

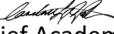


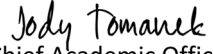




Syllabus
BIOS 2460
Microbiology
2022

Committee Members:

- Courtney Lambertson, Central Community College
- Lous Bartsch, Metropolitan Community College
- HaLea Messersmith, Mid-Plains Community College
- Amanda Thomason, Northeast Community College
- Steve McConnell, Southeast Community College
- Bill Hanson, Western Nebraska Community College
- N/A, Little Priest Tribal College
- Hank Miller, Nebraska Indian Community College

Facilitator: Amanda Thomason

The Institution agrees to the contents in this syllabus including course prefix, number, course description and other contents of this syllabus.

 Chief Academic Officer, Central Community College	04/07/2022	Adopt
 Chief Academic Officer, Little Priest Tribal College	03/28/2022	Adopt
 Chief Academic Officer, Metropolitan Community College	03/28/2022	Decline
 Chief Academic Officer, Mid-Plains Community College	03/28/2022	Adopt
 Chief Academic Officer, Nebraska Indian Community College	04/04/2022	Adopt
 Chief Academic Officer, Northeast Community College	03/28/2022	Adopt
 Chief Academic Officer, Southeast Community College	04/04/2022	Adopt
 Chief Academic Officer, Western Nebraska Community College	03/28/2022	Adopt



I. CATALOG DESCRIPTION

Course Number: BIOS 2460

Course Title: Microbiology

Prerequisite(s): General Biology (BIOS1010) or department approval.

Catalog Description: Study of microbiology with emphasis on structure of microbial cells, their nutrition and growth, control of growth including the immune system, genetics and genetic engineering, metabolic and biosynthetic activity, and host-parasite interactions. Accompanying laboratory study emphasizes microbiological techniques including microbial control and manipulation

Credit Hours: 4.0 semester

6.0 quarter

Lecture / Classroom Hours: 3 hours / week (semester)

5 hours / week (quarter)

Laboratory Hours: 2 hours / week (semester)

3 hours / week (quarter)

II. COURSE OBJECTIVES / COMPETENCIES

Course will:

1. Recognize the various microorganisms and explain their relationships to each other and to other organisms.
2. Explain the physiological processes used by microorganisms and explain their relationships to other organisms.
3. Describe the reproductive processes of microorganisms.
4. Understand the practical use of modern control methods.
5. Explain both naturally-occurring and artificial methods of protecting the body against disease.
6. Explain the effects of diseases organisms have on the normal anatomy and physiology of the body.
7. Describe techniques and applications of genetics and genetic engineering.
8. Differentiate the energy gathering and production methods and discuss their applications in microbiology.
9. Differentiate microorganisms using various techniques.

III. STUDENT LEARNING OUTCOMES:

Students will be able to:

1. Know the basic history of microbiology and list some important scientists who were involved.
2. Be proficient in basic laboratory techniques such as; aseptic technique, microscopy, staining techniques, microbial transfer, and bacterial metabolism.

3. Explain the differences and similarities in prokaryotic cell, eukaryotic cell, prion, and viral structure and function.
4. Differentiate microbial growth requirements.
5. Explain microbial genetics including expression, recombination, and transformation.
6. Differentiate techniques used in genetic engineering.
7. Know modern methods of microbial control and resistance.
8. Know methods which minimize pathogen transmission.
9. Explain the processes of the immune system.
10. Know modern taxonomy.

IV. COURSE CONTENT / TOPICAL OUTLINE

1. Microbial structure and classification.
2. Growth and development, ecological relationships, and metabolic processes of microorganisms.
3. Reproduction including genetic coding, viruses, and biotechnology.
4. Microbial control and immunity.
5. Principles of disease and its effects on body systems.

V. INSTRUCTIONAL MATERIALS

A. Required Text(s) Suggested

1. *Microbiology: An Introduction*, 2016, 13th edition or newer, Tortora.
2. *Microbiology: Laboratory Theory and Application*, 2012, brief edition, Leboffe.
3. *Foundations in Microbiology*, 9th edition or newer, Talaro, 2014.
4. *Benson's Microbiological Applications*, 13th edition or newer, short version, 2015.
5. *Microbiology: A Systems Approach*, 5th edition or newer, M. K. Cowan, K. Talaro, 2015. McGraw-Hill Publishing.
6. *Laboratory Applications in Microbiology*, 3rd edition or newer, Barry Chess, 2015, McGraw-Hill Publishing
7. *Nester's Microbiology: A Human Perspective*, 8th edition or newer, Denise Anderson, Sarah Salm, Deborah Allen, published by McGraw Hill.
8. *Microbiology*, 2017 or newer, Open Stax, publisher by Rice University
9. *Microbiology Fundamentals: A Clinical Approach*. 4th Edition. 2022, By Marjorie Kelly Cowan and Heidi Smith
10. Labster Virtual Lab, Microbiology.

B. Suggested

1. *Bergey's Manual of Determinative Bacteriology*, 9th edition or newer. LW&W Publishing.

VI. METHOD OF PRESENTATION/INSTRUCTION

Methods of presentation typically include a combination of the following

1. Lecture
2. Lab
3. Demonstration

4. Group activities
5. On-Line
6. Distance Education

VII. METHODS OF EVALUATION

Course grades, at the determination of the instructor, will be based on participation, assignments, exams, presentations, papers and/or a portfolio. Instructors will distribute and discuss evaluation and his/her grading policies with students at the beginning of each term.

VIII. INSTITUTIONAL DEFINED SECTION

(To be used at the discretion of each community college as deemed necessary)