



ANSC*4650 Comparative Immunology

Winter 2020

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 06, 2020

1 Course Details

1.1 Calendar Description

This course gives an overview of the immune defense mechanisms of domestic species, and to compare common and unique defense strategies developed for resisting microbial and viral infections. Topics include innate and acquired immunity, evolution of the immune system, immunoregulation, and the host response to pathogen invasion.

Pre-Requisites: ANSC*3080

1.2 Course Description

This course is designed to give an overview of the immune defense mechanisms of domestic species, and to compare common and unique defense strategies developed for resisting microbial and viral infections. Topics include innate and acquired immunity, evolution of the immune system, immunoregulation, and the host response to pathogen invasion.

1.3 Timetable

15:30 p.m. - 16:20 p.m. (3:30-4:20pm) Mondays, Wednesday, Friday in GFTC 241

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

Friday April 17th, 2020, 2:30pm - 4:30pm, Location TBD

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

2 Instructional Support

2.1 Instructional Support Team

Instructor: Niel Karrow
Email: nkarrow@uoguelph.ca
Telephone: +1-519-824-4120 x53646
Office: ANNU 123

Office Hours: Office hours will be at the ANNU coffee cart Tuesdays 1:30 p.m. - 3:15 p.m.

Office Hours:

Office Hours: Office hours will be at the ANNU coffee cart Tuesdays 1:30 p.m. - 3:15 p.m.

Office Hours:

2.2 Teaching Assistants

Teaching Assistant: Jessica Minnott
Email: minott@uoguelph.ca
Office Hours: Arrange meeting by email
 Marking assignments 1 and 3

Teaching Assistant: Tianna Sullivan
Email: tsulli03@uoguelph.ca
Office Hours: Arrange meeting by email
 Marking assignments 2 and 4

3 Learning Resources

3.1 Additional Resources

Other Resources (Other)

- An “Example IBL.doc” will be made available through Courselink.
- Lecture slides and notes will be made available through Courselink.
- List of abbreviations

4 Learning Outcomes

Students will attend three hours of lecture per week, and the following learning objectives will be assessed through two midterms, inquiry-based learning (IBL) assignments, and a final exam. By the end of this course you should have completed the following specific learning objectives that are designed to get you to think and communicate as immunologist.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Students will be expected to **explain** the concepts of innate and acquired immunity and **recall** examples of humoral and cellular components provided in the instructor’s course material. Assessment will be carried out by midterm and a final exam.
2. Students will be expected to **distinguish** innate and acquired immune system differences across vertebrate species that were provided in the instructor’s course material. Assessment will be carried out using a midterm and a final exam.
3. Students will be expected to **recall** examples of cross-talk between the innate and acquired immune systems provided in the instructor’s course material. Assessment will be carried out using a midterm and a final exam.
4. Students will be expected to **explain** how the immune response is regulated by **recalling** examples provided in the instructor’s course material, and **predict** how immune dysregulation can lead to disease. Assessment will be carried out using a midterm and a final exam.
5. Students will be expected to **illustrate** how genetic diversity contributes to variation in the host immune response by **recalling** examples provided in the instructor’s course material.

Assessment will be carried out using a midterm and a final exam.

6. Students will be expected to **apply** the course material to **predict** how the immune system specifically targets parasitic, viral, fungal and bacterial infections. Assessment will be carried out using a midterm and final exam.
 7. Inquiry-based learning (IBL) topics will be covered in class, and students will be expected to **recall** and **clarify** the assigned *questions*. In a class setting, students will be expected to **discuss** *prior knowledge* of the topics, and to **identify** *knowledge uncertainties*. Students will then be expected to individually **create** *hypotheses* to address the questions, then **research** only peer-reviewed literature to **identify** *pertinent information* to address knowledge uncertainties. Students will then be expected to individually **summarize** and **critically evaluate** these *research findings*, **attempt** to *answer the question*, and **reflect** on *remaining uncertainties* and the *learning process*. When composing this IBL summary, please use the “Example Inquiry Based learning Summary.doc” posted on Courselink as a formatting template document; including reference format. If you exceed 600 words (references not included in the word count), you will be penalized 10%. **Note:** Only your best three IBL summary assignments will be included in your final mark.
-

5 Teaching and Learning Activities

5.1 Lecture

Topics:

Lecture Content:

Unit 1. Introduction to body defense

Unit 2. Physical barriers at the host-microbe interface

Unit 3. Danger signals and pattern recognition receptors/molecules

Unit 4. Sentinel cells

Unit 5. Sentinel cell products

Unit 6. The complement system

Unit 7. Effector cells of the innate immune system:
neutrophils

Unit 8. Effector cells of the innate immune system:
macrophages

Unit 9. The acute phase response

Unit 10. Antigens and sites of antigen presentation

Unit 11. Antigen presenting cells and antigen presentation

Unit 12: Antigen receptor diversity: MHC

Unit 13. Effector and regulatory T cells

Unit 14. B cells and immunoglobulins

Unit 15: Antigen receptor diversity: BCR and TCR

6 Assessments

6.1 Marking Schemes & Distributions

Marking Scheme - Inquiry-based Learning (IBL) topics

5% Question being addressed

10% Summarize class knowledge prior to research

20% Identify knowledge uncertainties to be researched (listed in point form)

5% Create a testable hypothesis to address the question

20% Summarize research findings to address knowledge uncertainties

15% Critical evaluation

10% Reflect on remaining uncertainties and learning process

10% Spelling and Grammar

5% References (Include at least 3)

6.2 Assessment Details

Course Assignments and Tests (0%)

Course Assignments and Tests:

Assignment or Test	Due Date	Contribution to Final Mark (%)	Units Assessed
First day of class	Jan. 6		
Unit 1	Jan. 6		
Unit 1	Jan. 8		
Unit 2	Jan. 10		

Assignment or Test	Due Date	Contribution to Final Mark (%)	Units Assessed
Unit 2 + IBL #1	Jan. 13		
Unit 3	Jan. 15		
Unit 3	Jan. 17		
Unit 3	Jan. 20		
IBL #1 Due	Jan. 20	10	2
Unit 4	Jan. 22		
Unit 4	Jan. 24		
Midterm 1 (50 min)	Jan. 25 PAHL 1810 9:00 am	20	1-3
Unit 5	Jan. 27		
Unit 5	Jan. 29		
Unit 5	Jan 31		
Unit 5 + IBL #2	Feb. 3		
Unit 6	Feb. 5		
Unit 6	Feb. 7		
Unit 7	Feb. 10		
IBL #2 Due	Feb. 10	10	5
Unit 7	Feb. 12		

Assignment or Test	Due Date	Contribution to Final Mark (%)	Units Assessed
Unit 7	Feb. 14		
Winter break	Feb. 17-23		
Unit 8	Feb. 24		
Unit 8	Feb. 26		
Unit 9	Feb. 28		
Unit 9 + IBL #3	Mar. 2		
Unit 10	Mar. 4		
Unit 10	Mar. 6		
Midterm 2 (50 min)	Mar. 7 PAHL 1810 9:00 am	20	4-7
Unit 10	Mar. 9		
Unit 11	Mar. 11		
IBL #3 Due	Mar. 11	10	9
Unit 11	Mar. 13		
Unit 12	Mar. 16		
Unit 13	Mar. 18		
Unit 13	Mar. 20		
Unit 13 + IBL #4	Mar. 23		

Assignment or Test	Due Date	Contribution to Final Mark (%)	Units Assessed
Unit 14	Mar. 25		
Unit 14	Mar. 27		
Unit 14	Mar. 30		
IBL #4 Due	Mar. 30	10	13
Unit 15	Apr. 1		
Unit 15	Apr. 3		
Last day of class	Apr. 3		
Final exam	TBD	30	1-15

7 Course Statements

7.1 Grading Policies

Assignments are due at the beginning of the class scheduled above. Students submitting late assignments will receive a 5% late penalty per day.

7.2 Course Policy on Group Work

While students are encouraged to participate in an individual- and group-learning environment to better understand the course material, all assignments must reflect the work of each individual student.

7.3 Course Policy regarding use of electronic devices and recording of Lectures

Since electronic recording of classes is useful for reviewing course material, it will be allowed with the consent of the course instructor. These recordings 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.

8 University Statements

8.1 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.

8.2 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>

8.3 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>

8.4 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.

8.5 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>

8.6 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>

8.7 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.

8.8 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>
