

# Inver Hills Community College

## **BIOL 2205: Microbiology**

### **A. COURSE DESCRIPTION**

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites:

This course requires either of these prerequisite categories

1. BIOL 1120 - Exploring Biology (Minimum grade: 1.67 GPA Equivalent)

Or

2. BIOL 1154 - Principles of Biology I (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 02 - Critical Thinking, Goal 03 - Natural Science

Surveys microbial groups, microbial cell structure, nutrition, growth, control of growth, metabolism, genetics, evolution, epidemiology, infection, transmission and pathogenesis, and interactions with host organisms. Through hand-on experience, students will develop competence in in microscopy, aseptic technique, as well as in culturing, staining, enumeration, identification, isolation, safe handling and biochemical testing of microorganisms. Intended for students pursuing careers in nursing or similar health professions. This course aligns with American Microbiology Society curriculum guidelines as well as the test plan for the National Council Licensure Examination for Registered Nurses.

**B. COURSE EFFECTIVE DATES:** 01/01/1998 - Present

### **C. OUTLINE OF MAJOR CONTENT AREAS**

1. Biology of Microorganisms 40%
2. Culturing and Identification of Microorganisms 10%
3. History of microbiology 5%
4. Microbes and Humans 20%
5. Survey of Microorganisms 25%

## **D. LEARNING OUTCOMES (General)**

1. Explain and apply fundamental concepts related to the taxonomy, structure, function and ecology of microbes including bacteria, viruses, fungi and Protista.
2. Use critical thinking skills to understand, evaluate, and analyze processes related to microbes:
  - a. Microbial pathogenesis
  - b. The response of the mammalian immune system to microbial infection
  - c. Microbial metabolic diversity
  - d. Microbial biotechnology
  - e. Nature of exponential growth
3. Demonstrate basic competence in microscopy & lab instrumentation, identify microbes, and perform several staining techniques.
2. 4. Explain the major techniques for the physical and chemical control of microbes.
5. Utilize and understand the application of the isolation of microbes from the environment, food and water.
6. Formulate a hypothesis, conduct experiments and analyze results to establish the identity of an unknown culture.
3. 7. Organize, draft, edit, and revise formal scientific writing, including interpreting, incorporating and citing information and ideas from primary literature.
8. Demonstrate an understanding of Koch's postulates & explain six infectious diseases that attack each of the major systems of the human body.
9. Demonstrate current standard lab safety practices and procedures.

## **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

### Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

### Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted