DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2017

MI 2950 – INFECTION & IMMUNITY

3 Credits (3-0-0) 45 hours 15 weeks

INSTRUCTOR: Philip Johnson **PHONE:** 780-539-2863

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

OFFICE HOURS: T.B.A.

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

REQUIRED TEXT/RESOURCE MATERIALS:

The following texts will be placed on Reserve in the GPRC library:

'Basic Immunology' – Abbas & Lichtman
'Fundamentals of Immunology' - Bier *et al*
'Immunobiology' - Janeway *et al*
'Essential Immunology' - Roitt
'Mechanisms of Bacterial Pathogenesis' - Groisman (editor)
'Mechanisms of Microbial Disease' - Engleberg *et al*
'Bacterial Pathogenesis: A Molecular Approach' - Salyers & Whitt
'Viral Pathogenesis and Immunity' - Nathanson
'Human Virology' - Collier & Oxford
'Principles of Virology' - Flint *et al*

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.

CREDIT/CONTACT HOURS: 3 credits (3-0-0)

DELIVERY MODE(S): **Classes -** Mondays and Wednesdays 1000-1120, J229

OBJECTIVES:

1. To understand basic aspects of the immune response to pathogens and to be able to read with confidence newspaper and popular magazine reports dealing with immunity and infectious diseases.
2. To enroll in more advanced undergraduate courses in the areas of immunology and infections.
3. To write concise answers to questions relating to complex biological phenomena.

LEARNING OUTCOMES:

1. Knowledge of the components and mechanisms of innate immunity
2. Knowledge of the components and mechanisms of acquired immunity.
3. Knowledge of the factors influencing bacterial pathogenicity and virulence.
4. Knowledge of viral replication strategies and their effect on the host.
5. Knowledge of the host immune response to viral infections.

TRANSFERABILITY: University of Alberta - IMIN 200 (Immunology and Infection)

EVALUATIONS:

Mid-term Exam I	30%
Mid-term Exam II	30%
Final Exam	40%

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.

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A+	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A–	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B+	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B–	**2.7**	**70 – 72**	
C+	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**63 – 66**	
C–	**1.7**	**60 – 62**	
D+	**1.3**	**55 – 59**	**MINIMAL PASS**
D	**1.0**	**50 – 54**	
F	**0.0**	**0 – 49**	**FAIL**
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

**** 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**

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.

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

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

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