MICROBIOLOGY 481 SCHEDULE - Spring 2016

SECTION INSTRUCTOR TEACHING ASSISTANTS
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Medical Microbiology Doug Fix Laura Stevens
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DIVERSITY SECTION

Week 1
Tuesday (January 19):
  a. General introduction
  b. Media preparation: Basic principles
  c. Exercise 1 - Prepare media
  d. Exercise 2 - Prepare media
Thursday (January 21):
  a. Introduction to Exercises 1, 2 and 4
  b. Exercise 4 – Prepare media
  c. Exercise 1 - Set up enrichments (bring a soil sample to class)
  d. Exercise 2 - Parts I and II - Set up enrichments

Week 2
Tuesday (January 26)
  a. Introduction to Exercises 3 and 5
  b. Exercise 1 - Examine enrichments/streak plates
  c. Exercise 2 - Parts I and II (continued)
  d. Exercise 3 - Set up enrichments
  e. Exercise 5 – Set up enrichments
Wednesday (January 27)
  a. Exercise 3 - Measure pH two times (early and late)
Thursday (January 28)
  a. Exercise 1 - continued
  b. Exercise 2 - Parts I and II
  c. Exercise 3 - Measure pH early and in afternoon lab
  d. Exercise 4 - Set up enrichments
Friday (January 29)
  a. Exercise 3 - Measure pH early and late
Saturday (January 30)
  a. Exercise 3 - Measure pH early and late (Your instructors will do this)

Week 3
Monday (February 1)
  a. Exercise 3 - Measure pH any time
Tuesday (February 2)
  a. Exercise 1 - Transfer to liquid media
  b. Exercise 2 - Parts I and II (continued)
  c. Exercise 3 - Examine enrichments
  d. Exercise 4 - Examine enrichments, streak plates
  e. Exercise 5 - Examine enrichments and streak plates
Thursday (February 4)
   a. Exercise 1 - Set up growth experiment
   b. Exercise 2 - Complete Part I; Part II continued
   c. Exercise 3 - Examine enrichments, set up Gibson tubes
   d. Exercise 4 - Examine enrichments, streak for isolation
   e. Exercise 5 - Pure cultures I

Week 4
Tuesday (February 9)
   a. Exercise 1 - Complete
   b. Exercise 2 - Complete Part II
   c. Exercise 3 - Complete
   d. Exercise 4 - Transfer isolate to TS broth e. Exercise 5 - Pure cultures II

Thursday (February 11)
   a. Introduction to Exercises 6 and 7
   b. Exercise 6 – parts 1-3
   c. Exercise 4 - Set up for metabolic diversity
   d. Exercise 5 – Continue
   e. Notebooks Due - Complete through Exercise 3

Week 5
Tuesday (February 16)
   a. Exercise 4 - Score for growth, complete
   b. Exercise 5 - Complete
   c. Exercise 6 – part 4
   d. Exercise 7
   e. Clean up

Thursday (February 18)
   a. EXAM I - Microbial Diversity

Friday (February 19)
   a. Notebooks Due - Complete through Exercise 7

MEDICAL MICROBIOLOGY SECTION

Week 6
Tuesday (February 23):
   a. Exercise 8- Staphylococcus/Streptococcus, Part II
Thursday (February 25):
   a. Exercise 8- Staphylococcus/Streptococcus, Part III

Week 7
Tuesday (March 1)
   a. Exercise 9 - Enterobacteriaceae, Part II
Thursday (March 3)
   a. Exercise 9 - Enterobacteriaceae, Part III
Week 8
Tuesday (March 8)
   a. Exercise 10 - Molecular Techniques, Part II
Thursday (March 10)
   a. Exercise 10 - Molecular Techniques, Part III
Friday (March 11)
   a. Notebooks Due - Complete through Exercise 10

March 12-20: SPRING BREAK

Week 9
Tuesday (March 22)
   a. Exercise 11 - Campylobacter/Clostridium, Part II
Thursday (March 24)
   a. Exercise 11 Campylobacter/Clostridium, Part III

Week 10
Tuesday (March 29)
   a. Exercise 12 - Neisseria/Haemophilus, Part II
   b. Exercise 13 – Unknown Identification
Wednesday (March 30)
   a. Exercise 13 – Continue Unknown Identification
Thursday (March 31)
   a. EXAM II - Medical Microbiology Section
   b. Exercise 12 - Neisseria/Haemophilus, Part III
   c. Exercise 13 – Continue Unknown Identification
Friday (April 1)
   a. Exercise 13 – Continue Unknown Identification
   b. Notebooks Due - Complete through Exercise 12

IMMUNOLOGY SECTION

Week 10
Monday (April 4)
   a. Exercise 13 – Unknown Identification Report Due
Tuesday (April 5)
   a. Exercise 14: Preparation of blood smears.
   b. Exercise 15: Demonstration of the murine lymphoid organs and freezing of the lymphoid tissues.
Thursday (April 7)
   a. Exercise 17: Preparation of single cell suspensions from spleens and MLNs
   b. Exercise 18: Determination of live/dead cell concentrations in cell suspensions using a hemocytometer.
Friday (April 8)
   Notebooks Due - Complete through Exercise 17
Week 12

Tuesday (April 12)
a. Exercise 19: In situ staining of the frozen sections with fluorescent antibodies.

Thursday (April 14)
b. Exercise 20: Mounting of the stained sections, imaging by fluorescent microscope and analysis of the acquired images.

Week 13

Tuesday (April 19)
a. Exercise 21: Preparation of single cell suspensions from the spleen

Thursday (April 21)

Friday (April 22)
a. Notebooks Due - Complete through Exercise 20

Week 14

Tuesday (April 26)
a. Exercise 24: Titration of a serological reagent
b. Exercise 25: Two-dimensional gel diffusion and precipitation

Wednesday (April 27)
a. Exercise 25 continued: check precipitation after overnight incubation
b. Exercise 25 continued: check gel slides

Thursday (April 28)
a. Exercise 25 continued: check gel slides.

Friday (April 29)
a. Exercise 25 continued: check gel slides

Week 15

Tuesday (May 3)
a. Exercise 26: Enzyme-Linked Immunosorbent Assays

Thursday (May 5)
a. EXAM III – Immunology Section
b. Exercise 26 continued: Enzyme-Linked Immunosorbent Assays

Friday (May 6)
a. Notebooks Due - Complete through Exercise 26
MICROBIOLOGY 481 GENERAL INFORMATION

LABORATORY SAFETY RULES

GENERAL PRECAUTIONS - observe for ALL laboratories

A. Wear a lab coat while in the laboratory. You must wear a lab coat in order to work in the lab. You must also provide eye and face protection (i.e. goggles) for all experiments requiring Universal Precautions.

B. Place books, etc. on the shelves above the bench or coat rack.

C. Do not work with an uncovered open cut.

D. Upon entering the lab and after finishing work with bacteria, fungi or viruses, wash down your bench space with the disinfectant provided.

E. Keep all sources of possible contamination out of your mouth---hands, pencils, laboratory ware, etc. DO NOT EAT OR APPLY COSMETICS OR LIP BALM IN THE LABORATORY.

F. Discard contaminated equipment such as pipettes into the disinfectant tray provided on the bench. Petri dishes, test tubes, and similar items go into the large plastic pans provided in Room 113.

G. Wash hands with soap and water or disinfectant before leaving the laboratory.

H. Report accidents, such as a spilled culture or a cut, to the laboratory instructor. Do not pick up any pieces of broken or contaminated glassware.

I. Observe aseptic technique at all times when dealing with live cultures.

J. On regularly scheduled lab days, no work should be started until you have received pre-lab directions from your instructor.

UNIVERSAL PRECAUTIONS - observe for SPECIFIC laboratories

Universal precautions are prudent practices that are designed to prevent infectious disease transmission through body fluids, particularly the spread of hepatitis and HIV through blood. In this course, universal precautions will be used in all laboratories in which body fluids such as human or animal blood or serum or other body-derived materials from any source (including experimental animals) are used as experimental material. Universal precautions will also be used when handling known or suspected human pathogens or hazardous chemicals. As you will notice, many of the features of universal precautions are already employed in the microbiology laboratory. These precautions, based on recommendations from the Centers for Disease Control and Prevention, must be used by all persons and on all items contaminated by body fluids or infectious agents, or when using hazardous chemicals.

A. Handwashing. Handwashing is the single most effective means of preventing the spread of infections. Hands and other skin must be washed thoroughly and immediately with soap and water if they accidentally become contaminated with blood, body fluids, excretions, secretions or cultures of infectious agents. Hands must be thoroughly and immediately washed with soap
and water after removal of gloves. Further, mucous membranes must be flushed with water immediately after contamination.

B. **Sharps disposal.**
1. Used sharp items (needles, scalpel blades, glass pipettes, slides and other sharp instruments) should be considered as potentially infectious and must be handled with extraordinary care to prevent accidental injuries.
2. Disposable syringes and needles, scalpel blades, glass pipettes, slides and other sharp items should be placed in the puncture-resistant red containers designated specifically for this purpose. These containers must be located as close as practical to the area where the sharps are used. **Needles SHALL NOT be recapped, purposefully bent, or removed from disposable syringes, or otherwise manipulated by hand. Shearing or breaking of contaminated needles is prohibited.**

C. **Anticipated potential exposure.** All treatments and procedures must be performed in such a manner as to reduce the possibility of direct exposure to an experimental subject's mucous membranes, broken skin (including rashes), blood or other body fluids, secretions or excretions, or potentially infectious laboratory cultures or hazardous chemicals. Anticipated exposure may require gloves, as when having potential contact with blood or other body fluids, secretions or excretions, or when handling soiled items, contaminated equipment, or hazardous chemicals. Gloves are required and are always available to students who perform venipunctures and routine injections.

**Gloves are mandatory for:**
1. Direct contact with skin or mucous membranes at all times and especially when the student has cuts, scratches, or other breaks in the skin.
2. Venipunctures.
3. Situations where hand contamination with blood may occur, for example, when transporting collected blood.
4. Persons who are receiving training in venipuncture procedures.
5. Persons handling body fluids or potentially infectious laboratory cultures or hazardous chemicals.

D. **Anticipated direct exposure.** Masks (provided), eye coverings, and lab coats are required, in addition to gloves, if aerosolization or splashes are likely to occur when performing procedures involving predictable contact with blood or other body fluids, secretions or excretions, or in handling infectious cultures or hazardous chemicals.

E. **Blood spills.** If a spill of blood occurs, spray the spill with full-strength chlorine bleach (5.25% sodium hypochlorite) or any disinfectant certified to be effective for use against bloodborne pathogens. Wearing gloves, wipe up the spill with paper towels. Spray the area again with disinfectant and then wipe again. Discard paper towels and gloves in plastic bag and tie securely prior to disposal.

G. **Laboratory restrictions.** Routine laboratory restrictions for students who are pregnant or who have chronic illness are not necessary for purposes of infection control.

H. **Open wounds.** No student who has exudative lesions or weeping dermatitis should perform or assist in invasive procedures or other procedures which are likely to result in contamination of the student.

I. **Pipetting.** Mouth pipetting of any materials is prohibited.
J. **Specimen handling.** Specimens of blood, laboratory cultures, or other potentially infectious materials, or laboratory chemicals, shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.
   1. The container for storage or transport shall be labeled or color-coded appropriately with universal biohazard and/or chemical hazard warnings and closed prior to being stored or transported.
   2. If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded with universal biohazard or chemical hazard warnings.
   3. If the specimen could puncture the primary container, the primary container shall be placed within a secondary container which is puncture-resistant in addition to the above characteristics.

K. **Equipment decontamination.** Equipment which may become contaminated with blood or other potentially infectious materials shall be examined and shall be decontaminated as necessary by the Teaching Assistants or instructors. Please notify the Teaching Assistants or instructors if you have reason to believe that equipment (i.e. micropipettes, incubators, microscopes, etc.) may have been contaminated in the course of a laboratory exercise.

**GRADES**

Your final grade in this course will be based on the following criteria:

- 20% EXAM I – Diversity
- 20% EXAM II – Medical Microbiology
- 20% EXAM III – Immunology
- 10% Unannounced quizzes (two 10-pt. quizzes per each 5 week segment, 1 drop)
- 30% Laboratory Notebooks (50 points per each 5 week segment)

**REQUIRED SUPPLIES**

- Lab Coat
- Protective Eye Wear
- Sharpie Pens
- Laboratory Notebook (bound book)
- ProPipettor (that green thing)
- Microscope slides (one box; cover slips will be provided)

**ATTENDANCE**

Attendance is required. Each absence beyond one will result in a loss of 50 laboratory points. In addition, we expect you to come to the laboratory well prepared for the day's exercise. Many of the quizzes will be based on the laboratory exercise to be performed that day. Moreover, the time you have to spend in the lab as well as the chances of accidental contamination (of your experiment, yourself, or a lab-mate) can be significantly diminished **simply by being prepared.**
IMPORTANT DATES *
Semester Class Begins ..................................................01/19/2016
Last day to add a class (without instructor permission):........01/25/2016
Last day to withdraw completely and receive a 100% refund: ..02/07/2016
Last day to drop a course using SalukiNet: ..........................04/14/2016
Last day to file diploma application (for name to appear in Commencement program): ....................................................05/09–05/13/2016
Final examinations: ..............................................................................05/09–05/13/2016

Note: For outreach, internet, and short course drop/add dates, visit Registrar’s Academic webpage http://registrar.siu.edu/

SPRING SEMESTER HOLIDAYS
Martin Luther King, Jr.’s Birthday Holiday 01/18/2016
Spring Break 03/12—03/20/2016

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit http://registrar.siu.edu/pdf/ugradcatalog1314.pdf

INCOMPLETE POLICY~ Undergraduate only
An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. For more information please visit: http://registrar.siu.edu/grades/incomplete.html

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at http://registrar.siu.edu/pdf/ugradcatalog1314.pdf

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit http://gradschool.siu.edu/about-us/grad-catalog/index.html

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code http://srr.siu.edu/student_conduct_code/

MORRIS LIBRARY HOURS
http://www.lib.siu.edu/about

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

SALUKI CARES
The purpose of Saluki Cares is to develop, facilitate, and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students, and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: (618) 453-5714, or siucares@siu.edu, http://salukicares.siu.edu/index.html

EMERGENCY PROCEDURES
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) programs. Please reference the Building Emergency Response Protocols for Syllabus attachments on the following pages. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.

INCLUSIVE EXCELLENCE
SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well an essential preparation for any career. For more information please visit: http://www.inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:
 Tutoring: http://tutoring.siu.edu/
 Math Labs http://tutoring.siu.edu/math_tutoring/index.html

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit http://write.siu.edu/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: http://diversity.siu.edu/

Additional Resources Available:
SALUKINET: https://salukinet.siu.edu/cp/home/displaylogin
ADVISEMENT: http://advisement.siu.edu/
SIU ONLINE: http://online.siu.edu/