ANIMALSCI 390A: VETERINARY MICROBIOLOGY LABORATORY

SPRING SEMESTER 2014

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Instructor Office Hours: Tuesday: 10:00 am – Noon; Friday: 2:30 – 3:30 pm
We can be found in our lab (LSL N572) or office (LSL N567) just about any time during the day. To make an appointment to see us, please talk to us after class or send an email message.

COURSE OVERVIEW & GOALS
Veterinary Microbiology is a team-oriented microbiology laboratory course for skill development and discovery. It is focused on the importance of microbes in animal health and disease. The intent of this course is to introduce students to veterinary microbiology laboratory techniques and procedures, and to help students learn how to use these techniques to investigate the diversity, growth, and pathogenicity of microbes. In addition to microbiology skill development, the laboratory exercises are designed to encourage students to develop and test hypotheses and to think critically about observations both in and out of the laboratory environment.

LABORATORY MANUAL, SAFETY GOGGLES & NOTEBOOK
A laboratory manual, Veterinary Microbiology, will be provided. You must supply your own safety goggles and laboratory notebook (see below). Carefully read "Rules of the Lab" (at the beginning of the lab manual). Be sure to read the appropriate section of the manual and other assigned readings before coming to class. Come prepared – the course will be immeasurably more enjoyable and beneficial to you.

You are required to maintain a LABORATORY NOTEBOOK. You must supply your own notebook with bound pages (a spiral-bound notebook is fine, but loose-leaf notebooks are not), and bring it to every lab session. A Table of Contents is required – reserve the first two (or more) pages of your notebook for the Table of Contents. Before each lab period, write in your notebook a brief outline including objectives of the lab exercise scheduled for that day. Record observations and data directly into your notebook during lab. After each lab, add explanation, discussion, and conclusions, addressing the points in the “Discussion Guideline” found at the end of each lab exercise. If you include additional pages (e.g., graphs), attach them (e.g., with tape) to a page in your notebook. Helpful hints on maintaining your laboratory notebook are found throughout the lab manual.

NOTEBOOK REVIEWS, QUIZZES, PRACTICAL EXAM, & TEAM LAB REPORTS
Two Laboratory Notebook Reviews are scheduled for the semester. You are responsible for finishing notebook write-ups for laboratory exercises that have been completed by the date of the scheduled Notebook Review. An incomplete notebook will result in loss of points. Grading will be based on: 1) Title / Date, 2) Description of objectives for each laboratory, 3) Observations, and 4) Discussion of Results.

Two Quizzes are scheduled for the semester (indicated by a “Q” on the course schedule). Material will be taken directly from class discussions, assigned readings, and experimental procedures. A Practical Exam, scheduled for the final class period, will test your ability to perform and understand experimental procedures learned in the lab.

Laboratory exercises will involve both individual and team-based activities. You will be required to prepare two Team Lab Reports on designated laboratory exercises as indicated in the class schedule.

LABORATORY ATTENDANCE, PRE-CLASS PREPARATION, POST-CLASS FOLLOW-UP
Attendance is REQUIRED – NO MAKE-UP LABS will be scheduled. An unexcused absence will result in a loss of points for the laboratory missed. You are expected to spend at least three hours each week outside of class annotating your laboratory notebook, meeting with teammates to discuss team lab reports, and preparing for the next class.

COURSE GRADING
Grading will be based on the following: 2 Notebook Reviews (40%), 2 Team Lab Reports (20%), 1 Team/Self Evaluation (10%), 2 Quizzes (20%), 1 Practical Exam (10%)
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**SCHEDULE - SPRING SEMESTER 2014**

**Jan 27**  
1. **Introduction to Veterinary Microbiology Laboratory**  
   Laboratory safety & Rules of the lab; Notebooks; Veterinary practice & Research laboratories

**Feb 3**  
2. **Microbiology Boot Camp I**  
   Microscopy: Observations of rumen fluid; Microbial cell staining techniques  
   Preparation of silage

**Feb 10**  
3. **Microbiology Boot Camp II**  
   Aseptic technique; Culturing microbes in the Lab

**Feb 18**  
4. **Microbial Fermentations & Animal Nutrition - Silage; Enrichment & Isolation I**  
   Silage observations; Enrichment & Isolation of Lactic Acid Bacteria

**Feb 24**  
5. **Microbial Fermentations & Animal Nutrition - Silage; Enrichment & Isolation II**  
   Silage observations; Characterization of Lactic Acid Bacteria

**March 3**  
6. **Antibiotic Resistant Microbes Associated with Animals**  
   Hadley Farm: Sample collection; Viable counts of antibiotic resistant microbes: ISB 364

**Team Lab Report Due:** *Enrichment & Isolation of Lactic Acid Bacteria* (or, choose your own title)

**March 10**  
7. **Antibiotic Resistant Microbes Associated with Animals**  
   Antibiotic resistant microbes: Viable counts & characterization

**Notebook Review:** Turn in your Laboratory Notebook for review. **Deadline: 5:00 PM Tues. March 11.**  
Notebooks may be left in the Vet Micro Lab box outside LSL 567.

**SPRING BREAK**

**March 24**  
8. **Diagnostic Microbiology: Enteric Bacteria, Gastrointestinal Pathogens.**  
   Discussion: Salmonella in chickens  
   Isolation & identification of enteric bacteria

**March 31**  
9. **Diagnostic Microbiology: Enteric Bacteria, Gastrointestinal Pathogens.**  
   Characterization of enteric bacteria: cell morphology, behavior, cell staining; growth characteristics

**April 7**  
10. **Diagnostic Microbiology: Staphylococcus & Streptococcus, Pathogens of Skin and Wounds.**  
    Isolation & identification of *Staphylococcus & Streptococcus*

**April 14**  
11. **Diagnostic Microbiology: Staphylococcus & Streptococcus, Pathogens of Skin and Wounds.**  
    Characterization of *Staphylococcus & Streptococcus*: cell morphology, behavior, cell staining; growth characteristics

**April 23**  
12. **Microbes and Animal Disease.**  
    What's causing a problem in the barn today? Tour of the barns with animal care veterinarian; Final observations: diagnostic micro labs, ISB 364

**Notebook Review:** Turn in your Laboratory Notebook for review. **Deadline: 5:00 PM Thurs. April 24.**  
Notebooks may be left in the Vet Micro Lab box outside LSL 567.

**April 28**  
13. **Laboratory Practical Exam**  
    The Practical Exam provides an opportunity for you to demonstrate your ability to perform and understand experimental procedures learned during the laboratory course.

**Team Lab Report Due:** *Diagnostic Microbiology: Identifying Problem Microbes* (or, your own title)

**Team/Self Evaluation Due:** Wednesday April 30