Advanced Topics in Immunology (HTHSCI 4II3)  
Winter 2018

Coordinator: Dr. Charu Kaushic  
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Teaching Assistants:

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Lectures: Monday and Tuesday 9:30-10:20am MDCL 1110

Brief Description:

This course will build on the fundamental concepts presented in Introductory Immunology (HTHSCI 3I03), but will focus on how immunology is put into practice in the context of human health and disease. Lecturers will describe their fields as well as touch on current research. The course is divided into four thematic modules; (i) Immune related diseases (ii) Cancer Immunotherapy (iii) Infectious Diseases and Vaccinology and (iv) Immunology Across the Lifespan. Topics in each module will be related to that theme and will cover both basic, clinical and translational aspects of that topic.

Summary:

This course is offered to both third and fourth year students, as well as some graduate students, depending on their program of study. This course has been designed to stretch your learning experience beyond textbooks and lectures, so that you can more fully appreciate the scope of current research and understanding about the human immune system, diseases and therapies. Immunology is ultimately a practical (not theoretical) science and therefore lecturers, who are experts in their areas, will present the current state of knowledge, controversies in their field, and importantly their current research. This will help you understand not only the “nuts and bolts” of immunology but also the process of performing cutting edge research. The course coordinator and TAs will help you connect these seminar-based lectures and tutorial exercises to build up an in-depth understanding of human immunology in the context of human disease.

There will be minimal review of material or concepts taught in previous years and it will be the students’ responsibility to review any conceptual material they are unclear on. Your performance in this course will be evaluated not just on what you have learned in the lectures, tutorials, and reading, but also on how you can critically think about this information. Thus, there will be questions on the quizzes and final exam that will evaluate how well you can
integrate your learning and how well you think about problems in human immune function and disease. We will also be running 3 enquiry projects (2 group and 1 individual) during tutorials that are related to three module themes that will help you practice your critical thinking skills and prepare for your final exam. Please note there will be no make-up quizzes for this class. If you miss a quiz, that mark will be evenly re-distributed to other evaluation criteria. There will be a make-up final exam which will be scheduled by the registrar’s office.

Tutorials:

<table>
<thead>
<tr>
<th>Tutorial Section</th>
<th>Day</th>
<th>Time</th>
<th>Location</th>
<th>TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>T01</td>
<td>Wednesday</td>
<td>8:30-10:30am</td>
<td>MDCL 1115</td>
<td>Jeff Lam</td>
</tr>
<tr>
<td>T02</td>
<td>Wednesday</td>
<td>11:30-1:20pm</td>
<td>MDCL 1115</td>
<td>Jessica Breznik</td>
</tr>
<tr>
<td>T03</td>
<td>Thursday</td>
<td>2:30-4:20 pm</td>
<td>MDCL 1115</td>
<td>Jessica Breznik</td>
</tr>
<tr>
<td>T04</td>
<td>Thursday</td>
<td>8:30-10:20 am</td>
<td>MDCL 1115</td>
<td>Grace Teskey</td>
</tr>
<tr>
<td>T05</td>
<td>Friday</td>
<td>8:30-10:20 am</td>
<td>MDCL 1115</td>
<td>Grace Teskey</td>
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Attendance in tutorials is mandatory for this course, because we will be running enquiry projects and lab exercises during tutorials, which will be evaluated and count towards your final grade. You must pick one tutorial time and sign up to attend it throughout the semester, so you can participate in these tutorial related activities. The TAs will also review the class material during the tutorials. Because we have a number of diverse lecturers speaking who will cover a broad range of material, the tutorials are an extremely good review tool. Students are encouraged to email their TAs with any questions that they are struggling to understand from the lectures before their tutorial so that the TAs can appropriately prepare any background material which will be reviewed in tutorials. During the weeks when a quiz is scheduled during class, we will be running lab-based exercises during tutorial times. You will be asked to sign up for one of the offered times for all three lab exercises in January, to help us plan the lab exercises accordingly. Please follow instructions on how to do this, which will be provided in class and in Avenue to Learn.

Your TA should be your first contact for any inquiries regarding the course; please contact your TAs using their McMaster email addresses (see above) as this will guarantee the most rapid response possible, generally within 24hrs. If the TAs cannot address your concerns, you can contact Dr. Kaushic by e-mail and if necessary set up an appointment to meet.

Important Note:

This course uses Avenue to Learn to facilitate dissemination of information from the Instructor/TAs to students (e.g. posting of the course outline, lectures, reminders, etc.). Visit http://avenue.mcmaster.ca/ and login using your MacID.

Required Materials:

While there is no required textbook, you will find your HTHSCI 3I03 textbook (either Janeway’s Immunobiology 8th Ed. or The Immune System by Peter Parham 4th Ed.) useful for
review/reference. This course will use an i>clicker polling system for in class quizzes; you will require either a physical i>clicker remote or a REEF Polling by i>clicker enabled device (see below).

Course Evaluation:

In class iclicker quizzes  4%

To facilitate retention and understanding of lecture material, short quizzes will be performed at the end of class. Two to five multiple choice questions will be given and students will use the i>clicker system (details below) to answer the questions. This should help students cement their understanding of concepts covered in the preceding lecture. The 10 best quiz scores from each student will be averaged to account for 4% of their total mark. A minimum of 15 quizzes will be held over the course of the semester.

Enquiry Based Group Projects 20% (2X10%)
In order to help you integrate the key immunology concepts involved in the disease/health/therapy/translational aspects that will be covered in each module, we will be running 2 enquiry based exercises during tutorials. For those who have not participated in enquiry based exercises, this will be a great chance to practice this learning technique which is widely applied in research settings. Each tutorial section will be divided into groups of 3-6, depending on size of the tutorial section. Dr. Kaushic and the TAs will review with you how to do enquiry based research. Each enquiry group project will occur over 4 weeks. In week 1 you will form groups and will be given the enquiry triggers. Your group will be expected to work together to do the research on the enquiry project and during weeks 2 and 3, your group will be expected to give a short presentation to your TA summarizing your research progress. In week 4 you will make a final presentation that integrates all of your research. Your weekly participation and final presentation will be evaluated. For your convenience we are providing you with a tutorial/assignment schedule (see after lecture schedule)

Individual Enquiry  5%
The last enquiry project will be similar to the first two, except that this will be an individual exercise. Consider this is your practice for the final exam. The enquiry trigger will be given in the week of March 19th and you will have two weeks to conduct your research and formulate and submit a one page summary. You are welcome to discuss the subject with others but the summary MUST be in your own words. We will be looking closely for plagiarism and using programs that detect overlap with other’s assignments. This individual enquiry will be 5% of your final mark. Please consult tutorial/assignment schedule for dates for this exercise.

Lab based exercises 15% (3X5%)

Each student will attend three lab-based exercises (1 in February, 2 in March) that will run during normal tutorial slots. The aim of these lab-based exercises is to familiarize you with some common immunology techniques that are widely used in research labs, that you will hear about frequently in the lectures and read about in your enquiry research. Each lab-based exercise is different and designed to show application of immunology in a health/disease related setting. The grading schemes, difficulty level and workload are similar for all three exercises. Students will be given guidance on how to prepare for these lab exercises in
advance. Preparation and contribution will be marked as 15% (3 x 5% each) of each student’s final grade. Further details will be provided in class and online (HTHSCI 4II3 Avenue to Learn) in January. In the case that a student is unable to attend a lab-based exercise, the mark will be evenly re-distributed to other activities. Please consult the tutorial/assignment schedule for the dates of these exercises.

Quizzes 30% (3X10%)

There will be three quizzes held during the semester. A quiz will be held at the end of each of the first three modules; all three are held during regular lecture time in MDCL 1110 (our regular room) (50min each). The first quiz covers material taught during the first module of the course, the second quiz covers material taught during the second module of the course, etc. While each quiz will focus on lectures covered in that module, some concepts will be common among different modules and therefore you may be required to draw on some key concepts gleaned during the previous modules. All quizzes will be composed of some combination of the following: multiple choice, true/false questions, fill in the blanks, one line definitions, and a few short answers. You will be tested on your knowledge of key information and ideas in the topics/diseases covered *as well as your ability to apply this knowledge* (rote memorization is not sufficient to do well in this course).

Post-quiz “reflection/assessment” 1%

After each quiz, a short reflective quiz will be released on Avenue to Learn. Completion of these quizzes is worth 1% of your final grade (total of 3). The quizzes will ask you to reflect on your habits (attendance, study, etc.) related to HTHSCI 4II3 and the content/administration of the course; your candor is appreciated and benefits both your own introspection as well as our administration of the course.

Final Exam 25%

The course will conclude with a 120min exam held during the regular exam period (as scheduled by the registrar). The exam will contain 5 questions that will require one page essay-style answers. These questions will not test you on direct content of the classes, rather they will require you to apply your knowledge to integrate concepts, which will be similar to the group and individual enquiry based exercises you will be practicing in tutorials during the semester. Since we are not testing you directly on the content, and to give you some time to research and prepare, we will be posting 8-10 questions after the last class. 5 of these will be on the final exam. This will provide you time to understand the questions and prepare your answers. You are allowed to research and discuss the questions with others, but during the exam, each student will write their own answer. We will be looking closely for plagiarism, so while you are welcome to collaborate with others to research and understand the questions, you are strongly advised to prepare your answers in your own language. We want you to be fully prepared and give us your best answers, which will allow us to evaluate your understanding. The questions will be based on the content and concepts covered in all the modules, including the last one for which there is no in-class quiz. More details for the final exam will be discussed during the last class and on Avenue to Learn.
Note regarding evaluation:

Final decisions regarding the evaluation of submitted materials fall to the discretion of Dr. Kaushic and the TAs.

Information on iClicker:

In this course, you have the option of using an i>clicker, i>clicker+, or i>clicker2 remote, or using REEF Polling by i>clicker, which enables you to vote via a web-enabled device like a laptop, tablet, or smart phone. PLEASE NOTE that REEF Polling by i>clicker cannot be used in a course where your instructor has not enabled REEF Polling, however, HTH SCI 4I3 WILL BE enabling REEF Polling functionality. Check with your other instructors to ensure that REEF Polling is permitted in each course you take—otherwise, you may want to consider purchasing a remote so that you can use it in all your courses. Only purchase a REEF Polling subscription if:

1. You will not be using i>clicker in another course that does not allow REEF Polling as an alternative to purchasing a remote.
2. You do not plan to sell back a remote to the bookstore.
3. You have access to a wireless device (i.e. a laptop, iPhone, iPod Touch, or Android) running a browser that supports AJAX, JavaScript, and HTTPS requests such as Internet Explorer, Firefox, Chrome or Safari.

Be sure to check with your other instructors if you have questions about the possibility of using REEF Polling in your course(s).

REEF Polling is available as an iOS app, Android app, or is accessible on any device with a browser. After activation, a 14-day free trial is initiated. If you choose to use REEF Polling please DO NOT activate your free trial until the beginning of the semester – you should use this trial period to verify the REEF Polling system is compatible with your device before purchasing a 6-month subscription ($14.99).

Alternatively, physical iClicker+ devices are available for purchase from the McMaster University Bookstore (~$42.00 new or ~$36.00 used, if available).

We will review the “how-tos” of registering your iClicker devices during the HTHSCI 4I3 introductory lecture. Please note that the following information will be required during registration. It is imperative that you enter this information correctly, as it ensures we are able to correctly collect your responses to in class quizzes:

School Postal Code: L8S4L8
School Name: McMaster University
Course Code: HTHSCI 4I3 2018
StudentID: MACID
(please register using your MACID e.g. breznikj when prompted to provide a StudentID – this allows us to link your iClicker with you, so that you get academic credit for completing the quizzes!)
The first iClicker quiz will take place following the second lecture, on Tuesday January 9th, so be prepared!

**Academic Integrity:**

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

The following illustrates some examples of academic dishonesty:
1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.
4. Having another student bring your iclicker to class or answer questions on your behalf.

**Online Content:**

In this course we will be using Avenue to Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor. Please note that we may be using programs such as Turnitin for online assignment submissions.

**Academic Accommodation of Students with Disabilities:**

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities, located at [http://www.mcmaster.ca/policy/Students-AcademicStudies/](http://www.mcmaster.ca/policy/Students-AcademicStudies/).
Lecture Schedule:

Module 1. Immune Related Diseases – Autoimmunity, Immune Deficiency, Allergy
1. Monday Jan 8  Tolerance and Autoimmunity-Basic Principles- Dawn Bowdish
2. Tuesday Jan 9  Autoimmune Diseases- Dawn Bowdish
3. Monday Jan 15  Allergy-Clinical- Susan Waserman
4. Tuesday Jan 16  Food allergy- Basic Principles- Manel Jordana
5. Monday Jan 22  Developing tolerance to Allergy- Mark Larche
6. Tuesday Jan 23  Asthma Basic Principles- Mark Inman
7. Monday Jan 29  Translational science in managing asthma- Param Nair
8. Tuesday Jan 30  Immunodeficiency- Dawn Bowdish

Monday Feb 5 Quiz 1

Module 2. Cancer Immunotherapy
9. Tuesday Feb 6  Tumor Immunology- Yonghong Wan
10. Monday Feb 12  NK cell cells in tumor- Ali Ashkar
11. Tuesday Feb 13  Tumor microenvironment- Carl Richards
Monday Feb 19  Reading week
Tuesday Feb 20  Reading week
12. Monday Feb 26  T cell immunotherapy- Jonathan Bramson
13. Tuesday Feb 27  Chemical Approaches to cancer immunotherapy- Anthony Rullo

Monday March 5 Quiz 2

Module 3. Infectious Diseases and Vaccinology
14. Tuesday March 6  Influenza- Matt Miller
15. Monday March 12  TB- Mathy Jeyanathan
16. Tuesday March 13  TB vaccine- Zhou Xing
17. Monday March 19  HIV- Charu Kaushic
18. Tuesday March 20  HIV vaccine- Charu Kaushic

Monday March 26 Quiz 3

Module 4. Immunology Across Life Span
19. Tuesday March 27  Immunology of Youth- Dawn Bowdish
20. Monday April 2  Pregnancy Immunology- Charu Kaushic
21. Tuesday April 3  Immunology of Aging- Chris Verschoor

Monday April 9  Make up lecture/review class
## Tutorial, Enquiry and Lab exercise Schedule

| Week 1. | Jan 8-12 | Enquiry 1 trigger released, Class review in tutorial |
| Week 2. | Jan 15-19 | First presentation, Class review in tutorial |
| Week 3. | Jan 22-26 | Second presentation, Class review in tutorial |
| Week 4. | Jan 29-Feb 2 | Final Presentation, Class review in tutorial |
| Week 5. | Feb 5-9 | Quiz in class, Lab exercise-1, 2\textsuperscript{nd} enquiry trigger |
| Week 6. | Feb 12-16 | 1\textsuperscript{st} presentation, Class review in tutorial |
| Week 7. | Feb 19-23 | Reading week |
| Week 8. | Feb 26-March 2 | 2\textsuperscript{nd} presentation, Class review in tutorial |
| Week 9. | March 5-9 | Quiz in class, Lab exercise 2 |
| Week 10. | March 12-16 | Final presentation, Class review in tutorial |
| Week 11. | March 19 | 3\textsuperscript{rd} Enquiry trigger |
| March 19-23 | Class review in tutorial |
| Week 12. | March 26-30 | Quiz in class, Lab exercise 3 |
| Week 13. | April 2 | Enquiry submission due online |
| April 2-6 | Class review in tutorial |