



## MICR\*3230 Immunology

Fall 2021

Section(s): C01

Department of Molecular and Cellular Biology

Credit Weight: 0.50

Version 4.00 - September 07, 2021

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### 1 Course Details

#### 1.1 Calendar Description

This course provides an introduction to the immune response of the vertebrate host, the cells and tissues of the lymphoid system, humoral and cell-mediated immunity, the concept of immunity to diseases and current techniques in immunology.

**Pre-Requisites:** BIOL\*1090, BIOC\*2580

#### 1.2 Course Description

This course provides an introduction to the immune response of the vertebrate host, the cells and tissues of the lymphoid system, humoral and cell-mediated immunity, the concept of immunity to diseases and current techniques in immunology.

#### 1.3 Timetable

**To meet Public Health and University Guidelines pertaining to COVID-19 safety protocols, the class has been divided into two sections. Each section will receive face-to-face and remote instruction. For the first half of the course (Dr. Geddes-McAlister), Sections will alternate (as outlined below) for face-to-face and remote delivery. Note: All lectures will be recorded and available remotely following each lecture session. The second half of the course (Dr. Mallard) will be taught remotely. All quizzes, exams, tutorial, and office hours will be held virtually via Courselink.**

**For Sept. 10 - Oct. 22, 2021 Mon/Wed/Fri 11:30 AM - 12:20 PM (Dr. Jennifer Geddes-**

**McAlister)**

Section 01: Mondays (Face-to-face), Wednesdays (Remote synchronous via Courselink), alternating Fridays (Face-to-face)

Section 02: Mondays (Remote synchronous via Courselink), Wednesdays (Face-to-face), alternating Fridays (Face-to-face)

**Details**

**Fri. Sept. 10** - Section 01 face-to-face; Section 02 remote

**Mon. Sept. 13** - Section 01 face-to-face; Section 02 remote

**Wed. Sept. 15** - Section 01 remote; Section 02 face-to-face

**Fri. Sept. 17** - Section 01 remote; Section 02 face-to-face

**Mon. Sept. 20** - Section 01 face-to-face; Section 02 remote

**Wed. Sept. 23** - Section 01 remote; Section 02 face-to-face

**Fri. Sept. 24** - Section 01 face-to-face; Section 02 remote

**Mon. Sept. 27** - Section 01 face-to-face; Section 02 remote

**Wed. Sept. 29** - Section 01 remote; Section 02 face-to-face

**Fri. Oct. 1** - Section 01 remote; Section 02 face-to-face

**Mon. Oct. 4** - Section 01 face-to-face; Section 02 remote

**Wed. Oct. 6** - Section 01 remote; Section 02 face-to-face

**Fri. Oct. 8** - Section 01 face-to-face; Section 02 remote

**Mon. Oct. 11** - No classes (Holiday)

**Wed. Oct. 13** - Section 01 remote; Section 02 face-to-face

**Fri. Oct. 15** - Section 01 remote; Section 02 face-to-face

**Mon. Oct. 18** - Section 01 face-to-face; Section 02 remote

**Wed. Oct. 20** - Section 01 remote; Section 02 face-to-face

**Fri. Oct. 22** - In-class mid-term (remote via Couselink)

**For. Oct. 25 - Dec. 3, 2021 Mon/Wed/Fri 11:30 AM - 12:20 PM (Dr. Bonnie Mallard)**

Section 01 and 02: Remote

## 1.4 Final Exam

Final exam: Dec. 6, 2021 2:30 - 4:30 pm via Courselink (using LockDown Browser)

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Jennifer Geddes-McAlister  
**Email:** mcb3230@uoguelph.ca

**Instructor:** Bonnie Mallard  
**Email:** mcb3230@uoguelph.ca

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## 3 Learning Resources

### 3.1 Required Resources

#### Immunology (Textbook)

Immunology, 8th Edition, 2013, by Judith A. Owen, Jenny Punt, Sharon A. Stanford. W.H. Freeman & Co. (Online and hard-copy versions available, and on reserve in the library).

### 3.2 LockDown Browser

LockDown Browser will be used via Courselink for mid-term and final exams

### 3.2 Tutorial & Question and Answer sessions

Twice a week on Tuesdays from 2:00 - 2:30 pm and Thursdays from 10:00 - 10:30 am an online tutorial and question and answer session will be facilitated by the Teaching Assistants using the Courselink Virtual Classroom.

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## 4 Learning Outcomes

The goal of this course is to learn structure and function of the vertebrate immune system in an integrated manner with an emphasis on host defense mechanisms against harmful agents

and maintenance of homeostasis. An understanding of the application of the knowledge of immunology in health and disease is desired. At the end of the course, students should be able to explain, analyze and apply:

1. Immunology terms
2. Structure and function of the cells/organs of the immune system
3. Structure and function of immunological molecules
4. Results of basic immunological techniques
5. Development of humoral and cell mediated immune responses to infectious disease
6. Advanced experimental applications in immunology

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## 5 Teaching and Learning Activities

**Learning Strategy:** A structured interactive lecture and discussion strategy, using illustrations and multi media, will be used to emphasize the basic concepts. Lectures will be face-to-face and remote (i.e., recorded and posted to Courselink during the assigned class time). Students are encouraged to read the topics before lecture discussions to enhance understanding and construct informal discussion groups to support their learning. Brief guided notes, to accompany the lectures, will be available via Courselink website.

**For Dr. Geddes-McAlister, virtual office hours will be held on Fri. from 12:30 - 1:00 pm using the Courselink virtual classroom.**

**For Dr. Mallard, virtual office hours will be held on Wednesday from 12:30 - 1:00pm using the Courselink virtual classroom.**

Students are encouraged to ask questions relating to the learning materials during the class time. Students are encouraged to take advantage of support offered via bi-weekly Tutorials and Question and Answer Sessions on the topics covered during the lectures. In general, the average grade for the course is usually 70-72% in class size exceeding >450 students.

**All assessments (i.e., quizzes, mid-term, and final exam) will be held remotely via Courselink and LockDown Browser (Responds video monitoring will not be used in this course).**

## 5.1 Course Content & Lecture Schedule

Instructors: Geddes-McAlister (weeks 1-8), Mallard (week 9-15)

<b>Week</b>	<b>Topics Covered in Lecture</b>	<b>Chapter Readings</b>	<b>No. Of Lectures</b>
1-3	<b>A. Introduction: Dr. Jennifer Geddes-McAlister</b>		
	Introduction to the course (Kuby 8th Immunology Resources)		1
	An overview of the Immune System	1	2
	Cells, Organs and Microenvironments	2	2
3-5	<b>B. Innate Immunity:</b>		
	Innate Immunity	4	4
	<b>Online quiz - Wed. Sept. 22, 2021 (open book; via Courselink)</b>		
	Complement System	5 (165-198)	2
6	<b>C. Recognition and Response:</b>		

<b>Week</b>	<b>Topics Covered in Lecture</b>	<b>Chapter Readings</b>	<b>No. Of Lectures</b>
	Antigens, B cell Antigen Receptor (BCR) and Signaling, Antigen- Antibody Interactions	3(69-103)	1
	<b>Online quiz - Wed. Oct. 6, 2021 (open book; via Courselink)</b>		
6-7	<b>D. The Organization and Expression of Lymphocyte Receptor Genes:</b>		
	Antibody structure	3(69-103);	1
	Immunoglobulin (BCR) genes	6(205-236)	1
7-8	B cell Development and differentiation and Effector Response: Development of Antibody mediated immunity	11	2
	<b>Mid Term Examination - Fri. Oct. 22, 2021 (online with Courselink and LockDown Browser)</b>		
9-14	<b>E. Cell Mediated Immunity: Dr. Bonnie Mallard</b>		
	MHC & antigen presentation	8	4

<b>Week</b>	<b>Topics Covered in Lecture</b>	<b>Chapter Readings</b>	<b>No. Of Lectures</b>
	T cell receptors and signaling	3(95-101); 7(247-255); 9 and 11	3
	<b>Online quiz - Mon. Nov. 8, 2021 (open book; via Courselink)</b>		
	Cytokines and Chemokines	4	3
	Effector Response: Development of Cell mediated immunity	13(427-446)  15 (506-508)	4
	<b>Online quiz - Mon. Nov. 22, 2021 (open book; via Courselink)</b>		
14-15	<b>F. Infection and Immunity:</b>		
	Immunity to infectious disease	17(553-574)  18 (593-623)	3
	<b>Final Examination - TBD (online with Courselink and LockDown Browser)</b>		



## 6 Assessments

### 6.1 Methods of Assessment

<b>Form of Assessment</b>	<b>Weight of Assessment</b>	<b>Date of Assessment (Location)</b>	<b>Course Content /Activity</b>	<b>Learning Outcome Addressed</b>
Quiz 1	5%	Wed. Sept. 22, 2021 Courselink (open book)	Chapters 1,2,4	1, 2 and 6
Quiz 2	5%	Wed. Oct. 6, 2021 Courselink (open book)	Chapter 5 & 3 (assigned readings)	1,2 and 6
Midterm	35%	Fri. Oct. 22, 2021 (Courselink and LockDown Browser)	All material to date	1 to 6
Quiz 3	5%	Mon. Nov. 8, 2021 Courselink (open book)	Chapters 8, 3 (95-101), 7 (247-255), 9, 11	1 and 2
Quiz 4	5%	Mon. Nov. 22, 2021 Courselink (open book)	Chapters 4, 13 (427-446), 15 (506-508)	1,2,3 and 4
Final	45%	TBD (Courselink and LockDown)	Entire course content	1 to 6

<b>Form of Assessment</b>	<b>Weight of Assessment</b>	<b>Date of Assessment (Location)</b>	<b>Course Content /Activity</b>	<b>Learning Outcome Addressed</b>
		Browser)	delivered during the lectures	

## 6.2 Note

**Quizzes:** Four online quizzes (5% grade each) will be held during pre- and post-midterm sessions.

- The online quiz will be open for two days, i.e., 48 hours where students will be expected to answer ten randomly generated multiple-choice questions.
- Once the session is begun, it must be completed within 30 min.
- Prior to beginning the quiz, computer functionality, proper battery charge/power connection etc. must be ensured for successful completion of quiz.
- No alternate quiz session will be available resulting in the loss of marks towards the grade, should it be missed.

**Midterm:** A 50 min midterm examination (worth 35% of grade) will comprise 45 multiple-choice and/or other objective type of questions where best answer must be chosen.

- Some questions may emphasize interpretation or explanation of experimental observations or diagrams.
- Any student missing the midterm examination will write an 80% final examination. Additional information is available at: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

**Final:** A two-hour comprehensive and cumulative examination (worth 45% of grade) will cover the entire course learning materials. The examination will involve 90 objective type questions (e.g., True and False, multiple choice & some multiple part questions).

- Some questions may require interpretation and explanation of experimental observations or diagrams.
  - Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services as soon as possible at 519-824-4120 ext. 56208 (website: <https://www.uoguelph.ca/csd/>)
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## 7 Course Statements

### 7.1 Course Specific Notes

- Students are required to regularly check course announcements via Courselink.
- No e-mail sent to MCB3230@uoguelph.ca will be considered as confidential unless clearly stated. If pertinent, these could be discussed during the lectures.
- Students are encouraged to take advantage of bi-weekly Tutorials and Question - Answer Sessions by the Teaching Assistant.
- Use of cell phones during the lecture is prohibited.
- Electronic recording of classes is expressly forbidden without prior written consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.
- Students are encouraged to participate in fair faculty and course evaluation, which will be announced in advance via the course website.
- Any unusual incidence during the conduct of examination must be immediately brought to the attention of Professors in the examination hall.
- Students are not allowed to wear baseball hats (or hats that hide wandering eyes) during the examination. You may bring to examination - calculator, pen, or pencil but NOT backpack, earphones, or cell phone.
- Please contact the Course Coordinator for any matter concerning the course.

#### Online Behaviour

**Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:**

- Posting inflammatory messages about your instructor or fellow students

- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your user name and password
- Recording lectures without the permission of the instructor

## 7.2 Grading

Indicate all course policies regarding in-semester tests and assignment submissions, including time and place for submission of assignments and explicit penalties for late submissions.

## 7.3 Religious Matters

As for religious matters, please refer to the university policies at: <http://www.uoguelph.ca/hre/hr/hrholydays.shtml>

## 7.4 Academic Integrity

Academic integrity is integral to education and students are encouraged to review various policies at: <http://www.academicintegrity.uoguelph.ca/integrity.cfm>.

# 8 Department of Molecular and Cellular Biology Statements

## 8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

## 8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the

Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>

- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

### 8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.selfregulationskills.ca/>

### 8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

### 8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become

available.

## 9 University Statements

### 9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

### 9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

### 9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website  
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

## 9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

## 9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

## 9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

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