GPRC

DEPARTMENT OF ANIMAL HEALTH TECHNOLOGY

COURSE OUTLINE - FALL 2011

LAB PROCEDURES AND MICROBIOLOGY AH 174

INSTRUCTOR:	Karlee Worobetz	**PHONE:**	780-835-6686
OFFICE:	AS 140	**E-MAIL:**	kworobetz@gprc.ab.ca

OFFICE HOURS: See posted schedule outside of AS 140

PREREQUISITE(S)/COREQUISITE: Student must be Registered in Animal Health Technology

REQUIRED TEXT/RESOURCE MATERIALS: Hendrix, *Laboratory Procedures for Veterinary Technicians*, Mosby, 2007, 5th Edition

CALENDAR DESCRIPTION: Students will develop proficiency for care and use of lab equipment pertaining to quality control. Features of bacteria, fungi and viruses are discussed and basic microbiological lab procedures are introduced. Principles of pathogenesis by microbiological agents are covered. Students will learn to group bacteria and fungi according to staining results, morphology and characteristics. Practical microbiological procedures will be performed or discussed to help differentiate common microbiological pathogens. Important veterinary infectious diseases and their clinical signs, treatment and human health implications are discussed. Case studies will be used in presentation of course material.

CREDIT/CONTACT HOURS: 7.5 credits/ 120 hours

DELIVERY MODE(S): Lecture and Lab

OBJECTIVES: Upon successful completion of this course the student will be able to define and discuss:

1. Introduction to Microbiology
2. Bacterial Physiology
3. Identification of Bacteria
4. Gram Positive Aerobic Cocci
5. Endospore Forming Gram Positive Rods
6. Anaerobic, Facultative Anaerobic and Other Gram Negative Rods
7. Spiral Coiled and Unusual Bacteria
8. Mycology
9. Virology

*Please see laboratory manual for specific lab objectives

TRANSFERABILITY:

** 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

EXAMINATIONS: A passing grade for this course is 60% for the theoretical and 60% for the practical components. Attendance is required to ensure student success and all absences must be excused by the instructor prior to the scheduled lab or class. Labs will not be made up for and absences will result in a zero for any reports or assignments given out during that lab. Missed class

assignments and tests without an excused absence will not be able to be made up. A minimum of 50% is required on the final exam in order to be able to write a supplemental final exam.

	Mark distribution
a. Quizzes	15%
b. Lab reports, assignments	20%
c. Midterm (lecture)	15%
d. Lab Final	25%
e. Final Exam (lecture)	25%

* Please note: ½ marks will be deducted for spelling errors of medical terminology. Please treat all exams, quizzes and assignments as medical records and only correct answers using medical corrections. Failure to due this will result in mark deductions. Illegible writing will result in deducted marks. No electronic devices are to be used in exams or quizzes. Having an electronic device present during an exam or quiz will result in dismissal from class and an automatic fail on that test.

STUDENT RESPONSIBILITIES: Enrolment at the Grande Prairie Regional College assumes that the student will become a responsible citizen of the College. As such, each student will display a positive work ethic, take pride in and assist in the maintenance and preservation of Institute property, and assume responsibility for his/her education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting instructor expectations concerning attendance, assignments, deadlines and appointments.

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to pages 49-50 of the College calendar regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

COURSE SCHEDULE/TENTATIVE TIMELINE:

1. **Introduction to Microbiology**
    a. Define key words listed by instructor
    b. State the 5 kingdoms of life and super kingdoms
    c. Discuss differences between eukaryote and prokaryote
    d. State the significance of bacterial taxonomy
    e. Discuss Bergey's method of classifying bacteria
    f. Define nomenclature
2. **Bacterial Physiology**
    a. Describe the various cellular arrangements of a microorganism
    b. Describe the various cellular arrangements of the microorganisms
    c. State the differences between gram positive and negative microorganisms
    d. Describe in detail the bacterial structure and the function of each part
    e. Discuss the nutritional and environmental requirements of bacteria
    f. Name and describe the process in which bacteria reproduce
    g. Describe in detail the stages of the bacterial growth curve
    h. Describe 3 elements that control a bacterial infection
    i. State Koch's postulates
    j. List and discuss the process of bacterial pathogenicity

3. **Identification of Bacteria**

a. Discuss and identify the cell shape and arrangement of a microorganism
b. Discuss the common ingredients in culture media
c. Describe the proper storage of culture media
d. Identify and discuss the common types of culture media
e. Identify and explain the different types of hemolysis
f. Explain the differences between selective and differential media
g. Discuss and explain biochemical tests

4. Diseases Caused by Aerobic Cocci

a. Discuss the two families that fall into the category of Gram positive cocci
b. Discuss and apply how to differential between the two families
c. List all the Staphylococcus species names
d. State the general characteristic effects of Staphylococcus
e. Identify and apply the different biochemical tests that are used to differentiate the organisms covered in this unit
f. Discuss the difference between contagious and environmental mastitis
g. Discuss in detail the conditions associated with the various Staphylococcus infections
h. Describe the recommended treatment for infections covered in this unit
i. List the species names of the genus Streptococcus
j. Discuss the three methods of differentiating Streptococcus organisms
k. Discuss the pathogenesis of Streptococcus
l. State the general characteristics of Streptococcus
m. State which organisms are gram negative cocci
n. Discuss in detail the characteristic, pathogenesis and treatment of Moraxella bovis.

5. **Diseases Caused by Gram Positive Rods**
    a. List the two types of endospore forming Gram positive rods
    b. State the general characteristics of Clostridium sp.
    c. List the
    d. Discuss the characteristics of Listeria
    e. Discuss the characteristics of Erysipelothrix
    f. Discuss the characteristics of Cornyebacterium
    g. Discuss the characteristics of Actinomyces
    h. Discuss the characteristics of Dermatophilus
    i. Discuss the characteristics of Nocardia
    j. Discuss the characteristics of Mycobacterium
6. **Diseases Caused by Gram Negative Rods**
    a. List the different classes of Gram negative rods
    b. State the general characteristics of E. coli
    c. State the general characteristics of Salmonella
    d. Name the common diseases caused by Salmonella and E. coli
    e. State and List the characteristics of anaerobic, facultatively anaerobic and other gram negative rods
7. **Diseases Caused by Spiral, Coiled and Unusual Bacteria**
    a. Discuss mycoplasma
    b. Recognize the common characteristics of Campylobacter
    c. Describe the animal and human implications of Borrelia
    d. Discuss Rickettsia infections
8. **Mycology**
    a. Define mycology along with mycorrhizal, parasitic and saprophytic fungi
    b. Discuss the classification of fungi
    c. Discuss in detail the structure and physiology of fungi and yeasts
    d. Discuss in detail how molds and yeast reproduce
    e. Explain the zoonotic concern of dermatophytosis

f. Explain laboratory procedures applied to identifying mycology samples

9. Virology

a. Discuss the composition of a virus
b. Explain and recognize the various shapes of a virus
c. Explain the replication process of a virus
d. Discuss the various tests available to detect viruses
e. Explain the prevention methods of controlling the growth of viruses
f. List and explain viruses of significance to animal medicine

10. Microbial Sampling and Control

a. Define key words used in the unit
b. Discuss bacteriological sampling
c. State appropriate transport media

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**	**MINIMAL PASS***
F	**1.3**	**55 – 59**	**FAIL**
	1.0	**50 – 54**	
	0.0	**0 – 49**	
WF	**0.0**	**0**	**FAIL, withdrawal after the deadline**

*overall gradepoint average has to be 2.0 or higher to be successful in the AHT program.

Created by: Karlee Worobetz Date: Signature

Approved by: Trisha Holubowich Date: Signature: