

DEPARTMENT of SCIENCE

COURSE OUTLINE -WINTER 2019

MI 2950 (A3): Infection and Immunity – 3 (3-0-0) 45 Hours for 15 Weeks

INSTRUCTOR: Sean Irwin **PHONE:** 780-539-2860

OFFICE: J224 **E-MAIL:** Sirwin@gprc.ab.ca

OFFICE HOURS: Tuesday and Thursday 10 - 11:20 am, Friday 1 - 2:20 pm

CALENDAR DESCRIPTION:

This course introduces the principles and mechanisms of immunity in eucaryotes. It will provide an overview of the major groups of infectious agents (virus, bacteria, parasites) and examine selected microorganisms within the context of the host response to pathogens as well as pathogen evasion strategies.

PREREQUISITE(S)/COREQUISITE: BC 2000 or BC 2030, and MI 2650

REQUIRED TEXT/RESOURCE MATERIALS:

There is no textbook for the course. All of the course material will be covered in lectures.

DELIVERY MODE(S): Lectures - Mondays and Wednesdays 1000-1120, G111

COURSE OBJECTIVES:

- 1. To understand basic aspects of the immune response to pathogens.
- 2. To facilitate an in-depth understanding of the pathogenesis of infections.
- 3. To foster the development of critical thinking skills.

LEARNING OUTCOMES:

Upon successful completion of this course a student will have a working knowledge of the biological basis of immunology and the pathogenesis of infectious diseases.

TRANSFERABILITY:

A list of institutions to which this course transfers (For example: UA, UC, UL, AU, GMU, CU, CUC, KUC. Please note that this is a sample and it must be replaced by your specific course transfer)

*Warning: Although we strive to make the transferability information in this document up-to-date and accurate, the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities. Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page http://www.transferalberta.ca or, if you do not want to navigate through few links, at http://alis.alberta.ca/ps/tsp/ta/tbi/onlinesearch.html?SearchMode=S&step=2

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students** are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability

EVALUATIONS: Mid-term Exam I - 30% - In order to defer an exam due to illness

Mid-term Exam II - 30% you will require a medical note.

Class Presentation – 5% Final Exam - 35%

Mid-term I will cover material in the Immunology section of the course. Mid-term II will cover material from the Pathogenesis section of the course. The Final Exam will be cumulative, with approximately 40% of marks assigned to material covered in the Immunology and Pathogenesis sections, and 60% to that from the Virology section.. Throughout the course an emphasis will be placed on the integration of the concepts of immunology and infection. A thorough understanding of material covered in the Immunology section will be essential on ALL exams.

Class presentations can be chosen from the following topics: Immune Disorders, Hyperensitivities (asthma), Leprosy, *Neisseria gonorrhea* infections, Smallpox, Mononucleosis.

GRADING CRITERIA:

Alpha	4-point	Percentage	Alpha	4-point	Percentage
Grade	Equivalent	Guidelines	Grade	Equivalent	Guidelines
A+	4.0	90-100	C+	2.3	67-69
A	4.0	85-89	С	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
В	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

MI 2950 – Topic Outline

- 1 Introduction to Immunology
- 2 Innate defenses: cells and tissues of the immune system
- 3 Innate Signaling: The Toll Pathway
- 4 Introduction to Adaptive Immunity
- 5 Antigen Capture and Presentation
- 6 Antibodies: Structure and Generation
- 7 Humoral Immunity
- 8 T cell development
- 9 Complement
- 10 Cellular Immunity
- 11 Hypersensitivities
- 12 Immune response to eukaryotic parasites

MID-TERM EXAM I – February 5th

- 13 Bacterial Pathogenesis: Introduction and Definitions
- 14 Bacterial structure in relationship to pathogenesis
- 15 Adherence and invasion: pili, adhesins, iron uptake
- 16 Bacterial strategies of immune evasion
- 17 Bacterial secretion systems used in pathogenesis
- 18 Bacterial toxins
- 19 Examples of bacterial diseases

MID-TERM EXAM II - March 12th

- 20 Introduction to viruses
- 21 Structure and classification of viruses
- 22 Viral replication
- 23 Patterns of infection
- 24 Immune response to viruses
- 25 Influenza viruses
- 26 Human Immunodeficiency Virus
- 27 Herpesviruses
- 28 Poliovirus

STUDENT RESPONSIBILITIES:

Refer to the College Policy on Student Rights and Responsibilities at www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at https://www.gprc.ab.ca/about/administration/policies

**Note: all Academic and Administrative policies are available on the same page.