CoSM Class Policy

Fall 2023 Semester
BIO 3021L Sections 020 and 021
MICROBIOLOGY LAB for Science Majors

This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx

Name: Mr. Ron Havner, Instructor
Department: Biology
Email: havnerronal@sfasu.edu
Phone: 468-5196
Office: Miller Science, Rm 237
Office Hours: Monday, Wednesday and Friday 9:00am to 10:00 am and by appointment.

Class meeting time and place: Mondays and Wednesdays
BIO3021L020 1-2:50pm in Miller Science Room 208
BIO 3021L021 3 pm-4:50pm in Miller Science Room 208

Text and Materials:


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

Course Requirements:
Students must be currently enrolled in BIO 3421 Lecture. Students will learn basic microbiology laboratory protocols including specimen collection, cultivation, analysis, identification, and reporting (verbal and written). Students collect or be 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. This is an intensive in-lab laboratory course involving one on one instruction and work as a research team member for 4 hours minimum per week. It is expected that students will engage in at least 6 hours of out of lab study, research and preparation. Students will maintain, analyze, identify the specimen and report via 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:
Written Lab Exam #1: 100 points
Written Lab Exam #2: 100 points
Lab Daily Quizzes: 100 points
Dilution Exam: 100 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
Individual’s Lab Write-up: 50 points  
60% to 69%: D

Team Presentation: 50 points  
68% or less: F

Total points possible: 500 points

**Attendance Policy:**
At the beginning of each lab I will pass out 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 six scheduled labs, excused and unexcused, will result in a failing grade for the lab. Note that any absences in lecture are separate from and not combined with those in lab. It is the responsibility of the student to arrange for any makeup work with the instructor. Labs missed with prior approval will usually be made up Friday afternoons or by appointment.

**Academic Integrity (A-9.1)**

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

**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.
Withheld Grades Semester Grades Policy (5.5)

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 coursework 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 to compute the grade point average. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

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, and 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 promptly 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.

Student Wellness and Well-Being
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
BIO 3021 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 3421 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:

Course Content (Topical Outline):

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