BIOL A114: BASIC MICROBIOLOGY

Item	Value
Curriculum Committee Approval Date	10/16/2024
Top Code	040300 - MicroBiology
Units	2 Total Units
Hours	54 Total Hours (Lecture Hours 27; Lab Hours 27)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)
Associate Arts Local General Education (GE)	• Area 5 Physical and Biological Sciences, Scientific Inquiry, Life Science (OB)
Associate Science Local General Education (GE)	• Area 5 Physical and Biological Sciences, Scientific Inquiry, Life (OSB)

Course Description

Microbiology as applied to disease, treatment, immunity and the environment. Introduction to history, theory, and techniques of microbiology as applied to microbial nutrition, disease, immunity, control and the environment. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Demonstrate microbiologic laboratory skills and display a habit of good lab practices which extends to relevant situation in the medical setting.
2. Explain the dynamics of commensal and pathological relationships that occur between microbes and humans.
3. Evaluate the physical and chemical methods used in the control of microorganisms and apply this understanding to the prevention and control of infectious diseases when given a scenario.

Course Objectives

- 1. Recognize the basic characteristics of bacteria, fungi and viruses ? both similarities and differences
- 2. Recite how the above microorganisms cause disease and how they are treated/controlled
- 3. Demonstrate and practice aseptic procedures in lab relating to basic microbiological techniques such as culturing bacteria and fungi, gram staining and other stains, wet mounts, biochemical tests of bacteria including test interpretation
- 4. Practice and adhere to infection control procedures required in a microbiology lab

Lecture Content

History of microbiology How to cultivate and study single cells Gram stains theory and technique Aseptic culture and lab techniques Theory and use of the Brightfield microscope Characteristics of organisms in Whittaker s Five Kingdoms Comparison of eukaryotic and prokaryotic structure and function Bacterial anatomy Bacterial growth requirements Other bacterial types (spirochetes, spirilla and vibrios) Sexually transmitted diseases Fungi Normal flora of the human body Viruses and prions Disease and Immunity Disinfectants and antiseptics purpose and test procedures Chemotherapy (antibiotics and synthetics) purpose and administration modalities Bacterial metabolism Laboratory identification of bacteria Unknown organism identification Food borne illnesses infections and intoxications Food microbiology use of microbes in food production Food preservation measures/HACCP measures Other applications of microbiology

Lab Content

History of microbiology How to cultivate and study single cells Gram stains theory and technique Aseptic culture and lab techniques Theory and use of the Brightfield microscope Characteristics of organisms in Whittaker s Five Kingdoms Comparison of eukaryotic and prokaryotic structure and function Bacterial anatomy ; Bacterial growth requirements Other bacterial types (spirochetes, spirilla and vibrios) Sexually transmitted diseases Fungi Normal flora of the human body Viruses and prions Disease and Immunity Disinfectants and antiseptics purpose and test procedures Chemotherapy (antibiotics and synthetics) purpose and administration modalities ew Roman'',serif''; font-size: 11pt; Bacterial metabolism Laboratory identification of bacteria Unknown organism identification Food borne illnesses infections and intoxications Food microbiology use of microbes in food production Food preservation measures/HACCP measures Other applications of microbiology

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

Lecture, demonstrations, lab experiments and basic techniques, video presentations, discussions of current topics, independent and team lab exercises with required analysis of results.

Reading Assignments

Textbook reading (4 hrs/week)

Writing Assignments

Short essay questions and extra credit options require writing about subject material learned in microbiology, written paper requiring both outside research and demonstration of the ability to discuss microbiological concepts, Lab Manual includes graded sections where paragraphs are required to show understanding of concepts presented in both lecture and lab (3 hrs/week)

Out-of-class Assignments

Online assignments (2 hrs/week)

Demonstration of Critical Thinking

Exams including short essay, laboratory work including skill demonstrations and experiment worksheets, Lab Manual review for completion of drawings and self-quizzes, video analysis worksheets, written paper on a current topic microbiology

Required Writing, Problem Solving, Skills Demonstration

Short essay questions and extra credit options require writing about subject material learned in microbiology, written paper requiring both outside research and demonstration of the ability to discuss microbiological concepts, Lab Manual includes graded sections where paragraphs are required to show understanding of concepts presented in both lecture and lab.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Talaro, Kathleen. Foundations in Microbiology, Basic Principles, 6th ed. Chicago: McGraw Hill, 2006 Rationale: - 2. Required Tortora, Funke and Case. Microbiology and Introduction, 12 ed. Pearson Publishing, 2016