment | 10 | Nov. 26, 9:00am |
| Final Exam | Examination | 20 | TBA |

ASSESSMENT AND EVALUATION INFORMATION

ATTENDANCE AND PARTICIPATION EXPECTATIONS:

Students are expected to attend all classes and hand in all assignments. Students are expected to participate in in-class discussions.

GUIDELINES FOR SUBMITTING ASSIGNMENTS:

Assignments are due in class on the due date indicated.

EXAMINATIONS:

Mid term Exam: This exam will cover the content of the lectures Sep. 8 to Oct. 20 and will take the form of essay-type questions. The exam will be 80 minutes in length and is scheduled for Oct 29 from 9:00-10:20 AM.

Final Exam: This exam will cover the content of the lectures Oct. 22 – Dec 8 and will take the form of essay-type questions. The registrar schedules the exam. The exam will be 90 minutes.

EXPECTATIONS FOR WRITING:

Oral Paper Presentations, Oral Critique, and Debate:

Students will be grouped (2-3 students/group depending upon the number of students in the class) and each student group will receive one manuscript to review and present, plus one manuscript to critique in an oral debate. The presentation will occur on a different day than the critique (i.e. you will not present and critique on the same day). The number of people per group, the length of the oral presentation, critiques, and debates will depend upon the number of students enrolled in the class. A panel of evaluators (2 or more) will grade the presentations and critiques.

Written Assignments:

There are 3 written assignments for this course.

One (1) background literature review based on the manuscript assigned to each group of students for oral presentation (this assignment is to be considered a group assignment with 1 paper submitted per group). This literature review should be 8 pages double-spaced and all members of the group will receive the same mark.

Two (2) Essays, 5 pages double-spaced. Essays will be on a current immunology topic being discussed in the lay press. Topics are chosen by the student but must be approved by the course coordinator. Guidelines for how the essays should be structured will be conveyed in class.

LATE AND/OR MISSING ASSIGNMENTS:

Late or missing assignments without prior approval of the Instructor will receive a grade of 0.

Is a passing grade on a particular component essential to pass the course as a whole? No

| | | COURSE TIMETABLE | |
|----------------------|---|------------------------------|-------------------------------|
| Course Schedule Date | Topic & Reading | Instructor | Assignments/Due Dates & Times |
| Sep 8 | Introduction to Class & Foundations of Immunology | Dr. Peters | HSC 1405B |
| Sep 10 | B Cell Activation/Inactivation and Germinal Centre Reaction | Dr. Jenne | HSC 1405B |
| Sep 15 | T Cell Development and Selection, Current Topics in Immunology - Essay #1 Due | Dr. Santamaria | HSC 1405B, Essay #1 Due 9am |
| Sep 17 | Molecular Mechanisms of VDJ and Class Switch Recombination | Dr. Lees-Miller | Online |
| Sep 22 | Immunoglobulin and Fc Receptor Effector Functions (+Therapeutics) | Dr. Jenne | HSC 1405B |
| Sep 24 | Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due) | Dr. Jenne Dr. Lees-Miller | HSC 1405B, Reviews Due 9am |
| Sep 29 | Pattern Recognition (PAMPs and DAMPs) | Dr. Cobo | HSC 1405B |

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| Oct 1 | Antigen Processing and Presentation | Dr. Shi | HSC 1405B |
| Oct 6 | TCR-MHC Interactions, TcR Signalling, and T Cell Activation | Dr. Shi | HSC 1405B |
| Oct 8 | Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due) | Dr. Shi and Dr. Cobo | HSC 1405B, Reviews Due 9am |
| Oct 13 | Lymphatic Function and Immune Protection | Dr. Liao | HSC 1405B |
| Oct 15 | Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due) | Dr. Peters Dr. Liao | HSC 1405B |
| Oct 20 | Effector Mechanisms of CD4, CD8, and NK T cells | Dr. Mody | HSC 1405B |
| Oct 22 | Th Cell Polarization and Memory Generation | Dr. Peters | HSC 1405B |
| Oct 27 | T Regulatory Cells and T Resident Memory Cells | Dr. Geuking | HSC 1405B |
| Oct 29 | MID-TERM EXAM (Sep 8-Oct 20 Material) | Dr. Peters | HSC 1405B |
| Nov 3 | Innate Lymphoid Cells | Dr. Geuking | HSC 1405B |
| Nov 5 | Impact of the Microbiome on Adaptive Immunity | Dr. McCoy | HSC 1405B |
| Nov 10 Nov 12 | No Classes - Reading Week | NONE | |
| Nov 17 | Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due) | Dr. Mody Dr. Geuking | HSC 1405B, Reviews Due 9am |
| Nov 19 | Tumor Immunity and Cancer Immunotherapy | Dr. Mahoney | HSC 1405B |
| Nov 24 | Organ-Specific Autoimmunity – Bullous Disease | Dr. Mydlarski | HSC 1405B |
| Nov 26 | Organ-Specific Autoimmunity – Multiple Sclerosis, Current | Dr. Ousman | HSC 1405B - Essay #2 Due 9am |

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| | Topics in Immunology - Essay #2 Due | | |
| Dec 1 | Organ-Specific Autoimmunity – Diabetes | Dr. Santamaria | HSC 1405B |
| Dec 3 | The challenge of CD4 T cell-based vaccination strategies | Dr. Peters | HSC 1405B |
| Dec 8 | Primary and Acquired Immuno-deficiencies | Dr. N. Wright | HSC 1405B |
| TBD | Final Exam (Oct 22-Dec 8 Material) | Dr. Peters | Rm TBD |

CLASS ENROLLMENT, GROUP WORK, and SCHEDULE

The number of students enrolled in the class will dictate the group size and the number of **Oral paper presentations** versus **Current research discussion sessions**. This may also lead to slight alterations in the class schedule in which the **TOPIC** for those lecture dates are switched.

INTERNET AND ELECTRONIC COMMUNICATION DEVICE INFORMATION

Cell phones must be turned off in class unless otherwise arranged with the instructor.

The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. Students are to refrain from accessing websites that may be distracting for fellow learners (e.g. personal emails, Facebook, YouTube). Students are responsible for being aware of the University's Internet and email use policy, which can be found at <https://www.ucalgary.ca/policies/files/policies/electronic-communicationspolicy.pdf>.

MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

Media recording for lesson capture

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

Media recording for assessment of student learning



The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

Media recording for self-assessment of teaching practices

The instructor may use media recordings as a tool for self-assessment of their teaching practices. Although the recording device will be fixed on the instructor, it is possible that student participation in the course may be inadvertently captured. These recordings will be used for instructor self-assessment only and will not be used for any other purpose.

Student Recording of Lectures

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

ACADEMIC ACCOMMODATIONS

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>

IMPORTANT INFORMATION

Any research in which students are invited to participate will be explained in class and approved by the appropriate University Research Ethics Board

COPYRIGHT

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students (library.ucalgary.ca/files/library/guidance_for_students.pdf). Further information for students is available on the Copyright Office web page (<https://library.ucalgary.ca/copyright>)

A NOTE REGARDING INSTRUCTOR INTELLECTUAL PROPERTY

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor (s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course *at the same time* may be allowed under fair dealing



ACADEMIC INTEGRITY

The Cumming School of Medicine expects intellectual honesty from its students. Course participants should be aware of University policies relating to Principles of Conduct, Plagiarism and Academic Integrity. These are found in the printed Faculty of Graduate Studies Calendar, or online under Academic Regulations in the Faculty of Graduate Studies Calendar, available at [Faculty of Graduate Studies Academic Regulations](#)

ACADEMIC MISCONDUCT

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

EMERGENCY EVACUATION AND ASSEMBLY POINTS

Assembly points for emergencies have been identified across campus. The primary assembly points for South Campus (Health Science Centre (HSC); Health & Research Innovation Centre (HRIC); Heritage Medical Research Building (HMRB) and Teaching, Research and Wellness (TRW)) are:

- HSC and HMRB: HRIC Atrium (alternate assembly point is Parking Lot 6)
- HRIC: HMRB Atrium (alternate assembly point is Parking Lot 6)
- TRW: McCaig Tower (alternate assembly point is HMRB – Atrium)

APPEALS

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section N of the Faculty of Graduate Studies Calendar. Students must follow the official process and should contact the Student Ombuds Office (<http://www.ucalgary.ca/provost/students/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct

THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY (FOIP) ACT

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP) and students should identify themselves on written assignments (exams and term work.) by their name and ID number on the front page and ID on each subsequent page. Assignments given by you to your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission

WELLNESS AND MENTAL HEALTH RESOURCES

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre), <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services> and the Campus Mental Health Strategy website <https://www.ucalgary.ca/mentalhealth/>



SUPPORTS FOR STUDENT LEARNING, SUCCESS, AND SAFETY

Student Ombudsman: The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/ombuds/ or email ombuds@ucalgary.ca

Student Union: The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; Information about the SU, including elected Faculty Representatives can be found here: <https://www.su.ucalgary.ca>

Graduate Student's Association: The GSA Vice-President Academic can be reached at (403) 220- 5997 or gsa.vpa@ucalgary.ca; Information about the GSA can be found here: <https://gsa.ucalgary.ca>

SAFEWALK

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.