

## **Biol 4011 FA – Fundamentals of Immunology**

*Time and Place:* 11:30 am to 1:00 pm, Tuesdays and Thursdays at ATAC 1007

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

LU Office: CB 4018; Office hours: Thursdays, 3—4 pm; our group's website:  
www.zehbelab.weebly.com

*Graduate Assistant:* Robert Jackson, MSc, PhD Candidate; please direct inquiries to  
rjackso1@lakeheadu.ca

*Textbook:* Janeway, Immunobiology (9<sup>th</sup> edition, 2016, Garland Science). PowerPoint presentations will be provided after each class

<b>Date &amp; Time</b>	<b>Lecturer / Presenter</b>	<b>Topic</b>
Sept. 5/7	Dr. Ingeborg Zehbe & Robert Jackson [PhD Candidate]	Course Introduction: marking scheme, assignments, overview of immunology [Ch.1]
Sept. 12/14	Dr. Ingeborg Zehbe & Robert Jackson	The innate immune system: First lines of defence [Ch. 2]
Sept. 19/21	Dr. Ingeborg Zehbe & Robert Jackson	<u>Assignment 1</u> : Immunology Methods: Pre-seminar & Wet Lab Demonstration
Sept. 26/28	Dr. Ingeborg Zehbe & Robert Jackson	Induction of innate immunity [Ch. 3]
Oct. 3/5	Dr. Ingeborg Zehbe & Robert Jackson & Melissa Togtema [PhD Candidate]	Special guest lectures: <b>Evolution of immunology &amp; Global immune globulin structure and antibodies</b>
<b>Oct. 10/12</b>	<b>Reading week</b>	<b>N/A</b>
<b>Oct. 19</b>	<b>Mid-term Exam</b>	<b>Material from first half of the course</b>
Oct. 24/26	Dr. Ingeborg Zehbe & Robert Jackson	Human leukocyte antigen (HLA): B and T lymphocyte development & receptors [Chs 6, 8]
Oct. 31/Nov.2	Dr. Ingeborg Zehbe & Robert Jackson	T cell-mediated immunity & the humoral immune response [Chs 9, 10]
Nov. 7/9	Dr. Ingeborg Zehbe & Robert Jackson	Integrated dynamics of innate and adaptive immunity & the mucosal immune system [Chs 11, 12]
Nov. 14/16	Dr. Ingeborg Zehbe & Robert Jackson & Melissa Togtema	<u>Assignment 2</u> : Journal Club: Pre-seminar & Journal Article Discussion
Nov. 21/23	Dr. Ingeborg Zehbe & Robert Jackson	Immune tolerance, immune deficiency & autoimmunity
Nov. 28/30	Dr. Ingeborg Zehbe & Robert Jackson	Discussion & Debate on an agreed topic & Question time for Final Exam
<b>Dec. 7</b>	<b>Final Exam</b>	<b>Material from second half of the course</b>

## **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, lab tours, guest lectures, and group discussions.

## **Mark Breakdown**

Participation/Quizzes	10%
Mid-term exam	25%
Assignments (2)	30% (2 x 15%)
Final exam	35%

## **Participation**

Participation will be graded based on in-class student involvement. This includes participating in class discussions, answering and asking questions, and quizzes that will be administered throughout lectures.

## **Assignments (A1 and A2)**

Students will be given two assignments during the course. A1 – Immunology Methods, which will include a preparatory seminar followed by a wet lab demonstration of technology. Students will then write a short summary on an assigned method to be due the following week. A2 – Journal Club, which will include a preparatory seminar followed by moderated small-group journal article discussions.

**Mid-term Exam**

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

**Final Exam**

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