

**Health Science 1DT3 Discover Immunology Today
Course outline for Winter 2018**

Course Coordinator and Instructor:

Dr. Carl D. Richards, MDCL-4016

- email: Carl.Richards@learnlink.mcmaster.ca
- Office hours: Thursdays 12-2.

Course TAs:

Puja Bagri: bagrip@mcmaster.ca

Josh Koenig: koenigj@mcmaster.ca

John Vrbensky : vrbensjr@mcmaster.ca

Sessions: In MDCL- 3020, Tuesdays and Thursdays 5:30-6:20, Jan 4 to April 5, and group presentations on tues/thurs April 3 and 5 (regular lecture hours) and Sat morning April 7, for 3 hours from 9:00am-12:00 (room TBA),

- Course description: This course is intended to inspire curiosity in questions generated by concepts in immunology that drive current research directions. Students will be introduced to a spectrum of concepts in immunology with research faculty that are members of the McMaster Immunology Research Centre. Different topics will be explored over two lectures/question&answer sessions per week, assignments completed by each individual and a group assignment.

Objectives:

- to understand a spectrum of concepts that help provide a framework for current thought/systems/networks/paradigms in Immunology
- to explore various limits of current research knowledge with investigators of the McMaster University Research Centre (MIRC)
- to develop writing skills in the form of abstract submissions
- to explore one topic in immunology in detail in the form of a group written assignment and group oral presentation

LEARNLINK:

In this course we will be using LearnLink. 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 email 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 Coordinator.

If you are not already using LearnLink, to connect to LearnLink please look through:

<https://www.learnlink.mcmaster.ca/>

Need help? Email... help@learnlink.mcmaster.ca

Note that the assignments are due electronically into designated folders within learnlink for 1DT3. Below (under “Evaluation”) are the specific due dates for the assignments to help plan the term.

Required readings:

- There is no textbook required for this course.
- Required reading includes the tutorial “Understanding the Immune system” from NCI, which can be found at <http://www.thebody.com/content/art6319.html> (also posted in learnlink as a pdf).
- Additional resources may be provided each week, in the form of ppt files, reviews, articles and/or other media, these will be posted on LearnLink in the 1DT3 lecture notes folder
- For additional reference, there are copies in the Health Sciences Library of the textbook: Janeway’s **Immunobiology**, 7th edition, Murphy-Travers-Walport, (has been used for 3rd and 4th year immunology courses). There are 4 copies available each for 3 day loan, and 3 copies of Janeway’s 8th edition each for a 3 day loan this term. There is at least one copy of the 9th edition for use only in the library reference area.
- Information regarding the research programs of each of the MIRC faculty can be found at <http://mirc.mcmaster.ca/>

Weekly schedule and topics:

Theme one: The immune system and its weapons

- Weeks 1,2) Orientation: course description and evaluations Jan 4, 9, 11 Dr. C. Richards
“ A primer for immunity ”
- Immunology in the news
 - overview of cells and molecules of the Immune system with some basic concepts:
 - pathogens, recognition of foreign vs self
 - antibodies vs antigens, receptors,
 - Innate vs adaptive immunity, cell vs humoral immunity, homeostatic vs inducible.
 - T cells and killing of cancer cells
- 3) “Immune geography and the variety of antibodies” Jan 16, Jan 18 J Koenig
- Why are the systems of the immune system placed where they are?
 - Why is there such a diversity of antibody molecules for defense?
 - monoclonal antibodies
- 4) “Human Vaccines” Jan 23, Jan 25 Dr. Zhou Xing
- Overview of current global human immunization program, and its social, economic and cultural challenges.
 - using a specific vaccine example in the current human immunization program to examine the scientific, social, economic and cultural challenges and potential solutions.
- 5) “Natural Killer cells: what's in a name?” Jan 30, Feb 1 Dr. A Ashkar
- how do these cells naturally become killers?”
 - NK cells and their role in natural defense against tumors and viral infections.
 - the concept that natural killer cells change function depend on their environment.

Theme two: Immunity and populations

- 6) "Evolution of the immune system" Feb 6, 8 Dr. D Bowdish
- Identify challenges that early life forms must have faced in identifying progeny versus pathogens
 - Discuss evolutionary trade-offs that humans have had to make to balance having large brains, complicated pregnancies and metabolically costly immune systems.
- 7) "Errors in autoimmunity" Feb 13, 15 Dr. C Richards
- How and why does the immune system target the body in autoimmune diseases such as rheumatoid arthritis ?
 - Why have autoimmune conditions been maintained in populations?

----- reading week Feb 20-25-----

- 8) "The immunology of "new" viruses." Feb 27, Mar 1 Dr. B Lichty
- What happens when a new virus arises in a certain population?
 - Why is this often different than the relationship that eventually develops over time as a virus and a population interact?
[zoonosis, viruses introduced to an aboriginal population, pathogenic mutants arising]
- 9) "HIV and the mucosal immune system" Mar 6, 8 Dr. C Kaushic

Theme three: misfiring and manipulation of immune function

- 10) Chemical strategies to modulate the anti-tumor immune response: Mar 13, 15, Dr. A Rullo
- Reprogramming molecular recognition through site-directed covalent modification
 - Avidity based cancer cell recognition and targeting approaches
 - Chemokine releasing molecules to "warm up" cold tumors
- 11) "Are all infections bad?" Mar 20, 22 Dr. Y Wan
- cancer immunotherapy and oncolytic viruses
 - differences from conventional therapies
 - how does the immune system recognize cancer and virus?
- 12) "Is Allergy a case of mistaken Identity" Mar. 27, 29 Dr. M Jordana
- Allergens: Innocuous vs dangerous?
 - Why does the immune system target antigens in allergy?
- 13) GROUP PROJECT PRESENTATIONS Dr. C. Richards and TAs
- **Tues April 3 5:30-6:20 (usual class time)**
 - **Thursday April 5 5:30-6:20 (usual class time)**
 - **Saturday April 7 9-12, Room TBA**

Evaluation: 1DT3, 2018

10%: Session questionnaires

separate in-session questionnaires must be handed in (paper submissions) by each student at end of each session. Students must attend sessions and submit at least 20 completed questionnaires for full marks (0.5% each) over the course, in addition to the three group mandatory presentation sessions April 3, 5 and 7, for full marks.

[Sample:]

Q: what is a main immunological paradigm or problem that interested you this session

Q : On the basis of the session, what is/are your question(s) that arise?

Other comments or questions:

52% : “Annotated ABSTRACT” submissions

4 “annotated abstracts” are required (electronic submissions),
Abstract one will be worth 10%,
Abstract 2, 3 and 4 will be worth 14% each)

- “Annotated Abstracts” must be between minimum 280 and maximum 300 words, submitted in a format with 2 cm margins, single spaced, 12 pt times new roman font
- an **annotated bibliography** must follow, all written work must be properly referenced and use The Vancouver Style. Guidelines Can be found if you search <https://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/library/public/vancouver.pdf>
The same pdf is also posted on learnlink in the 1DT3 folder
- for the **annotations**, each reference entry should be followed by your own description in a few sentences that clearly indicate the main point that links the use of the reference to your abstract text statements (or the group project text)
- A **title for the abstract, name and student number** running across the head of each page,
- This must be **converted to a pdf**, ensuring conversion replicates the word processing file accurately
- These will be due electronically to the appropriate folder in LearnLink
Abstract 1: due **Jan 24/2018** into folder 1DT3 Abstract #1 17-18
Abstract 2: due **Feb 12/2018** into folder 1DT3 Abstract #2 17-18

Abstract 3: due **Feb 28/2018** into folder 1DT3 Abstract #3 17-18
Abstract 4: due **Mar 19/2018** into folder 1DT3 Abstract #4 17-18

Further details on the topics will be provided later. For example, the first topic will be on Nobel Prize laureates in immunology

38%: GROUP PROJECT,

- **26% will be derived from the written group submission and 4% from the group oral presentation (group members will share the same mark)**
- **8% from peer-evaluation of your contribution to the group assignment**

Students will be randomly assigned to groups of 8-9, to tackle a problem/project in the field of immunology. Further details on the topics of the project will be provided later.

There will be two opportunities to meet with one MIRC faculty member for one hour as a group for suggestions and feedback on the approach to the project
1/3 of the way through course (approx first week of feb)
and 2/3 through course (approx. first week of Mar)

Group Project Write-up: to be submitted electronically to appropriate learn link folder, with an annotated bibliography

The Group Project Write-up requirements:

- The document must include a cover page, with a title and all students in the group names, the date and a word count of the written text
- After the cover page, the written text should be between 2000 and a maximum of 2400 words (not including figure legends if any) which is approximately 4-5 pages of text (not including embedded pictures/diagrams if any). The pages must be numbered in sequence starting with the title page as number 1. The text must be single spaced, in New Times Roman font size 12, with 2.5 cm margins on all sides.
- An annotated bibliography must follow the text, page numbers continuing in sequence from the text. The references should be numbered in the text in sequence of appearance and in the Vancouver style of referencing and then listed in numerical order in the annotated bibliography.
- If there are figures to be included, these could be embedded in the text or attached at the end. Remember figures/pictures/diagrams must be properly attributed if not original. They need to be numbered in sequence starting at "Figure 1", and must also be accompanied by a figure legend. If there are tables to be included, they must also be numbered in sequence starting with "Table 1"
- The material should be assembled into one document and submitted as a PDF electronically to the appropriate learn link folder

Due: Wed March 28, 2018 to learnlink folder " 1DT3 group project submissions 17-18"

Group oral presentations: **5:30-6:20 Tues/Thurs April 3/5 (normal class hours/ location)**
Sat April 7, 2017, 9:00 am-12 (room TBA)

The Instructors, Coordinator, Program and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in

extreme circumstances. If modifications become necessary, reasonable notice and communication with the students will be given. Students will be provided with an explanation and an opportunity to comment. It is the responsibility of the student to check their McMaster email and the course folder on LearnLink weekly during term. Any significant changes will be made in consultation with the BHSc Assistant Dean.

Conversion from percentages to letter grades will follow the standard McMaster procedure (please see the Table below). All percentage grades within 0.5% of the next letter grade will be reviewed.

%	Letter	%	Letter	%	Letter	%	Letter	%	Letter
90-100	A+	77-79	B+	67-69	C+	57-59	D+	0-49	F
85-89	A	73-76	B	63-66	C	53-56	D		
80-84	A-	70-72	B-	60-62	C-	50-52	D-		

MISSED WORK AND LATE SUBMISSIONS:

Course work missed due to illness or personal circumstances may be made up. You must submit appropriate documentation (e.g. note from physician) to your Faculty/Program office (in MDCL-3308). **It is your responsibility to follow-up with the Coordinator.** No mark will be entered for the missed work unless the Faculty/Program office gives its approval. All course work must be submitted into the appropriate folder in Learnlink. **Late abstract submissions will be penalized 20% a day for that abstract (including weekends). Late group work project submissions will be penalized 10% of the assignment mark a day (including weekends).** Late penalties will not be waived unless your Faculty/Program office advises the Coordinator that you have submitted to that office the appropriate documentation to support your inability to submit the work by the due date and time.

ACADEMIC INTEGRITY:

Students should be aware that written submissions will be checked for plagiarism by TAs and/or the course coordinator.

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 course work, 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 <http://www.mcmaster.ca/academicintegrity>.

The following illustrates only three forms 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.