CoSM Class Policy

Fall 2010 Semester
BIO 309L Sections 020, 021, and 022
GENERAL MICROBIOLOGY LAB

Name: Mr. Ron Havner, Instructor
Department: Biology
Email: havnerronal@sfasu.edu
Phone: 468-5196
Office: Miller Science, Rm 237
Office Hours: 1pm to 4 pm Monday and Wednesday and from 2pm to 4pm Tuesdays and Thursdays and from 1pm to 4pm on Fridays
Class meeting time and place: Mondays and Wednesdays
BIO309L020 8-9:50am in Miller Science Room 208
BIO 309L021 11am-12:50pm in Miller Science Room 208
BIO 309L022 4-5:50pm in Miller Science Room 208

Text and Materials:

Required: Latex or Vinyl gloves, Lighter or matches, and an Alcohol Based Marker (Medium Black)

Course Requirements:
Students must be currently enrolled in BIO 309 Lecture. Students will learn basic microbiology laboratory protocols including specimen collection, cultivation, analysis, identification, and reporting (verbal and written). Students are provided with a specimen of medical, industrial, or environmental relevance and will maintain, analyze, identify and report, verbal presentation and written report, information concerning this specimen.

Course Calendar:
Introduction, Safety, Aseptic Technique: 2 hours
Cultural and Growth Characteristics: 8 hours
Cellular Characteristics: 4 hours
Metabolic/Enzymatic Testing/Analysis: 12 hours
Dilutions: 4 hours
Applied Microbiology: 6 hours
Exams: 3 hours
Presentation of Data: 2 hours
See attached lab schedule

Grading Policy:
Lab Practical Exam #1: 100 points
Lab Practical Exam #2: 100 points
Lab Daily Quizzes: 100 points
Dilution Exam: 100 points
Individual’s Lab Write-up: 50 points
Team Presentation: 50 points
Total points possible: 500 points

Grading will be as follows:
(Percentages refer to points earned from points possible)
90% and above: A
80% to 89%: B
70% to 79%: C
60% to 69%: D
68% or less: F
Attendance Policy:
At the beginning of each lab I will make available a signature roster. Since attendance is mandatory, you will receive no direct credit for it (although the effects of missing a lab will show up in other evaluated activities). In the event that a student must miss a lab period for unavoidable reasons (instructor’s discretion), the student will notify the instructor at least one day PRIOR to that lab. Failure to attend more than three scheduled labs will result in a failing grade for the lab. It is the responsibility of the student to arrange for any makeup activity with the instructor. Labs missed with prior approval will be made up Friday afternoons.

Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one’s own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.
The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.
BIO 309 General Microbiology Laboratory

Course Description:
Study of microorganisms to include bacteria, viruses, fungi, and protozoa with emphasis on laboratory methodology and the structure and function of common microorganisms.

Pre-requisites: One semester of Biology and one semester of Chemistry.
Co-requisite: BIO 309 Lecture.

Course Objectives:
- Provide students with an understanding of important facts, concepts, and the investigative procedures of a microbiology laboratory.
- Train students in the proper use and maintenance of the research grade laboratory microscope with emphasis on oil immersion methods.
- Train students in aseptic technique, prophylaxis, and the proper methods relating to the safe manipulation and maintenance of microorganism.
- Train students in fundamental laboratory methodology to include the use of differential media, metabolic/enzymatic testing and associated reagents.
- Provide students with a hands-on familiarity with basic research procedure and associated critical and investigative thinking skills utilizing identification of unknown microorganismal specimens.
- Provide students with a familiarity of the environmental, industrial, and medical aspects of microorganisms in a laboratory setting.

Student Learning Outcomes (Course Competencies):

Knowledge and Understanding
Student understanding will be evaluated by utilization of laboratory practical exams, weekly quizzes, and a selected written exam (laboratory dilutions). Students will demonstrate:
- The safe methods for isolation, subculture, and maintenance of bacterial, fungal, and viral specimens.
- An understanding of fundamental stains, basic staining techniques, and related bacterial and fungal physiology.
- An understanding of bacterial, fungal, and viral structure and metabolism as it relates to experimentation in the laboratory.
- An understanding of the uses of various media and testing protocols with focus on basic research.
- An understanding of the common microorganisms utilized in industry, medicine and environmental applications.

Subject Specific Skills
Students will demonstrate mastery of:
- Quantitative measures; weight, volume, concentrations.
- Aseptic technique; handling and analysis of specimens, reagents, other testing materials and the maintenance of a sterile work area.
- Analysis and identification of bacterial by genus and species utilizing methods mastered in the laboratory. Emphasis on critical thinking and interpretation of test results.
- Adequate utilization of reference resources such as Bergey’s Manual of Systematic Bacteriology.
- Skill in the logical communication of microbiology laboratory concepts through effective report writing and oral presentation.

Program Learning Outcomes:
Each of the student learning outcomes listed above address the Biology Department Program Learning Outcome #1: Demonstrate a good knowledge base in biological concepts and be able to integrate knowledge with critical thinking skills to become problem solvers. Knowledge base will include: levels of complexity (molecular/cellular through population/communities/ecosystems); biological principles and processes.

Required Textbook:
MICROBIOLOGY LABORATORY, Theory & Application, Brief Edition.
Course Content (Topical Outline):

- Introduction to the Microbiology Laboratory [1 week]
  - Safety materials and procedure
  - Aseptic Technique
  - Hand Washing
  - Normal Microbiota
  - Microbial Ubiquity
- Microscopy [1 week]
  - Operation of the research light microscope
  - Microbial scale
  - Oil Immersion technique
- Microbial Specimens [1 week]
  - Assignment of specimens
  - Subculture
  - Colony morphology and form of growth
  - Physical factors affecting growth and control
- Stains [1 week]
  - Negative and Simple stains; cell morphology and form of growth
  - Gram, Endospore, Acid-Fast stains; cellular structure
- Dilution and Quantification of microorganisms [1 week]
  - Spread, pour, and streak plates
  - Determination of bacterial concentrations
- Metabolic and Enzymatic Analysis [6 weeks]
  - Differential media
  - Hemolysis
  - Fermentation
  - Proteins and enzymes
  - Metabolic waste
- Fungi [1 week]
  - Classification of Fungal genera
  - Structure of common molds and yeasts
  - Culture of fungal specimens
- Microbiology of Soil [1 week]
  - Actinomycetes
  - Other common species
- Microbiology of Water [1 week]
  - Common protozoa
  - Identification by dichotomous key
  - Qualitative analysis of water samples
- Cultivation and enumeration of bacteriophages (viruses) [1 week]
  - Preparation of bacterial host
  - Preparation of plaque assay
- Presentation of Data [1 day]
  - Oral Group Presentation (PowerPoint)
  - Written Lab report