



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
Telephone No.	(403) 210-7731		
Class Term, Days	Fall 2019, Tuesdays and Thursdays		
Class Times	9:00am – 10:30am		
Class Location	See Schedule		

COURSE INFORMATION/DESCRIPTION OF THE COURSE
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:
<ol style="list-style-type: none"> 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 [2019-2020 Calendar](#).

Assessment Methods	Description	Weight %	Due Date and Time
Essay #1	Written Assignment	10	Sep. 26, 9:00am
Group Presentation	Oral Presentation and Oral Critique	20	Assigned date, 9:00am
Literature Manuscript Review	Written Group Assignment	20	Assigned date, 9:00am
Midterm Exam	Examination	20	Oct. 29, 9:00am
Essay #2	Written Assignment	10	Nov. 26, 9:00am
Final Exam	Examination	20	Registrar Scheduled

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.

FINAL EXAMINATIONS:

Mid term Exam: This exam will cover the content of the lectures Sept 5 to Oct 17 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 24 – Dec 5 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 5	Introduction to Class & Foundations of Immunology	Dr. Peters	G743
Sep 10	B Cell Activation/Inactivation and Germinal Centre Reaction	Dr. Jenne	G737
Sep 12	Molecular Mechanisms of VDJ and Class Switch Recombination	Dr. Lees-Miller	G743
Sep 17	Immunoglobulin and Fc Receptor Effector Functions (+Therapeutics)	Dr. Jenne	Rm G737
Sep 19	Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due)	Dr. Jenne Dr. Lees-Miller	Rm G737, Reviews Due 9am
Sep 24	Pattern Recognition (PAMPs and DAMPs)	Dr. Cobo	Rm G737
Sep 26	T Cell Development and Selection Current Topics in Immunology - Essay #1 Due	Dr. Santamaria	Rm TBD, Essay #1 Due 9am
Oct 1	Antigen Processing and Presentation	Dr. Shi	Rm G737
Oct 3	TCR-MHC Interactions, TcR Signalling, and T Cell Activation	Dr. Shi	Rm 1405A
Oct 8	Oral Paper Presentations, Oral Critique, and Debate (Presenting Group Literature Review Due)	Dr. Shi and Dr. Cobo	Rm G737, Reviews Due 9am
Oct 10	Lymphatic Function and Immune Protection	Dr. Liao	Rm G743

Oct 15	Th Cell Polarization and Memory Generation	Dr. Peters	Rm G737
Oct 17	Localization of CD4 T Cell Mediated Immunity	Dr. Peters	Rm G743
Oct 22	Effector Mechanisms of CD4, CD8, and NK T cells	Dr. Mody	Rm G737
Oct 24	Current research discussion session	Dr. Peters and Liao	Rm G743
Oct 29	MID-TERM EXAM (Sep 5-Oct 17 Material)	Dr. Peters	Rm G737
Oct 31	Innate Lymphoid Cells	Dr. Geuking	Rm G737
Nov 5	Impact of the Microbiome on Adaptive Immunity	Dr. McCoy	Rm G737
Nov 7	Current research discussion session	Dr. Mody Dr. Geuking	Rm G737
Nov 12 Nov 14	No Classes - Reading Week	NONE	
Nov 19	Tumor Immunity and Cancer Immunotherapy	Dr. Mahoney	Rm G737
Nov 21	Organ-Specific Autoimmunity – Bullous Disease	Dr. Mydlarski	Rm G737
Nov 26	Organ-Specific Autoimmunity – Multiple Sclerosis Current Topics in Immunology - Essay #2 Due	Dr. Ousman	Rm TBD, Essay #2 Due 9am
Nov 28	Organ-Specific Autoimmunity – Diabetes	Dr. Santamaria	Rm G737
Dec 3	Primary and Acquired Immuno-deficiencies	Dr. Wright	Rm G737
Dec 5	The challenge of CD4 T cell-based vaccination strategies	Dr. Peters	Rm G737
TBD	Final Exam (Oct 24-Dec 5 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 the Oct 17 and Oct 24th lectures 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.