Department of Science
Grande Prairie Regional College

MI 2950
Infection & Immunity

Course Outline
Winter 2009-2010

Instructor
Philip Johnson B.Sc., M.Sc., Ph.D., M.S.P.H.
Office: J224
Phone: 539-2863
E-mail: *johnson@gprc.ab.ca*

Course 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 strateiies.

Pre-requisites: BC 2000 or BC 2030, and MI 2650

Course Goals: 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.

Class Schedule: Tuesdays and Thursdays 0830-0950, J201

Contact hours: 3-0-0 (3 credits)

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

Textbook: There are no required textbooks for this course.

Other resources: Handouts containing copies of the Powerpoint slides used in class will be available for download from the course page on Blackboard.

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

'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*

Requirements: 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 pages of the 2009-10 GPRC Calendar regarding policies on plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

Evaluation:

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.

Final Grades will be assigned based approximately on the marks distribution shown in the table below.

Alpha grade	**4 point equivalent**	**Percentage guidelines**	**Designation**
A+	4.0	90-100	Excellent
A	4.0	85-89.9	
A-	3.7	80-84.9	First class
B+	3.3	77-79.9	
B	3.0	73-76.9	Good
B-	2.7	70- 72.9	
C+	2.3	67-69.9	Satisfactory
C	2.0	63-66.9	
C-	1.7	60-62.9	
D+	1.3	55-59.9	Minimal pass
D	1.0	50-54.9	
F	0.0	0-49.9	Fail
WF	0.0	0	Fail – withdrawal after deadline

Students should be aware that a grade of D or D+ may not be acceptable for transfer to some other post-secondary institutions.

MI 2950 – Topic Outline

	topic
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	Viral Pathogenesis
23	Viral lifestyles and 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	Cellular interactions in viral recognition
29	Viral interference in host immunity – CTL escape
30	Viral escape from antibodies
31	Emergence of new viruses