

# Minnesota State University Moorhead

## **BIOL 236: Introduction to Microbiology**

### **A. COURSE DESCRIPTION**

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: BIOL 236L

MnTC Goals: Goal 03 - Natural Science

Focuses on bacteria, viruses and other microbes and their influence on humans, especially on activities related to human health. Addresses the nature of scientific inquiry, along with key microbiology concepts. Lab is required. Basic laboratory skills include bacterial cultivation, aseptic technique, microscopy, bacterial quantitation. Not intended for students majoring in the biological sciences. MnTC Goal 3.

**B. COURSE EFFECTIVE DATES:** 06/01/1995 - Present

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

1. Humans and the Microbial World
2. Microscopy and Cell structure
3. Dynamics of Prokaryotic Growth
4. Control of Microbial Growth
5. Metabolism: Fueling Cell Growth
6. Viruses, Prions and Viroids: Infectious Agents of Animals and Plants
7. The Innate Immune System
8. The Adaptive Immune System
9. Host Microbes Interactions
10. Antimicrobial Medications
11. Skin Infections
12. Wound Infections
13. Respiratory System Infections
14. Digestive System Infections
15. Genitourinary Infections
16. Nervous System Infections
17. Blood and Lymphatic Infections
18. HIV Disease and Complications of Immunodeficiency

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

1. Demonstrate an understanding of the scientific method and of the relationship between hypotheses and theories.
2. Recognize and define problems and formulate and test hypotheses using data collected by observation or experiment. One project must develop, in greater depth, students' laboratory or field experience in the collection of data, its quantitative and graphical analysis, its interpretation, its reporting, and an appreciation of its sources of error and uncertainty.
3. Exhibit knowledge of the development and contributions of major scientific theories.
4. Demonstrate knowledge of the concepts, principles, problems, and perspectives of one or more specific scientific disciplines.
5. Consider societal issues from natural science perspectives, making informed judgments by assessing and evaluating scientific information.
6. Acquire and demonstrate knowledge of the field of microbiology.
7. Understand how microbes impact society, and play significant roles in health and disease.
8. Develop skills employed in working with microorganisms including but not limited to: microscopy, staining, culture, aseptic techniques, enumeration and identification methods.

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

##### 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