Montgomery County Community College
BIO 140
Microbiology and Immunology
4-3-3

COURSE DESCRIPTION:
A study of microorganisms and their relationship to infectious disease in humans. The biology of microorganisms; infection and pathogenesis; resistance and immunity. For Allied Health specialties and Science majors. (Laboratory/lecture format). This course is subject to a course fee. Refer to http://mc3.edu/adm-fin-aid/paying/tuition/course-fees for current rates.

REQUISITES:
*Previous Course Requirements*

High School Chemistry taken within the last five years, with a minimum grade of "C", **or** CHE 121, CHE 131, **or** CHE 151 taken within the last five years with a minimum grade of "C"
Completion of BIO 121 or BIO 151 within the last five years with a minimum grade of "C", **or** a passing score on the MCCC Biology Placement Test.

*Concurrent Course Requirements*
None

| LEARNING OUTCOMES Upon successful completion of this course, the student will be able to: | LEARNING ACTIVITIES | EVALUATION METHODS |
|---|---|---|
| 1. Demonstrate a basic knowledge and understanding of microbial characteristics including bacteria, fungi, parasites, and viruses. | Lecture<br>Laboratory Reports<br>Laboratory Experiments<br>Laboratory Practicum<br>Group Discussions<br>Case Studies<br>Supplemental Readings<br>Current News Relating to the Course<br>Video Presentations<br>Outlines | Exams<br>Lab Quizzes |
| 2. Describe modes of transmission of disease and methods of control of microbes. | Lecture<br>Laboratory Reports<br>Laboratory Experiments<br>Laboratory Practicum<br>Group Discussions<br>Case Studies<br>Supplemental Readings<br>Current News Relating to the Course<br>Video Presentations<br>Outlines | Exams<br>Lab Quizzes |

benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:

Lecture

I. Introduction to Medical Microbiology
   - A. The Microbial World and You
   - B. History of Microbiology

II. Cell Structure and Function
   - A. Microscopic Observation
   - B. Microbial Metabolism and Growth

III. Microbial Classification and Identification
   - A. Kingdoms
   - B. Scientific Nomenclature
   - C. Classification Methods and Tests
   - D. Identification Methods and Tests

IV. Microbial Control
   - A. Sterilization and Disinfection
   - B. Antibiotics
   - C. Vaccines and Immune Modulation

V. Survey of the Microbial World
   - A. Bacteria
   - B. Fungi

The Importance of Handwashing

III. Bacterial Morphology
   A. Simple Stain
   B. Gram Stain
   C. Acid-fast Stain
IV. Aseptic Technique Streak Dilution
V. Staphylococcus Identification
VI. Streptococcus Identification
VII. Gram Negative Bacilli – Identification
VIII. Controlling Bacteria with Disinfectants
IX. Throat Cultures
X. Urine Cultures
XI. Susceptibility Testing

LEARNING MATERIALS:
Textbook:
Tortora, Funke, and Case. (2013). *Microbiology, An Introduction* (11th