

Syllabus

BIOS2460

MICROBIOLOGY

2016

Committee Members:

Courtney Lamberson, Central Community College
No Representative, Little Priest Tribal College
Todd Templeton, Metropolitan Community College
Carla Long, Mid-Plains Community College
No Representative, Nebraska Indian College
Amanda Thomason, Northeast Community College
Steve McConnell, Southeast Community College
Kail Bowman, Western Nebraska Community College

Amanda Thomason

Amanda Thomason (Feb 7, 2017)

Facilitator: Amanda Thomason, Northeast Community College

Date Reviewed: August 12, 2016

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

Deb Brennan

Deb Brennan (Feb 3, 2017)

Deb Brennan, Central Community College

Adopt

Betty Red Leaf Collett

Betty Red Leaf Collett (Mar 22, 2017)

Betty Redleaf, Little Priest Tribal College

Decline

Thomas J McDonnell

Thomas J McDonnell (Feb 16, 2017)

Tom McDonnell, Metropolitan Community College

Decline

Jody Tomanek

Jody Tomanek (Feb 2, 2017)

Jody Tomanek, Mid-Plains Community College

Adopt

Leland Henke

Leland Henke (Feb 16, 2017)

Mary Johnson, Nebraska Indian Community College

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John Blaylock

John Blaylock (Feb 2, 2017)

John Blaylock, Northeast Community College

Adopt

Dennis Headrick

Dennis Headrick (Feb 2, 2017)

Dennis Headrick, Southeast Community College

Adopt

Kimberly Kuster Dale

Kimberly Kuster Dale (Feb 3, 2017)

Kim Dale, Western Nebraska Community College

Adopt

I. CATALOG DESCRIPTION

Course Number: BIOS2460

Course Title: Microbiology

Prerequisite(s): General Biology (BIOS1010) or placement based on attending college's placement test scores, or department approval.

Catalog Description: Study of microbiology with emphasis on structure of microbial cells, their nutrition and growth, control of growth, genetics and genetic engineering, metabolic and biosynthesis 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 AND COMPETENCIES

Course will:

1. Recognize the various microorganisms and explain their relationships 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 and explain medical/genetic applications of these processes.
4. Understand the practical use of modern controlling 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.

III. STUDENT LEARNING OUTCOMES:

Students will:

1. Know the basic history of microbiology and list some important scientists which were involved.
2. Be proficient in basic laboratory techniques such as; 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 preferences including their non-environmental conditions.

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, 12th edition, Tortora.
2. Microbiology: Laboratory Theory and Application, 2012, brief edition, Leboffe.
3. *Foundations in Microbiology*, 9th Edition, Talaro, 2014.
4. *Benson's Microbiological Applications*, 13th edition, short version, 2015.
5. MICROBIOLOGY: A SYSTEMS APPROACH, 4TH EDITION, M. K. COWAN, K. TALARO, 2015. MCGRAW-HILL PUBLISHING
6. LABORATORY APPLICATIONS IN MICROBIOLOGY, 3RD EDITION, BARRY CHESS, 2015, MCGRAW-HILL PUBLISHING
7. Nester's Microbiology: A Human Perspective, 8th edition, Denise Anderson, Sarah Salm, Deborah Allen, published by McGraw Hill.

B. Suggested

1. Bergey's Manual of Determinative Bacteriology, 9th edition.

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)