DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2015

MI 2950 – INFECTION & IMMUNITY

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

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

OFFICE HOURS:
Mondays 1130-1300
Tuesdays 1300-1420
Wednesdays 1300-1420
Thursdays 1000-1120

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.

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

**** 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%
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.
Exams I and II will be non-cumulative and held during class after approximately 4 weeks and 8 weeks of the semester.
The Final Exam will be cumulative, with 40% of marks assigned to material covered prior to Exam II, and 60% of the marks assigned to material covered after Exam II. It will be scheduled during Final Exam week.
All exams will consist of a combination of multiple-choice and written questions.

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**

STUDENT RESPONSIBILITIES:

Since participation in lectures and completion of assignments are essential to achieving success in this course, regular attendance at classes is highly recommended. Students who chose not to attend classes must assume whatever risks are involved.

Students should avoid any disruptive behaviour during class.

All cell phones must be switched off during class.

Students should refer to the 2014-2015 G.P.R.C. Calendar, especially in regards to policies on plagiarism, cheating and the resulting penalties. These are serious issues and will be dealt with severely. The Calendar is available at

www gprc.ab.ca/programs/calendar/

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, adhesisns, iron uptake
16 Bacterial strategies of immune evasion
17 Bacterial secretion systems used in pathogenesis
18 Bacterial toxins
19 *Listeria monocytogenes*
20 *Campylobacter* and *Helicobacter*
21 *Mycobacterium tuberculosis*

MID-TERM EXAM II

22 Introduction to viruses
23 Viral pathogenesis
24 Viral attachment and entry
25 Viral replication strategies: RNA viruses (HIV; poliovirus)
26 Viral replication strategies: DNA viruses and mutation (herpes)
27 Innate defenses against viruses
28 Evasion of host response
29 Emergence of new viruses and examples