

YORK UNIVERSITY
FACULTY OF HEALTH
KINESIOLOGY AND HEALTH SCIENCE

Course: KINE3710 3.0 – Immune System in Health and Disease

Course Webpage: eClass

Term: Fall 2023

Prerequisite / Co-requisite: HH/KINE 2011 3.00; HH/KINE 3012 3.00.

Course Credit Exclusion: None. **Note:** May not be taken for credit by Biology or Biochemistry majors.

COURSE DIRECTOR: Dr. Ali Abdul-Sater

Instructor: Dr. Ali Abdul-Sater

Office hours: By email appointment only – Via Zoom

(<https://yorku.zoom.us/j/93208613866?pwd=eDhZMEhaemt6NzhseEduaXk2K2hsZz09>)

Location: **Tuesdays ACW 005**
 Thursdays CLH B

Email: aasater@yorku.ca

 [@aabdulsater](https://twitter.com/aabdulsater)

TA: Jasika Bashal

Email: jbashal@yorku.ca

Email inquiries are welcome, but only emails sent from your **york.ca** account will be answered. Students must indicate their **full name, student number and KINE3710 in the subject line**. Emails not respecting these guidelines will NOT be answered.

TIME AND LOCATION

Lectures: Tuesdays and Thursdays, 10:30 AM – 12:00 PM

Location: **Tuesday** lectures will take place in **ACW 005**, while **Thursday** lectures will be in **CLH-B**

COURSE DESCRIPTION

The immune system in health and disease is designed to provide students with an overview of the two main arms of the immune system including innate and adaptive immunity. Additionally, the course will cover the various cellular components and the effector molecules of the immune system. The course ends with a brief update on the research regarding the effects of physical activity on immune responses.

COURSE ORGANIZATION

There are **two 90-minute lectures a week**, where the core concepts of the course will be explained and clarified. Active learning techniques will be implemented, and student participation is expected. There are no required laboratories. It is expected that each student will review the material to be presented in the class *before the class*.

LEARNING OBJECTIVES

The main objective of this course is to enable students to understand the fundamental biology of the innate and the adaptive immune responses. Upon completion of this course, students should be able to:

- Identify the cells and tissues of the immune system and understand their place and purpose within the human body.
- Describe and characterize the components of the innate and adaptive immune systems and explain how these components are organized to form an immune response.
- Describe and compare the development of B cells and T cells, including the gene rearrangements that generate the antigen receptors and the selective processes that eliminate cells with potential for causing autoimmunity.
- Understand how cellular and humoral immunity work, and the development of immunological memory. This will help students understand the importance of vaccines and how they work.
- Explain the diseases associated when the immune system mounts unwanted or unnecessary responses.

COURSE TEXT / READINGS

Required Textbook: Basic Immunology: Functions and Disorders of the Immune System, SIXTH EDITION, by Abul Abbas – ELSEVIER. The textbook is available at York U Bookstore (https://www.bookstore.yorku.ca/buy_book_detail.asp?pf_id=13736057)

Lecture Slides: Slides are uploaded to eClass but might be modified and updated prior to each lecture. **These slides are copyrighted and cannot be shared in any way.**

VIRTUAL INDIVIDUAL OFFICE HOURS

Individual office hours are used to address any questions regarding the course material.

Individual office hours are held via Zoom by appointment only. Students should first contact the TA, Jaska Bashal, as she would be able to answer most of their questions and inquiries. If they continue to have questions, students can then email Dr. Abdul-Sater to set up a zoom meeting.

Students who click the [Zoom link](#) for virtual office hours will be automatically placed in a waiting room. Students will then be selected into the one-on-one virtual meeting with Dr. Abdul-Sater on a first come, first serve basis.

Please note that individual office hours will be recorded for quality purposes and will not be shared with the class.

EVALUATION SUMMARY

1. **Online quizzes (eClass):** 10%, Weekly online quizzes (10 in total: 1 quiz on course outline + 9 on Thursdays of weeks 2, 3, 4, 7, 8, 9, 11, 12 & 13; see lecture overview) will be conducted on eClass and will be worth 1% each. Quiz format varies and may include short answer question, matching, fill-ins and multiple-choice questions.
Note: The quiz on course outline will be available starting from Sep 6 until Sep 25.
2. **EXAM 1:** 30% (45 multiple-choice questions), covers the lectures 1 - 7
Date: **Tuesday, October 3, 2023**, 10:30 – 11:30 AM
Location: **TBA**
3. **EXAM 2:** 30% (45 multiple-choice questions), covers the lectures 8 - 14
Date: **Tuesday, November 7, 2023**, 10:30 – 11:30 AM
Location: **TBA**
4. **EXAM 3:** 30% (45 multiple-choice questions), covers the lectures 15 – 21
Date: **Tuesday, December 5, 2023**, 10:30 – 11:30 AM
Location: **TBA**

MISSED TERM TEST POLICY

Students with a valid reason for missing a course test, such as illness, compassionate grounds, etc., may request accommodation from the Course Director via email **within one week from the exam date**. Otherwise, a grade of “0” will be assigned for the test.

Students with **valid excuses (see below)** to miss **ONLY ONE** exam will have to write the missed exam in **Jan 2024**, which will cover only the lectures for the missed evaluation.

Students with valid excuses who miss **more than one exam** will have to write a **cumulative exam** in **Jan 2024** that covers all lectures and not only those reflecting the evaluations they have missed. This exam would be worth the weight of all missed exams and consists of 100 questions (multiple choice, short answer, matching).

To be able to write the missed evaluations in June (see above), students must request deferred standing. To request deferred standing, the student must complete and submit a Deferred Standing Agreement Form (see http://myacademicrecord.students.yorku.ca/pdf/deferred_standing_agreement.pdf) and submit it to the course director **before the deadline on Tuesday, Dec 12 at 12 pm**. The exact date and time of the exam will be announced in early Jan 2024. Students who have been granted deferred standing and do not complete the make-up examination must petition to the Office of the Registrar. **There will be no deferred-deferred exam**. Under no circumstances will accommodations be provided because of conflict with vacation plans or work conflicts.

COURSE POLICIES AND TECHNICAL REQUIREMENTS

- Numerous students in Faculty of Health courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, Chegg, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be wilfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero, Chegg or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.
- Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Taking photos or screenshots of these questions constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when photos are shared or uploaded to third party repository sites.
- Students are required to make themselves aware of school policies relating to Academic Honesty and Integrity, Access, Religious Accommodation, Student Conduct and other matters. Plagiarism and other academic offenses will be sanctioned to the fullest extent in accordance with university and Faculty policies.

A summary of these policies can be accessed at

<http://www.yorku.ca/secretariat/senate/committees/ascp/documents/CourseInformationForStudentsAugust2012.pdf>

The following is a list of requirements of what you will need in order to complete the course.

- Useful links to computing information, resources and help for students:

<u>Student Guide to Moodle</u>	https://lthelp.yorku.ca/student-guide-to-moodle
<u>Computing for Students Website</u>	https://student.computing.yorku.ca/
<u>Student Guide to eLearning at York University</u>	http://elearning-guide.apps01.yorku.ca/
<u>Learning Skills Services</u>	https://lss.info.yorku.ca/online-learning/
<u>Zoom@YorkU User Reference Guide</u>	http://staff.computing.yorku.ca/wp-content/uploads/sites/3/2012/02/Zoom@YorkU-User-Reference-Guide.pdf
<u>Zoom@YorkU Best Practices</u>	https://staff.computing.yorku.ca/wp-content/uploads/sites/3/2020/03/Zoom@YorkU-Best-Practicesv2.pdf

LECTURE OVERVIEW

	TOPICS COVERED	LECT	DATE
WEEK 1	Course business / General introduction to the immune system	1	September 7
WEEK 2	Types of Adaptive Immunity	2	September 12
	Tissues of the immune system	3	September 14
WEEK 3	Innate immunity: How to recognize microbes	4	September 19
	Components of innate immunity: cells, barriers & complement	5	September 21
WEEK 4	Innate immune reactions	6	September 26
	Antigen capture and presentation to T cells: MHC molecules	7	September 28
EXAM 1	Location TBA; Time: 10:30 – 11:30 AM; covers lectures 1-7		October 3
WEEK 5	Antigen processing and presentation	8	October 5
WEEK 6	<i>Reading Week – No Lectures</i>		October 10 October 12
WEEK 7	B-Cell and T-Cell receptors	9	October 17
	Generation of diversity in antigen receptors	10	October 19
WEEK 8	Development of B and T cells	11	October 24
	Activation of T cells	12	October 26
WEEK 9	TCR Signaling	13	October 31
	T Cell-dependent immune responses	14	November 2
EXAM 2	Location TBA; Time: 10:30 – 11:30 AM; covers lectures 8-14		November 7
WEEK 10	B Cell activation and signaling	15	November 9
WEEK 11	Functions of T cells in humoral Immunity	16	November 14
	Effector mechanisms of humoral Immunity	17	November 16
WEEK 12	Vaccines: How they work and protect from disease	18	November 21

	Immunological tolerance and autoimmunity	19	November 23
WEEK 13	Cancer and Its Interactions with the Immune System	20	November 28
	Immune responses against transplants & Hypersensitivity	21	November 30
EXAM 3	Location TBA; Time: 10:30 – 11:30 AM; covers lectures 15-21		December 5

ACADEMIC HONESTY AND INTEGRITY

In this course, we strive to maintain academic integrity to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing SPARK's [Academic Integrity module](#) at the beginning of the course. Breaches of academic integrity range from cheating (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.) to aiding and abetting (helping someone else to cheat). All breaches in this course will be reported to the appropriate university authorities, and can be punishable according to the [Senate Policy on Academic Honesty](#).

To promote academic integrity in this course, students will be normally required to submit their written assignments to Turnitin (via the course eClass site) for a review of textual similarity and the detection of possible plagiarism. In so doing, students will allow their material to be included as source documents in the Turnitin.com reference database, where they will be used only for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin service are described on the Turnitin.com website.

IMPORTANT COURSE INFORMATION FOR STUDENTS

All students are expected to familiarize themselves with the following information, available on the Senate Committee on Academic Standards, Curriculum & Pedagogy webpage (see Reports, Initiatives, Documents) -

http://www.yorku.ca/secretariat/senate_cte_main_pages/ASCP.htm

<http://secretariat.info.yorku.ca/files/CourseInformationForStudentsAugust2012.pdf>

- Senate Policy on Academic Honesty and the Academic Integrity Website
- Ethics Review Process for research involving human participants
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

ACCOMMODATIONS

York senate policy on Academic Accommodation for Students with Disabilities:

<http://www.yorku.ca/secretariat/policies/document.php?document=68> "York University shall make reasonable and appropriate accommodations and adaptations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs".

Students who feel that there are extenuating circumstances that may interfere with the successful completion of their exams or other course requirements are encouraged to discuss

their concerns with Dr. Abdul-Sater as soon as possible. Students with learning, mental health, physical, sensory and medical disabilities who require accommodations in teaching style or evaluation methods should discuss the matter with Counselling and Disability Services (CDS - N110 Bennett Centre; <http://www.yorku.ca/cds/>) and the Course Director (Dr. Abdul-Sater) early in the term so that appropriate arrangements can be made. Please note: you are not required to disclose the nature of your condition. If you are registered with CDS, Dr. Abdul-Sater will work with CDS to ensure all reasonable accommodations are met.