Syllabus
BIOS2460
Microbiology
2019

Committee Members:

Courtney Lamberson, Central Community College
No representative, Little Priest Tribal College
Carla Delucchi, Metropolitan Community College
Leah Christensen, Mid-Plains Community College
No representative, Nebraska Indian Community College
Jennifer Judt, Northeast Community College
Steve McConnell, Southeast Community College
Bill Hanson, Western Nebraska Community College
Facilitator: Dr. Leah Christensen

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

Landace L. T. Walton — Adopt
Chief Academic Officer, Central Community College

Manoj Patil
Manoj Patil (Apr 24, 2019) — Adopt
Chief Academic Officer, Little Priest Tribal College

Thomas J McDonnell
Thomas J McDonnell (May 13, 2019) — Decline
Chief Academic Officer, Metropolitan Community College

Jody Tomanek
Jody Tomanek (Apr 24, 2019) — Adopt
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Kristine Sudbeck
Kristine Sudbeck (May 16, 2019) — Adopt
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Lyle Kathol
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Dennis Headrick
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Chief Academic Officer, Southeast Community College

Kim Kuster Dale
Kim Kuster Dale (Apr 25, 2019) — Adopt
Chief Academic Officer, Western Nebraska Community College

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, 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 / 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 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.
7. Describe techniques used in genetic engineering and discuss applications.
8. Differentiate the energy gathering and production methods and discuss their applications in microbiology.

III. STUDENT LEARNING OUTCOMES:

Students will be able to:

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 or newer, Tortora.
   2. Microbiology: Laboratory Theory and Application, 2012, brief edition, Lebhoffe.
   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, 4TH 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

B. Suggested
   1. Bergey's Manual of Determinative Bacteriology, 9th edition or newer.

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)*

BIOS2460 - Microbiology - 2019

Final Audit Report 2019-05-16

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