



CUMMING SCHOOL OF MEDICINE
GRADUATE COURSE OUTLINE

COURSE TITLE: Introduction to Immunology			
Course	MDSC 640		
Pre/Co-Requisites	Consent of the Faculty, see also course outline provided by CMMB 527. Credit for both Medical Science 640 and Cellular and Molecular and Microbial Biology 527 will not be allowed.		
Faculty	Cumming School of Medicine, Graduate Science Education		
Instructor Name(s)	Dr. Bjoern Petri (for CMMB 527 refer to: Mr. Christopher Hooey: cjhooey@ucalgary.ca)	Email	bpetri@ucalgary.ca
Office Location	HSC 2825	Office Hours	by appointment
Instructor Email Policy	N/A		
Telephone No.	403-220-4562		
TA Name, if applicable		Email	
Class Term, Days	MDSC 640 Tutorials: T, Lectures (CMMB 527): MWF		
Class Times	Tutorials, 3.00-4.00 PM (Lectures (CMMB 527), 3:00-3:50 PM)		
Class Location	Tutorial location: Foothills Campus, HSC G744 (Lectures (CMMB 527): Main Campus, location: ST 127 (subject to change))		

COURSE INFORMATION/DESCRIPTION OF THE COURSE
<p>The course consists of attendance at CMMB 527 lecture series (3x1h) and active participation in a weekly 1-h tutorial led by the course coordinator and postdoctoral fellows in the Immunology Graduate Program.</p> <p>Notes: This course will use material and content from lectures of Cellular, Molecular and Microbial Biology 527 as the knowledge base for participation in weekly tutorial sessions as part of the focus of MDSC 640.</p>
LEARNING RESOURCES/REQUIRED READING
<p>Course emails.</p> <p>Textbook: Kuby Immunology 8th edition (refer please also to textbook suggested by CMMB527).</p> <p>D2L Course Website: CMMB 527, CMMB 527 course outline.</p> <p>Material distributed before and during tutorials (scientific manuscripts, tutorial questions etc. via email list).</p>



COURSE OBJECTIVES/LEARNING OUTCOMES

This introductory immunology course is for graduate students who had no background in immunology during undergraduate studies. It provides a comprehensive overview of the immune responses: antibody-antigen interaction, antibody structure, genetics and synthesis, cellular immunology, MHC, phagocytosis, tolerance and autoimmunity. Using this basic understanding of fundamental immune processes, the involvement of the immune response in autoimmunity, hypersensitivity, tissue rejection, tumor immunology, vaccine production, viral, bacterial, fungal and parasitic infections will be discussed. Additionally, methods for the study of immunology will be covered.

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 <u>and</u> Time
Tutorial Participation	Each week a specific group of students will be required to submit a brief (4-5 sentences) written answer to the assigned tutorial question and present/discuss a scientific publication assigned to them demonstrating they have read and prepared the topic of the week (related to the background material provided in the CMMB527 lecture series). Students will be assigned to small groups (based on max. number of students) in week 1 of the semester and will be responsible for completing the assignment on a weekly basis. Changes to these groups will only be made by the course coordinator and only under exceptional circumstances (i.e. group member(s) withdrawing from the course). All participating students are expected and required to be familiar with the topic of the tutorial and the related questions. All students are expected to have questions prepared related to the scientific publication which will be presented demonstrating that they read and understood the assigned material. The scientific publication is focusing on advancements and recent research in the field related to the topics covered in lectures preceding the tutorial day.	30	on tutorial day as assigned.
Tutorial Term Paper	This assignment will take place throughout the term and will culminate in a written report submitted to the course coordinator from each participating student of the tutorial. This report will be 10-15 pages, double-spaced, in length and will need to be appropriately referenced (references and pertinent figures will be additional to the 15page (maximum) report). The tutorial term paper is designed to encourage the students to choose a topic of interest from one of the areas that will be covered in the lecture/tutorial schedule. The students are free to choose any aspect of immunology from one of the areas-topics that will be given to them in the first week and will further their knowledge beyond the scope of the	30	Winter term 2020: April 15th 2020 by midnight.

	<p>lecture and tutorial material. Same and/or similar topics can be chosen by different students. Topics should not reflect directly the research the students are working on in their particular degree related research project.</p> <p>These term papers will allow for the lecture/tutorial material to venture beyond the scope of the textbook. By incorporating material from other sources, the students will be better able to demonstrate how immunology impacts and integrates into many aspects of society and life.</p> <p>Possible areas will be introduced in the first week of lectures to provide the students with an overview of the potential topics for further study on an individual basis. Students will then be encouraged to meet early and frequently with the course coordinator to discuss and define potential personal report topics of interest and will be required to schedule a formal meeting with the course coordinator to finalize a report topic by the beginning of the 4th week of lecture/tutorials. Each student will select a topic that corresponds to a special area of interested presented to them but will be expected to expand their selected topic beyond the scope of the course text and lectures. This tutorial term paper will require the students to search and access primary literature in addition to current press and historical information on their topic of interest. Part of the mark attributed to the written report will reflect how well the students utilize material external to what is covered in the course lectures.</p>		
Exam I	This written exam will be administered after the first half of the course and will cover the breath of material covered in weeks 1-5 of the CMMB 527 lecture series and related MDSC640 tutorials.	20	Winter term 2020: March 3rd 2020 , in tutorial class
Exam II	This written exam will be administered at the end of the course and will cover the breath of material covered in weeks 6-9 of the CMMB 527 lecture series and related MDSC640 tutorials.	20	Winter term 2020: April 14th 2020 , in tutorial class



ASSESSMENT AND EVALUATION INFORMATION

ATTENDANCE AND PARTICIPATION EXPECTATIONS:

This is a highly interactive course. Attendance and active participation in MDSC640 are mandatory. This course will use material and content from lectures of Cellular, Molecular and Microbial Biology 527 as the knowledge base for participation in weekly tutorial sessions as the focus of MDSC640. It is anticipated that out of class study in addition to lecture participation would be required to produce an exam result worthy of a high grade. Attendance in the CMMB 527 lecture series is therefore highly recommended.

GUIDELINES FOR SUBMITTING ASSIGNMENTS:

The term paper is due from each student at the end of week 10 of the course by midnight (Winter term 2020: TBA).

As this component of the course requires a written report please refer to the University's Writing Across the Curriculum statement at <http://www.ucalgary.ca/pubs/calendar/current/e-2.html>.

FINAL EXAMINATIONS:

Each piece of work of the tutorial (tutorial participation, tutorial term paper and lecture content related examinations) submitted by the student will be assigned a percentage score (see assessment components). The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade. Only the final average grade will be used in determining pass/fail for this course.

A passing grade on a particular component is not essential for you to pass the course as a whole.

Registrar Scheduled Exam: NO (MDSC640 students will be excluded from CMMB527 exams)

EXPECTATIONS FOR WRITING:

It is anticipated that additional hours of research /study and preparation time would be required to produce a report worthy of a high grade. Course material and additional resources should be utilized to gather knowledge and information to generate a comprehensive and high-quality term paper. For guidelines on the term paper please refer to the assessment component section above.

LATE AND/OR MISSING ASSIGNMENTS:

Students will lose 5% per day late past the deadline for all assignments. Additionally, assignments will NOT be accepted more than 72 hours after the posted deadline and students failing to submit any assignment within this time frame will receive a mark of zero. Students who miss an exam will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.

It is the agreement of all Faculty involved in MDSC640 that extensions will NOT be granted on any assignment or quizzes. The only exceptions to this are those in keeping with the University Calendar (illness, religious conviction, or domestic affliction) that are received in writing and with supporting documentation.

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



COURSE TIMETABLE

See below

Tutorial outline for MDSC 640 / WT 2020
room: HS G744
(Health Sciences Center main floor
located within Foothills Campus
time 3.00-4.00PM Tuesdays

Day	Date	CMMB 527 Lecture / MDSC640 TUTORIAL
Mon	13-Jan	Lec-1: Introduction to course
Tue	14-Jan	T0 - Introduction to Immunology/Course Outline
Wed	15-Jan	Lec-2: Compare & Contrast Innate Vs. Adaptive Responses
Fri	17-Jan	Lec-3: C&C Immune Cell Description & Function (WS#1)
Mon	20-Jan	Lec-4: Organs & Tissues of the Immune System
Tue	21-Jan	T1 - Principles and Players of the Immune System
Wed	22-Jan	Lec-5: Innate Immunity: Pattern Recognition & Signalling (PRR)
Fri	24-Jan	Lec-6: Innate Effectors: The Complement System (WS#2)
Mon	27-Jan	Lec-7: Innate Effector Mechanisms
Tue	28-Jan	T2 - Mechanisms of the Innate Immune System
Wed	29-Jan	Lec-8: Leukocyte Migration
Fri	31-Jan	Lec-9: Acute & Chronic Inflammation
Mon	03-Feb	Lec-10: Antigens
Tue	04-Feb	T3 - Mechanisms of Inflammation
Wed	05-Feb	Lec-11: Antibodies: Structure & Function I
<i>Fri</i>	<i>07-Feb</i>	Lec-12: Antibodies: Structure & Function II
Mon	10-Feb	Lec-13: Antigen-Antibody Interactions (WS#3)
Tue	11-Feb	T4 - Antigens and Antibodies: Structure & Function
Wed	12-Feb	Lec-14: Ig Genetics
Fri	14-Feb	Lec-15: T-cell Receptor Genetics (WS#4)
Mon	17-Feb	READING WEEK
Tue	18-Feb	READING WEEK NO TUTORIAL
Wed	19-Feb	READING WEEK
Fri	21-Feb	READING WEEK
Mon	24-Feb	Lec-16: MHC Genetics- Structure
Tue	25-Feb	T5- Antigens and Antibodies: Genetics
Wed	26-Feb	Lec-17: Antigen Processing & Presentation (WS#5)
Fri	28-Feb	Lec-18: Immune Assays I (CH-20)
Mon	02-Mar	Midterm (lectures 1-17)
Tue	03-Mar	TUTORIAL EXAM I
Wed	04-Mar	Lec-19: Immune Assays II (CH-20)
Fri	06-Mar	Lec-20: Immune Assays III (CH-20)
Mon	09-Mar	Lec-21: Cell Mediated Immunity- T-cell Ontogeny
Tue	10-Mar	T7 - Cell mediated Immunity: T cell ontogeny
Wed	11-Mar	Lec-22: Cell Mediated Immunity- TCR
Fri	13-Mar	Lec-23: Cell Mediated Immunity- TCR Signalling
Mon	16-Mar	Lec-24: Cell Mediated Immunity- Cytokines
Tue	17-Mar	T8 - T cell receptor Biology and Cytokines
Wed	18-Mar	Lec-25: Cell Mediated Immunity- Cytokine Signalling
Fri	20-Mar	Lec-26: Cell Mediated Immunity- Effector Responses



Mon	23-Mar	Lec-27: Hypersensitivity
Tue	24-Mar	T9 - Cell mediated Immunity: Signalling and Responses
Wed	25-Mar	Lec-28: Tolerance & Autoimmunity
Fri	27-Mar	Lec-29: Immunodeficiency
Mon	30-Mar	Lec-30: Transplantation (WS#6)
Tue	31-Mar	T10 - Challenges of the Immune System I
Wed	01-Apr	Lec-31: Pathogens & the Immune System (Leishmania)
Fri	03-Apr	Lec-32: Pathogens & the Immune System (Intestinal)
Mon	06-Apr	Lec-33: Vaccines
Tue	07-Apr	T11 - Challenges of the Immune System II
Wed	08-Apr	Lec-34: Immunology & Society (Anti-vax)
Fri	10-Apr	Good Friday
Tue	14-Apr	TUTORIAL EXAM II

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.