DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2016

MI 2650 – GENERAL MICROBIOLOGY

3(3-0-4) 105 hours 15 weeks

INSTRUCTOR:	Philip Johnson	PHONE:	780-539-2863
OFFICE:	J224	E-MAIL:	pjohnson@gprc.ab.ca

OFFICE HOURS:	Tuesdays & Wednesdays	1300-1420 hrs
	Thursdays	1000-1120 hrs

PREREQUISITE(S)/COREQUISITE: BI 1070 and CH 1610 or CH 2610

REQUIRED TEXT/RESOURCE MATERIALS:

"Brock – Biology of Microorganisms" (14th Edition, 2015)
Madigan, Martinko, Dunlap & Clark
Pearson / Benjamin Cummings Publishers
The 13th edition may be used as the text. However, some sections of the course have changed considerably so the pages referred to on the Topic Outline may not be accurate for the 13th Edition.
For extra help, the text includes an access code for "The Microbiology Place" which contains a number of useful resources including practice quizzes, videos and animations. You are encouraged to use this site as much as possible.

MI 2650 Lab Manual 2016-2017
Grande Prairie Regional College

SUPPLEMENTS:

Various materials including copies of the Powerpoint slides used in class will be made available on Moodle. These can be downloaded at any time by students.
The text contains an access code to 'MasterngMicrobiology' which contains many useful resources for students. A link to MasteringMicrobiology is available on the Moodle page for MI 2650.

CALENDAR DESCRIPTION:

This course covers aspects of bacterial physiology such as nutrient uptake, metabolism, extracellular proteins, chemotaxis and differentiation. The eukaryotic microbes, their ecological roles and eukaryotic cell culture will be discussed. The interactions of microbes with the environment and symbiotic relationships are major topics. Basic principles of industrial microbiology and the use of biotechnology for the production of economically and medically important substances will be covered. Laboratory exercises deal with topics related to the lecture material.

LEARNING OUTCOMES:

1. Students should know structure and metabolism of procarotic organisms.
2. Students should know the principles of microbial ecology.
3. Students should understand the importance of microbes to the environment.
4. Students should be able to apply learned principles to other areas of biology.

COURSE OBJECTIVES:

1. To gain an understanding of microbe structure and function.
2. To gain a knowledge of the associations between microbes and other organisms.
3. To develop critical thinking skills with respect to microbiology.

CREDIT/CONTACT HOURS: 3 credits (3-0-4)

DELIVERY MODE(S):	Classes	Tuesdays	1130-1250 (J204)
		Thursdays	1130-1250 (J204)
	Labs	Tuesdays	1430-1720 (J130)
		Thursdays	1300-1420 (J126)

TRANSFERABILITY:

BIOL 3xx – Athabasca University
BIOL 274 – Augustana University
MICRB 265 – University of Alberta
Jr. BIOL – University of Calgary
BIOL 3200 – University of Lethbridge
BIOL 2xx – Concordia University College

NOTE 1: At the University of Calgary, students who pass MI 2650 will not be given credit for BIOL 231, but the course can be used as the pre-requisite for CMMB 343.

EVALUATIONS:

Lab Reports	14%
Lab Quizzes	6%
Final Lab Exam	15%
Mid-term Exam	20%
Final Exam	35%

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE GRADING CONVERSION CHART			
Alpha Grade	4-point	Percentage	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

STUDENT RESPONSIBILITIES:

Refer to the College Policy on Student Rights and Responsibilities available at:
www.gprc.ab.ca/about/administration/policies/fetch.php?ID=69

Refer to the section on Student Conduct on pages 42-44 of the 2016-17 GPRC Calendar especially the Statements on Plagiarism and Cheating on page 43

**Note: all Academic and Administrative policies are available at
www.gprc.ab.ca/about/administration/policies/

Since participation in lectures, and completion of assignments are important components of this course, regular attendance in class is strongly advised. Students who chose not to attend or complete assignments must assumed the risks involved.
Students in MI 2650 MUST read the relevant pages of the textbook in order to supplement the information provided in classes.
In order to successfully complete MI 2650, students MUST attend all scheduled laboratory sessions and achieve a mean score of 50% on the laboratory assignments, including the Lab Exam.
All laboratory assignments MUST be completed and handed in at the time specified. Late reports will not be marked.
Due to the complexity of the laboratory exercises in MI 2650, they can be completed only during the scheduled times.
Since material covered in BI 1070 is relevant to MI 2650, it is assumed that students have retained that information and will be able to answer exam questions that refer to it.

MI 2650 - TOPIC OUTLINE

To improve understanding of the material covered during classes and to ensure successful completion of MI 2650, it is strongly suggested that students read the relevant text pages in advance of the classes.

TOPIC	TEXTBOOK READINGS 13th edition	14th Edition
Introduction to microbiology	1-23; 447-454	1-25; 348-354
Procaryotic structure & function	34-36; 47-84; 133; 155-162; 192-193	32-64; 159; 108-115; 125-126
Nutrition & Metabolic Diversity	34-38; 94-97; 106-108; 341-371; 373-410; 711-713; 714-715	79-80; 82-84; 95-96; 379-432; 650-657
Genetic regulation and Signal transduction	170-174; 193-195; 210-223; 225-227	120-127; 216-230 232-233
Microbial Growth	118-149; 279-284	144-171; 305-308
Control of Microbial Growth	756-786	158-182; 811-826
Microbial associations	672-676	598-600
a. Agrobacterium	440-442; 719-730	336-339; 678-679
b. Nitrogen fixation	365-368; 723-728	100-102; 673-678
c. Ruminant digestion	734-738	683-687
d. Microbes and man	738-741; 788-789; 798-807	687-691; 714-725