DEPARTMENT OF ANIMAL HEALTH TECHNOLOGY

COURSE OUTLINE - FALL 2010

LAB PROCEDURES AND MICROBIOLOGY AH 174

INSTRUCTOR:	Wendy Kane (Lecture/Lab) Dr. Terrill Udenberg(lecture)	**PHONE:**	780-835-6686 780-835-6701
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OFFICE HOURS: See posted schedule

PREREQUISITE(S)/COREQUISITE: Admission into 1st year Animal Health Technology program

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

CALENDAR DESCRIPTION: Students will develop proficiency in care an use of lab equipment, performing dilutions, conversions and 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. Microbiology: Introduction and History
2. Microbiology: Classification and Nomenclature of Bacteria
3. Microbiology: Bacterial Morphology and Physiology
4. Microbiology: Culture Media and Microbial Control
5. Microbiology: Bacteriological Sampling
6. Introduction to Veterinary Bacterial Pathogens
7. Diseases Caused by Cocci
8. Diseases Caused by Gram Positive Rods
9. Diseases Caused by Gram Negative Rods
10. Diseases Caused by Spiral, Coiled and Unusual Bacteria
11. Mycology
12. 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 (lecture)	10%
b. Lab reports, assignments and quizzes	25%
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 (if I can't read it, I can't mark it!). 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. **Microbiology: Introduction and History**
    a. discuss the work of the scientists covered in this unit
    b. state Koch's postulates
    c. define the terms covered in this unit
    d. state the difference between prokaryotes and eukaryotes
    e. state and define the difference between bacteria, fungi and protozoa
2. **Microbiology: Classification and Nomenclature of Bacteria**
    a. discuss the five Kingdom classifications
    b. discuss the classification of Bacteria
    c. discuss Bergey's method of classifying bacteria
    d. define nomenclature
    e. explain and practice how to properly write the scientific name of bacteria
3. **Microbiology: Bacterial Morphology and Physiology**
    a. describe the various shapes of the microorganisms
    b. describe the various cellular arrangements of the microorganisms

c. describe in detail the bacterial structure and the function of each part
d. discuss the nutritional and environmental requirements of bacteria
e. name and describe the process in which bacteria reproduce
f. describe in detail the stages of the bacterial growth curve

4. Microbiology: Culture Media and Microbial Control

a. discuss the common ingredients in culture media
b. describe the proper storage of culture media
c. identify and discuss the common types of culture media
d. identify and explain the different types of hemolysis
e. explain the differences between selective and differential media
f. define disinfection, sterilization and pasteurization
g. describe the methods of bacterial control discussed in this unit

5. Microbiology: Bacteriological Sampling

a. state the reason why it is necessary to follow proper protocol
b. list what information is required on an accurate history form
c. recognize when the sampling should be done
d. discuss in detail the collection of the samples from the appropriate tissues
e. recognize what transport medias are used for
f. discuss in detail information covered regarding shipping samples to diagnostic laboratories
g. describe and discuss the steps to follow to process bacteriological samples

6. Introduction to Veterinary Bacterial Pathogens

a. define the following terms: coccus, bacillus and spirochete
b. discuss morphological and cultural characteristics of bacteria
c. use proper terminology when describing oxygen or temperature requirements of bacteria
d. explain the difference between Gram Positive and Gram negative organisms
e. explain why7 bacteria stain Gram positive or Gram negative
f. describe acid fast cell wall organisms
g. list the elements that control the outcome of infection
h. explain how bacteria are pathogenic
i. explain how a pathogen damages tissues
j. discuss the primary identification of bacteria
k. explain the catalase test
l. explain the coagulase test
m. explain the oxidase test
n. explain the motility test

7. Diseases Caused by 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. discuss the human health considerations of Staph. species infections
i. describe the recommended treatment for infections covered in this unit
j. list the species names of the genus Streptococcus
k. discuss the three methods of differentiating Streptococcus organisms
l. discuss the pathogenesis of Streptococcus
m. state the general characteristics of Streptococcus
n. state which organisms are gram negative cocci
o. discuss in detail the characteristic, pathogenesis and treatment of Moraxella bovis.
p. state which organism causes gonorrhea in human

8. 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 human health hazards of Clostridium
d. discuss the characteristics of mycobacterium

9. 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

10. 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

11. 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

12. 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

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 grade average has to be 2.0 or higher to be successful in the program.

Created by: Wendy Kane Date: Signature:

Approved by: Susan Klassen Date: Signature: