



COURSE OUTLINE

1. **Course:** CMMB 527, Immunology - Winter 2024

Coordinator(s)

Name	Email	Phone	Office	Hours
Dr. Chukwunonso Nzelu	chukwunonso.nzelu@ucalgary.ca	TBA	TBD	By appointment

Section(s)

Lecture 01 : MWF 15:00 - 15:50 in ST 127

Instructor	Email	Phone	Office	Hours
Dr Bjoern Petri	TBA	TBA	TBA	TBA
Dr. Chukwunonso Nzelu	chukwunonso.nzelu@ucalgary.ca	TBA	TBD	By appointment

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

Course themes

During this course, we will examine the fundamentals of the immune system, with a closer look at how our immune system works in real world contexts. We will also learn how to interpret immunological data. The course is split by theme:

- 1) The Innate Immune System (Themes 1-4)
- 2) The Adaptive Immune System (Themes 5-7)
- 3) The Immune System at Work (Themes 8-10)

Lecture: 01	MWF	15:00-15:50	ST 127
Labs: A	Th	9:00-11:50	BI 123/BI 159
B	Th	12:30-15:20	BI 123/BI 159
C	Th	15:30-18:20	BI 123/BI 159

Instructional Team

Instructors

Dr. Chukwunonso (Nonso) Nzelu (he/him) chukwunonso.nzelu@ucalgary.ca

* Few Guest Lecturers might be invited

Student hours: Please book an appointment by email with the instructors/GTAs if you need to discuss the course. Another good way to introduce yourself, discuss the course, and talk about immunology is to meet with the instructors immediately after lecture. We look forward to discussing and learning about immunology with you this term!

GTAs

Isbel Lopetegui-Gonzalez (she/her): isbel.lopeteguigonzi@ucalgary.ca

Shashini Perera (she/her): shashini.perera@ucalgary.ca

Naomi Chege (she/her): - naomi.chege1@ucalgary.ca

Teaching assistants (GTAs) in CMMB 527 are graduate students who are developing their teaching practice. You will see GTAs facilitating presentations and discussion in labs, and you may also see the course GTAs in lectures. Your GTA will evaluate your weekly worksheets and lab assignments. Your GTA will act as a coach to help you achieve and continue improving throughout this course. Please remember that our GTAs are developing their teaching skills. Please direct feedback to us so that we can best mentor them in developing their teaching practice.

The instructional team (instructors, GTAs and technicians) will support your learning during the course. Disrespectful treatment of any member of the team constitutes non-academic misconduct and will be reported to the Associate Head of Undergraduate Teaching.

Instructional Contingencies

In the event of instructor sickness, lecture will be cancelled. An email will be sent and D2L newsfeed posted as soon as possible. Zoom may be used for synchronous delivery in some cases. Information regarding change of delivery and formatting will be provided 24-hours ahead of any changes via email and the D2L newsfeed.

In the event of GTA sickness or quarantine: We currently have contingency plans in place for an alternative GTA to facilitate your lab session in the event of a sickness or quarantine. Your lab should therefore be able to run according to the schedule. In the event that our back-up contingencies are not possible, your lab will either be on Zoom or be cancelled. In the event of a cancellation, the weight of the assignment will be adjusted to other labs. An email will be sent and D2L newsfeed posted as soon as possible.

Course Site:

D2L: CMMB 527 L01-(Winter 2024)-Immunology

Questions, Feedback & Communication Policy

D2L Q&A discussion board

If possible, please bring forward questions and ideas in person during and after class and labs. Being able to ask you follow-up questions in real time helps us to make sure that we are answering your questions and providing helpful support. For general questions about the course, we will be using a D2L Q&A Discussion Board. This board allows you to post and respond to other students' questions, and receive input from the instructional team. To ensure that all students have access to the same information, all general questions should be posted here. The instructional team will respond to posts M-W within 24 hours.

Course communication policy

We will reply to the discussion board, post notices, and send emails between 9:00am-5:00pm Monday-Friday. We will do our best to read and respond to discussion board posts/emails within 24 hours Monday-Friday, and those received during the weekend by the following Tuesday. If you do not receive a response within the time-frame, please follow-up by email (sometimes emails or discussion posts are lost in spam filters or mistakenly overlooked!).

Note: Students must use their U of C account for all course correspondence.

Assignments & Activities

Lecture

- In the in-person lecture section of this course on Mondays, Wednesdays, and Fridays, you will be working with neighbors to discuss and solve problems. Typically, this will entail first solving problems as individuals, then the group will engage in peer-instruction and collaboration to answer questions, solve problems, and develop learning strategies – a technique that has been shown to increase learning compared to instructor lecture and explanation only (see Smith et al., 2011).

- Lecture material will be posted on D2L.

- Most weeks, a quiz will be due on Friday before class. The quiz will be completed outside of class time. Multiple quiz attempts are allowed with no time limit. The quiz will be based on the material covered that week (see lecture schedule for details).

There will be one midterm and one final (see lecture schedule for details).

Labs

- The in-person lab section of this course is on Thursdays. You chose a lab time when you enrolled for the course (9.00, 12.30 or 3.30) and cannot change this time. The labs are split between practical and theory sessions. In the practical sessions, you will be working by yourself to complete the experiments with support from a GTA and technician. Some lab worksheets will be due at the end of the lab session. Others will need to be completed outside of lab time. In the tutorial sessions, you will be learning how to interpret data and given more theoretical information on the techniques you are learning in your practical sessions. Assignments will be due at the end of the session.

- Lab material will be posted on D2L.
- Labs are mandatory to pass this course. Attendance will be recorded.

- See lab schedule for details of the assignments.

D2L & discussion boards

Discussion board etiquette when posting

- o Use a descriptive subject line to make your threads easy to follow
- o Use professional language
- o Be respectful of other people's thoughts and opinions – treat others the way you would like to be treated yourself
- o Stay on topic

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Biological Sciences Equity Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, staff, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Chair, Arshad Ayyaz (arshad.ayyaz@ucalgary.ca), or a committee representative of your choice at <https://science.ucalgary.ca/biological-sciences/about/equity-diversity-and-inclusion>

Course Outcomes:

- o Compare and contrast components of the immune system
- o Illustrate how the immune system evolved, and how it develops within vertebrates
- o Distinguish innate from adaptive immune responses
- o Demonstrate proficiency in basic immunological laboratory techniques such as the ELISA assay
- o Differentiate between immune assays and defend the use of a particular assay in a given situation
- o Relate immune responses to real-world examples, such as infectious disease, transplants and allergies

2. Requisites:

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Biology 311, 331, Cellular, Molecular and Microbial Biology 343; and 3 units from Cellular, Molecular and Microbial Biology 411, Biochemistry 431 or 443.

3. Grading:

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Quiz: Safety, Academic Misconduct and Ethics questions ¹	1%	Jan 11 2024		
Quiz: Introduction Survey & Syllabus questions	1%	Jan 12 2024		
Week 2 Lab Assessments ²	2%	Jan 18 2024		
Quiz: Theme 2	1%	Jan 19 2024		
Week 3 Lab Assessment ³	2%	Jan 25 2024		
Quiz: Theme 3	1%	Jan 26 2024		
Week 4 Lab Assessment ⁴	2%	Feb 01 2024		
Quiz: Theme 4	1%	Feb 02 2024		
Week 5 Lab Assessment ⁵	2%	Feb 08 2024		
Quiz: Theme 5	1%	Feb 09 2024		
Midterm	12%	Feb 14 2024 at 03:00 pm (50 Minutes)	in-person	ST 127
Week 8 Lab Assessment ⁶	4%	Mar 01 2024		
Quiz: Theme 6	1%	Mar 04 2024		
Week 9 lab Assessment ⁷	1%	Mar 07 2024		
Quiz: Theme 7a	1%	Mar 08 2024		
Week 10 Lab Assessment ⁸	10%	Mar 14 2024		
Quiz: Theme 7b	1%	Mar 15 2024		
Week 11 Lab Assessment ⁹	1%	Mar 21 2024		
Quiz: Theme 8	1%	Mar 22 2024		
Quiz: Theme 9	1%	Mar 29 2024		
LAB EXAM ¹⁰	20%	Apr 04 2024		
Quiz: Theme 10	1%	Apr 05 2024		
Registrar Scheduled Final Exam	32%	Will be available when the final exam schedule is released by the Registrar	in person	Will be available when the final exam schedule is released by the Registrar

¹ The quiz is due at the end of each lab section.

² For group 1: Lab 1 Worksheet; For group 2: Tutorial 1 Worksheet; These are due at the end of the lab section.

³ For group 2: Lab 1 Worksheet; For group 1: Tutorial 1 Worksheet; These are due at the end of the lab section.

⁴ For group 1: Lab 2 Worksheet; For group 2: Tutorial 2 Worksheet; These are due at the end of the lab section.

⁵ For group 1: Lab 2 Worksheet; For group 2: Tutorial 2 Worksheet; These are due at the end of the lab section.

⁶ Group 1 Short Lab Report (due at the start of next lab, 4%); Group 2 Quiz (due in class, 1%)

⁷ Group 1 Quiz (due in class, 1%); Group 2 Short Lab Report (due at the start of next lab, 4%)

⁸ Group 1 Full Lab Report (due at the start of next lab, 10%); Group 2 Quiz (due in class, 1%)

⁹ Group 1 Quiz (due in class, 1%); Group 2 Full Lab Report (due at the start of next lab, 10%)

¹⁰ Due at the end of the lab section.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component 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.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

Final Grade:

Your letter grade for the course will be determined by summing the weighted numerical scores earned for each component listed in the schedule and converting them to a letter grade using the scale below. Grades on individual components, and the overall grade percentage will not be rounded. All opportunities to earn marks in this course will be presented to all students and not given on an individual basis. - Note: Letter grades are not determined for any individual component, but the table may be used to give you an approximate sense of your standing during the term.

This course will have a Registrar Scheduled Final exam that will be delivered in-person and on campus. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this

course will be designed to be completed within 2 hours.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. **Missed Components Of Term Work:**

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

Missed in-person components

To maintain a safe and healthy campus community, everyone is asked to stay home and not attend campus if feeling ill. The following information and guidelines are provided in the event of a missed in-person component for health or other university-sanctioned reasons. Please see university guidelines for missed components of term work (Calendar section 3.6), and note the requirement for notification **within 48 hours**.

In the event of a missed lecture...

You do not need to provide notification or justification for missing a lecture. If you miss a scheduled lecture, you should review the lecture notes on D2L. You can then bring any questions regarding the lecture and in-class discussions to Dr. Nzelu either after the next lecture you attend or through the discussion boards.

In the event of a missed lab...

Attendance at your assigned lab session (practical or theory) is required to pass the course. In the event of a missed lab, please contact Dr. Nzelu as soon as possible, and **within 48 hours** of the missed lab. If notified early, we will work with you to make arrangements to attend a different lab section if possible. If another section cannot be attended and you have a university-sanctioned absence, you will receive an "excused" for the session. Depending on the assignment, Dr. Nzelu will either provide you with data so that you can complete the assignment outside of class time or take the weight of the assignment and add it to another lab assignment. A maximum of two excused absences will be permitted for the entire term. In the event of three or more excused absences, you will be given an alternative assignment to complete within one week of your missed lab.

Unexcused labs (non-university sanctioned absences) will receive a mark of zero for the associated assignment.

Missed deadlines for out of class activities

A 10% deduction per day late will be applied to all out-of class assignments submitted after the deadline, with assignments not accepted after one week (five business days). The D2L DropBox will remain open after the deadline to allow late submissions, and your mark will receive a deduction. You therefore do not need to email the instructional team regarding late submissions.

A 10% deduction will be applied for:

- Short Lab Report
- Full Lab Report

Late submissions will not be accepted for:

- Theme Quizzes
- Lab Worksheets

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. Course Materials:

Recommended Textbook(s):

Sharon Stranford; Judy Owen; Patricia Jones; Jenni Punt, *Kuby Immunology 8th edition and newer*. W. H. Freeman.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and 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/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

No aids are allowed on tests or examinations.

Students should also read the Calendar, [Section G](#), on Examinations.

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. Human & Living Organism Studies Statements:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students taking laboratory and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work [form](#) to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

Reappraisals of grades

- Grades for all assignments and activities will be posted on D2L within two weeks of receipt of assignments. It is your responsibility to review your posted mark and notify Dr. Nzelu if an assignment that you completed is marked as "not received" within 48 hours of posting. Documentation will be required, including email receipt of your submission to D2L and your submission with a time-stamp dated before the due date. - If you would like to have your work re-appraised after the posting of your mark, please contact Dr. Nzelu for an appointment to review and discuss your work. Note: your GTAs cannot reappraise your grade. If you would like to request a reappraisal, you must submit your request with a full rationale and description of how your work meets the grading criteria to Dr. Nzelu within ten business days of the mark being posted on D2L. Non-academic grounds are not relevant for grade reappraisals. Please be aware that the grade can be raised, lowered, or remain the same. See Section I.3 of the University Calendar for more information on grade reappraisals.

12. Other Important Information For Students:

- a. **Mental Health** 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 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, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see their [website](#) or call [403-210-9355](#).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU](#) [contact](#), Email your SU Science Reps: science1@su.ucalgary.ca, science2@su.ucalgary.ca, science3@su.ucalgary.ca.

f. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Lisa Gieg by email imgieg@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
[Student Academic Misconduct Policy](#) and [Procedure](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- h. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students

registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- j. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

Electronically Approved - Jan 05 2024 17:25

Department Approval