

Biol 4011 FDE – Fundamentals of Immunology (2021FS)

Time and Place: 5:30 pm to 7:00 pm, Mondays and Wednesdays online via zoom; 1st class will be held on Monday, 13 September 2021.

Course Instructor: Dr. Ingeborg Zehbe, Research Chair (email: izehbe@lakeheadu.ca).

LU Office: CB 4018; Office hours: per request and via zoom; Zehbe Research Group website: zehbelab.com.

Graduate Assistant: MSc Candidate Ashley Faulkner; during the semester, please direct inquiries to avfaulkn@lakeheadu.ca; if these cannot be resolved then please request a time with Dr. Zehbe (izehbe@lakeheadu.ca).

Textbook: Janeway, Immunobiology (9th edition, 2016, Garland Science); please make sure to get the correct edition. Any edition prior to the 9th one is not adequate!

Course Rationale

Focus on fundamental principles of basic immunology from first engagement of innate immunity to the generation of the adaptive immune response with strong focus on vertebrates (humans). No previous knowledge in immunology is necessary. Some insight in basic genetics and signalling pathways with their receptors is necessary.

Course Objective

Obtain knowledge of immunological principles related to:

- Cell surface molecules and receptors on cells of the immune system
- How immune cells develop and acquire the ability to recognize antigens
- How they interact to defend the organism against microbes
- How they malfunction in autoimmunity & immunodeficiency

Lecture Structure

During the semester, lectures will be structured as formal lectures, preparatory seminars, debates, colloquiums, and guest lectures.

Marks Breakdown

Class attendance	3% (20 x 0.15)
Re-caps (15—30 min; Mondays)	12% (9 x 1.33%)
Mid-term exam	20%
Assignments (2)	30% (2 x 15%)
Final exam	35%

Participation and Re-caps

This is an interactive class where we apply active learning! Participation is not only encouraged but also essential! Participation will be graded based on in-class student involvement. This includes class attendance (20%) as well as answering questions during weekly re-caps on Mondays (80%). **For the 15—30 min re-caps on Mondays** [classes marked with *], **each student will**

have to send us via email one question [counting 2% toward the 12%] by **Thursday 5 pm the week prior**. An adequate selection of revised questions will be sent back to students on **Friday by noon** so that you can prepare for your following **Monday class**. **During the re-cap session, we will only monitor and you will be required to speak, each of you, with no exceptions made!**

Assignments (A1 and A2)

Students will be given two Journal Club assignments during the course, which will include a preparatory seminar followed by a written assignment of a peer-reviewed journal article. You will be required to send suggestions of such an article and we will decide upon the final article 2 weeks prior of the assignment's due date.

Mid-term Exam

To be written in class: will be based off of the material covered in the first half of the course.

Final Exam

To be written during the examination period: will be based off of the material covered in the second half of the course.

Expectations

Lakehead University has zero tolerance for academic dishonesty, including plagiarism. **Please refer to the policy of Lakehead University. Class attendance is mandatory.** Missed exams may only be written on an alternate date if a valid reason is provided. Use of non-class devices such as cell phones including iPhones is not allowed during class: all you need is your computer and tools to take notes. **During classes, you will be required to keep your video on but your microphone is only needed when you speak.**

Course Schedule

Date & Time	Lecturer / Presenter	Topic
Sept. 13/15	Dr. Ingeborg Zehbe & Ashley Faulkner	Course Introduction: marking scheme, assignments & Overview of immunology [Ch.1]
Sept. 20*/22	Dr. Ingeborg Zehbe	The innate immune system: First lines of defense [Ch. 2, 3 (parts)]
Sept. 27*/29	Dr. Ingeborg Zehbe	Induction of innate immunity [Ch. 3]
Oct. 4*/6	Drs Guillem Dayer & Ingeborg Zehbe	Global immune globulin structure and antibodies & Evolution of immunology (Students to send journal article suggestions by Oct. 6)
Oct. 11*/13	<i>Reading week</i>	<i>N/A</i>
Oct. 18/20	Dr. Ingeborg Zehbe & Ashley Faulkner Monday: Re-cap for Mid-term Exam	Mid-term Exam: Material from first half of the course

<i>Oct. 25*/27</i>	Drs Ingeborg Zehbe and Guillem Dayer & Ashley Faulkner	<u>Assignment 1</u> : Journal Club on agreed topic: Pre-seminar & Journal Article Written Assignment (due on Oct. 27, no class)
Nov. 1/3	Dr. Ingeborg Zehbe	Human leukocyte antigen (HLA): B and T lymphocyte development & receptors [Chs 6, 8]
Nov. 8*/10	Dr. Ingeborg Zehbe	T cell-mediated immunity & the humoral immune response [Chs 9, 10]
Nov. 15*/17	Dr. Ingeborg Zehbe	Integrated dynamics of innate and adaptive immunity & the mucosal immune system [Chs 11, 12] (Students to send journal article suggestions by Nov. 17)
Nov. 22*/24	Dr. Ingeborg Zehbe & Ashley Faulkner	Immune tolerance, immune deficiency and autoimmunity & Debate (vaccination)
Nov. 29*/Dec. 1	Drs Ingeborg Zehbe & Guillem Dayer & Ashley Faulkner	<u>Assignment 2</u> : Journal Club on agreed topic: Pre-seminar & Journal Article Written Assignment (due on Dec. 1, no class)
Dec. 6	Dr. Ingeborg Zehbe & Ashley Faulkner	Question time for Final Exam (optional)
<i>TBD</i>	Final Exam	Material from second half of the course except A1 and A2