

**University of Guelph**  
**College of Biological Science**  
Department of Molecular and Cell Biology  
COURSE OUTLINE  
Immunology - MICR\*3230, 0.50 (Fall, 2015)

**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.

*Prerequisites:* BIOL\*1040 or BIOL\*1090), BIOC\*2580

**Teaching team:**

**Course Coordinator:**

Dr. Azad K. Kaushik, Room SCIE4248  
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**Instructor:**

Yfke Pasman, Room SCIE3206  
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**Teaching Assistant:**

Warren van Loggerenberg, Room 4403  
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Emma Louth, Room (TBA)  
Extension: (TBA); e-mail: [elouth@uoguelph.ca](mailto:elouth@uoguelph.ca)

**Course schedule:** Mon,Wed,Fri, 11:30AM-12:20PM, ROZH101 Start Date: September 11, 2015

**Learning goals and rationale**

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:

- i. Immunology terms
- ii. Structure and function of the organs of the immune system
- iii. Structure and function of immunological molecules
- iv. Results of basic immunological techniques
- v. Development of humoral and cell mediated immune responses to infectious disease

**Learning Strategy:** A structured interactive lecture and discussion strategy, using illustrations and multi media, will be used to emphasize the basic concepts. Students are encouraged to read the topics before lecture discussions to enhance understanding. Brief guided notes, will be available via D2L website. Students are encouraged to ask questions relating to the learning materials during and outside the class. A 'general online discussion' via D2L is encouraged to promote student interactions and co-operative learning but the discussions must be in the context of structured learning (blogging to be avoided) as per brief guided notes. It would be helpful to work in a small learning group, using social media, to achieve the learning goals. Students are encouraged to take advantage of coaching offered via two weekly structured 'Tutorials' on the

topics covered during the lectures and, also, two weekly ‘Question-Answer’ sessions. In general, the average grade for the course is usually 70-72% in class size exceeding >350 students.

### Course Resources

**Text Book and iClickers Required:** Immunology, 7th Edition, 2013, by Judith A. Owen, Jenny Punt, Sharon A. Stanford. W.H. Freeman & Co. (Available at the university Book Store and on reserve in the library); Students are required to have iClickers for this course for interactive class learning, but these will not be used for grading. Useful resources on iClickers are available at:

- <http://www.uoguelph.ca/courselink/iclickers.html> ;
- <http://www.uoguelph.ca/tss/ltei/clickers/index.cfm>

### Student Consultation and help:

	MON	TUE	WED	THURS	FRI
Kaushik	Post-lecture up to 30 min.		Post-lecture up to 30 min; <b>Office:</b> 2:00-4:00 PM; email for appointment		Post-lecture up to 30 min.
Pasman	Post-lecture up to 30 min.		Post-lecture up to 30 min.; By appointment		Post-lecture Up to 30 min.
Loggerenberg		Tutorials 12:00 PM - 12:45 PM; TBA		Tutorials 1:30 PM - 2:15 PM; TBA	
Louth	QA Session 10:30-11:15 AM; TBA				QA Session 2:30-3:15 PM; TBA

### Methods of Assessment

Assessment		Date of Assessment (Location)	Course Content /Activity	Learning Outcome Addressed
Form of Assessment	Weight of Assessment			
Quiz 1*	2.5%	TBA via D2L (At Home)	Chapters 1,2,3, 5,6 and 20 as in section A, B and C	1 and 2
Midterm**	40%	October 24, 2015, 2:45-4:15pm ROZH 101 & 104	Section A, B, C and D (Part) as shown in lecture schedule	1 to 4
Quiz 2*	2.5%	TBA via D2L (At Home)	Chapters 3, 7, 8 and 11 as in Section E	1 and 2
Final***	55%	December 16, 2015, 11:30AM - 01:30PM (TBA)	Entire course content delivered during the lectures	1 to 5

\***Quiz:** Two online quizzes 2.5% grade each will be held during pre- and post-midterm sessions.

- The online quiz will be open for three days, i.e., 72 hours where students will be expected to answer ten randomly generated multiple-choice questions (MCQ).
- 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 1.5-hour midterm examination will comprise 70 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.
- Unless there is a valid and genuine medical reason, any student missing the midterm examination will need to write a 100% (95% Final plus 5% Quizzes) 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 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.
- The students will be graded 100% on the final examination (95% Final plus 5% Quiz), if the performance is better than the mid-term examination.
- A failing student with a final grade of 49% will be permitted to pass the course by rounding up to 50%.
- 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/>)

### Course Content and Lecture Schedule

Week	Topics Covered in Lecture	Chapter Readings	No. Of Lectures
<b>KAUSHIK</b>			
1-4	<b>A. Introduction</b>		
	Introduction to the course (Kuby 7 <sup>th</sup> Immunology Resources)		1
	An overview of Immune System	1	2
	Cells, Organs and Microenvironments	2	3
5-6	<b>B. Innate Immunity:</b>		
	Innate Immunity	5 (Part; excluding signaling (156-160) and regulation (169-173) sections)	2
	Complement System	6(187-210)	1
7	<b>C. Antigens-Antibody interactions:</b>		
	Antigens, B cell Antigen Receptor (BCR) and Signaling, Antigen- Antibody Interactions	3(65-77) 20(656-673)	2
	<b>Online Quiz – TBA</b>		
8	<b>D. Humoral Immunity:</b>		
	Antibody structure	3(80-95);	2
	Immunoglobulin (BCR) genes	7(225-247)	2
	<b>Mid Term Examination</b>		
	B cell Development and differentiation	10(329-352); 12(385-413)	1.5

	Effector Response: Development of Antibody mediated immunity	13(415-427)	
<b>PASMAN</b>			
9-14	<b>E. Cell Mediated Immunity:</b>		
	MHC & antigen presentation	8	4
	T cell receptors and signaling	3(95-101); 7(247-255); 9 and 11	3
<b>Online Quiz – TBA</b>			
	Cytokines and Chemokines	4	3
	Effector Response: Development of Cell mediated immunity	13(427-446) 15 (506-508)	3.5
14-15	<b>F. Infection and Immunity:</b>		
	Immunity to infection with focus on HIV-AIDS	17(553-574) 18 (593-623)	2
<b>Final Examination</b>			

### Important Dates

- September 11 - 1<sup>st</sup> lecture
- \*TBA - Quiz 1
- \*TBA – Midterm
- November 6 - Fortieth class day, Last day to drop one semester course
- \*TBA - Quiz 2
- December 4 – last lecture
- December 16, 11:30AM - 01:30PM - Final examination 14:30 - 16:30

### Course Specific Notes:

- Students are required to regularly check course announcements via D2L.
- No e-mail sent to professors will be considered as confidential unless clearly stated. If pertinent, these could be discussed during the lectures.
- Students are encouraged to take advantage of ‘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.

### Course and University Policies

1. 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, and be prepared to provide supporting documentation. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:

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

All academic matters concerning this course (e.g., unable to meet an in-course requirement because of illness or compassionate reasons) will be subject to regulations as per university policy.

2. Accessibility: The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible. For more information, contact CSD at 519-824-4120 ext. 56208 or email [csd@uoguelph.ca](mailto:csd@uoguelph.ca) or see the website: <http://www.csd.uoguelph.ca/csd/>

The university welcomes feedback on accessibility issues: Email the Human Rights and Equity Office (HREO) at: [accessibility@uoguelph.ca](mailto:accessibility@uoguelph.ca) or [hreinfo@hre.uoguelph.ca](mailto:hreinfo@hre.uoguelph.ca) or fill in the feedback box on the University's accessibility website or at <http://www.uoguelph.ca/accessibility>

3. Academic Misconduct: The University 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 discourages misconduct. 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.*

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

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

5. Drop Date: The last date to drop one-semester courses, without academic penalty, is the 40<sup>th</sup> class day. To confirm the actual date please see the schedule of dates in the Undergraduate Calendar. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

6. 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.

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

8. 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.

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

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

## **Campus Resources**

The Academic Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: <http://www.uoguelph.ca/registrar/calendars/index.cfm?index>

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

- make an appointment with a program counsellor in your degree program. <http://www.bsc.uoguelph.ca/index.shtml> or <https://www.uoguelph.ca/uaic/programcounsellors>

If you are struggling to succeed academically:

- 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/>

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.uoguelph.ca/~ksomers/>

If you have a documented disability or think you may have a disability:

- The Student Accessibility Services can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: <https://www.uoguelph.ca/csd/>