



**CUMMING SCHOOL OF MEDICINE
GRADUATE COURSE OUTLINE**

GENERAL INFORMATION			
Course Code and Number	MDSC 755, Lec/Lab 02, Topic 49		
Course Title	Neuroimmunology		
Pre/Co-Requisites	MDSC 619.01 and MDSC 619.02 or equivalent		
Faculty	Cumming School of Medicine, Graduate Science Education		
Instructor Name(s)	Dr. Hedwich Kuipers Dr. Rajiv Jain Dr. Rianne Gorter Dr. Atefeh Rayatpour	E-mail ! Please make sure to cc at least one of the co-instructors when emailing Dr. Kuipers!	hedwich.kuipers@ucalgary.ca rajivwilliam.jain@ucalgary.ca rienne.gorter@ucalgary.ca atefeh.rayatpour@ucalgary.ca
Office Location	HMRB179	Office Hours	M-F 9am-5pm
Instructor E-mail Policy	Available by email, answers not guaranteed outside of office hours		
Telephone No.	403-210-7636		
TA Name(s)	See above	E-mail	
Class Term	Summer 2024		
Class Days and Times	Mon/Wed/Fri, 9:00 am - 12:30 pm		
Class Location	HS 1464B, some lectures might be delivered via Zoom, but will be projected in the classroom		

COURSE INFORMATION/DESCRIPTION OF THE COURSE
This course will cover various aspects of neuroimmunology: 1) fundamentals of immunology - function and regulation of immune cells, 2) the role of immune cells in the central and peripheral nervous system, 3) how immune cells contribute to various CNS diseases and injury (eg. multiple sclerosis, stroke, spinal cord injury), and 4) experimental assays and tools to study neuroimmunological diseases. It will also cover the theory and practice of writing for a lay audience and grant writing.
LEARNING RESOURCES/REQUIRED READING



None

COURSE OBJECTIVES/LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. Describe the fundamentals of immunology and the role of immune cells in the CNS and PNS during homeostasis and disease.
2. Exhibit the ability to create and design neuroimmunological questions and experiments.
3. Write a pilot-style grant application.
4. Write a research summary for the lay public.

COMMUNICATION

Brightspace (By D2L) is located on the University of Calgary server and will be used extensively for communication with students. It is the student's responsibility to ensure that they receive all posted communications and documents and that they receive e-mails sent by instructors or fellow students through D2L. Only your @ucalgary.ca e-mail address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account. If you need help accessing or using Desire2Learn or Zoom, please visit: <https://elearn.ucalgary.ca/resources-for-students/>

LEARNING TECHNOLOGY REQUIREMENTS

To successfully engage in learning experiences at the University of Calgary, students taking online, remote, or blended courses **are required** to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security and malware updates.
- A current and updated web browser.
- Webcam (built-in or external).
- Microphone and speaker (built-in or external), or headset with microphone.
- Current antivirus and/or firewall software enabled.
- Broadband internet connection.

Most current laptops will have a built-in webcam, speaker, and microphone.

Please see the following for a detailed explanation of the minimal required technology for online learning <https://elearn.ucalgary.ca/technology-requirements-for-students/>



A laptop, desktop, tablet, or mobile device is required for D2L access. If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

TERRITORIAL LAND ACKNOWLEDGEMENTS

The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which include the Blackfoot Confederacy (comprised of the Siksika, the Piikani, and the Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including Chiniki, Bearspaw, and Goodstoney First Nations). The City of Calgary is also home to the Métis Nation of Alberta (Districts 5 and 6).

GRADING SYSTEM/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	85-94	Excellent – superior performance showing comprehensive understanding of the subject matter
A-	3.70	80-84	Very Good Performance
B+	3.30	75-79	Good Performance
B	3.00	70-74	Satisfactory Performance
B-	2.70	65-69	Minimum Pass for Students in the Faculty of Graduate Studies
C+	2.30	55-64	All grades below “B-” are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements
C	2.00	50-54	

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

Assessment Methods	Description	Weight %	Due Date <u>and</u> Time (in MST)
Attendance and participation	General attendance, and asking and answering questions during lectures,	15%	
Exit ticket questions	2-3 “exit ticket” questions will be posted on D2L each class day and the students are expected to post their answers in D2L by the end of the day	25%	End of each lecture day
Lay summary & blogpost	Written lay summary of own research and of a high-impact research article (provided)	25%	July 4, 2024, 4:00pm
Pilot grant application	Written grant application in the style of a pilot/catalyst grant (no preliminary data required) on a topic different from own (specific) research topic.	35%	July 19, 2024, 4:00 pm

ASSESSMENT AND EVALUATION INFORMATION

As per the university’s Attendance Policy <https://www.ucalgary.ca/pubs/calendar/current/e-3.html>:

“Regular attendance is advised for students in all courses and there is no regulation that precludes an instructor from taking attendance in the class. The University has directed that attendance will not be considered when assessing a student’s grade except in courses where class participation is a required component of the course. In these cases, if a student is absent from a course the student may be asked to provide documentation regarding the absence.”

ATTENDANCE AND PARTICIPATION EXPECTATIONS:

Students are expected to attend all lectures, as a large variety of topics will be covered. Likewise, active participation, demonstrated through asking and answering questions during/after lectures is expected, as developing, formulating and articulating questions based on the information that is presented deepens understanding of the topic. Absence might affect the attendance and participation grade. Exceptions for absences might be granted on a case-by-case basis, after clear communication of the reason for the absence by the student.

GUIDELINES FOR SUBMITTING ASSIGNMENTS:

Assignments should be submitted as pdf (preferred), Microsoft word document, or hard copy, with the UCID number of the student clearly indicated.

FINAL EXAMINATIONS:

n/a

EXPECTATIONS FOR WRITING:

Writing is an essential and integral skill required of scientific researchers and while generative artificial intelligence might have a place in the process of creating various written scientific documents, it is also

essential to develop an independent writing style. Therefore, the final written assignments for this course are expected to be written by the student, without the assistance of generative artificial intelligence tools. We will hold discussions on how to develop and implement a guiding policy for the (potential) use of generative AI in writing assignment at several moments in the course. Writing skills cross all disciplines. Writing abilities support your success at work and/or in further studies. If you require any support with your writing or would like to book a one-on-one appointment with a writing coach, please visit: <https://www.ucalgary.ca/student-services/student-success/writing-support>

LATE AND/OR MISSING ASSIGNMENTS:

Extensions for assignments must be requested well in advance of their due date and will be granted at the sole discretion of the instructor. If no extension has been requested or granted, 10% will be deducted of the grade per day for late assignments.

DEFERRALS OF TERM WORK:

Should a request to defer term work exceed the end of the term, a *Deferral of Term Work* form must be completed and submitted to the Office of the Registrar. The deferral will be recorded on the student record. Deferrals are granted at the discretion of the Dean (or designate) and are normally granted for 30 days beyond the last day of the term. Should circumstances warrant, the maximum time that may be granted for a deferral of term work is one additional term. Approved extensions must be sent to the Office of the Registrar. Application information is available at: <https://www.ucalgary.ca/pubs/calendar/current//g-2-3.html>

CLASS SCHEDULE				
Date	Time	Lect #	Topic / activity	Instructor
June 24	9:00am-10:00am	1	Introduction to course & first assignment: Writing for a lay audience	Dr. Hedwich Kuipers / Mr. Tyler Soule
	10:15am-11:15am	2	Introduction to immune components	Dr. Björn Petri
	11:30am-12:30pm	3	Innate immunity	Dr. Jonathan Canton
June 26	9:00am-10:00am	4	T cells	Dr. Hedwich Kuipers
	10:15am-11:15am	5	B cells	Dr. Rajiv Jain
	11:30am-12:30pm	6	Animal models	Dr. Atefeh Rayatpour
June 28	9:00am-10:00am	7	MRI to image neuroinflammation	Dr. Jeffrey Dunn
	10:15am-11:15am	8	Microglia	Dr. Rianne Gorter
	11:30am-12:30pm	9	Blood Brain Barrier	Dr. Shalina Ousman
July 3	9:00am-10:00am	10	Astrocytes	Dr. Hedwich Kuipers / Dr. Rianne Gorter
	10:15am-11:15am	11	Multiple sclerosis	Dr. Wee Yong

	11:30am-12:30pm	12	High throughput techniques: Flow cytometry & single cell transcriptomics platforms	Dr. Marlene Mørch / Dr. Charlotte D'Mello
July 5	9:00am-10:00am	13	Grant writing	Dr. Vienna M. Doenni
	10:15am-11:15am	14	Meningitis	Dr. Brian Lozinski (Zoom)
	11:30am-12:30pm	15	Clinical trials	Dr. Marcus Koch
	4:00 PM	Lay summary & blogpost assignment due		
July 8	9:00am-10:00am	16	Genetics of disease	Dr. Gerald Pfeffer
	10:15am-11:15am	17	Genetic manipulation strategies	Dr. Robyn Flynn (Centre for Genome Engineering)
	11:30am-12:30pm	18	Imaging techniques	Dr. Kelvin Poon / Dr. David Elliott (HBI AMP facility)
July 10	9:00am-10:00am	19	Pharmacology of treating CNS	Dr. Saba Homayonia
	10:15am-11:15am	20	Clinical implications of neuroimmunology	Dr. Camara-Lemarroy
	11:30am-12:30pm	21	Addiction	Dr. Nynke van der Hoogen
July 12	9:00am-10:00am	22	Spinal cord & peripheral nerve injury	Dr. Shalina Ousman
	10:15am-11:15am	23	Neurovirology	Dr. Chris Power (Zoom)
	11:30am-12:30pm	24	Optogenetics	Dr. Tamas Fuzesi
July 15	9:00am-10:00am	25	Cancer	Dr. Reza Mirzai (Zoom)
	10:15am-11:15am	26	Microbiome	Dr. Marcela Davoli-Ferreira
	11:30am-12:30pm	27	Pain	Dr. Bradley Kerr (Zoom)
July 17	9:00am-12:30pm	time for rescheduled lectures, if necessary		
July 19	4:00 PM	Pilot grant assignment due		

GUIDELINES FOR ZOOM SESSIONS

Zoom is a video conferencing program that will allow us to meet at specific times for a 'live' video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed, or published without the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as the Code of Conduct). When entering



Zoom or other video conferencing sessions, you play a role in helping create an effective, safe, and respectful learning environment. Please be mindful of how your behaviour in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies. If participants have difficulties complying with this requirement, they should e-mail the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your zoom sessions visit: <https://elearn.ucalgary.ca/guidelines-for-zoom/>.

If you are unable to attend a Zoom session, please contact your instructor to arrange an alternative activity (where available). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (such as for group work, presentations, etc.).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only.

CONDUCT DURING LECTURES

The classroom should be respected as a safe place to share ideas without judgement — a community in which we can all learn from one another. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

As members of the University community, students, employees and academic staff are expected to demonstrate conduct that is consistent with the University of Calgary Calendar, the Code of Conduct and Non-Academic Misconduct policy and procedures, which can be found at <https://www.ucalgary.ca/legal-services/ucalgarys-policies-and-procedures>.

EQUITY, DIVERSITY, AND INCLUSION

The Cumming School of Medicine recognizes that equity, diversity, and inclusion benefits and strengthens all communities, including the medical community and those served by it. We aim to actively engage all learners, particularly those from equity seeking groups including women, Indigenous peoples, visible/racialized minorities, persons with disabilities, and LGBTQ+. While our faculty continues to learn about more equitable, diverse, and inclusive approaches to education, we welcome and appreciate suggestions to help us ensure that all learners are well served by our courses.



To help cultivate learning environments that support diverse and inclusive perspectives and lived experiences, learners are invited to let instructors know if:

- they have names and/or pronouns they would prefer to use that differ from those that appear on official records
- scheduled class meetings conflict with religious events so that alternative arrangements can be made.

If they are not already, learners are also encouraged to become familiar with the various opportunities for diverse engagement, learning, and support on campus, including, but not limited to the following resources:

The Office of Equity, Diversity, and Inclusion

<https://www.ucalgary.ca/equity-diversity-inclusion>

The Q Centre

<https://www.su.ucalgary.ca/programs-services/student-services/the-q-centre/>

The Writing Symbols Lodge

<https://www.ucalgary.ca/student-services/writing-symbols/home>

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 e-mails, Facebook, YouTube). Students are responsible for being aware of the University's Internet and e-mail use policy, which can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-electronic-resources-and-information-policy>.

MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

Media recording for lesson capture

Please refer to the following statement on media recording of students: https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf

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/visual 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 the Associate Dean, Graduate Science Education. The full policy on Student Accommodations is available at <https://www.ucalgary.ca/legal-services/university-policies-procedures/student-accommodation-policy>.

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

INSTRUCTOR INTELLECTUAL PROPERTY

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.

COPYRIGHT LEGISLATION



All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy> and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy

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 <https://www.ucalgary.ca/pubs/calendar/grad/current/gs-academic-regulations.html>.

ACADEMIC MISCONDUCT

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <https://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 (www.ucalgary.ca/student-services/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, at <https://www.ucalgary.ca/wellness-services/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 e-mail 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 <https://www.ucalgary.ca/risk/campus-security/your-safety/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.