MICROBIOLOGY — BIOL 2020

A. Course Description
   - Credits: 4.00
   - Lecture Hours/Week: 3.00
   - Lab Hours/Week: 1.00
   - OJT Hours/Week: 0
   - Prerequisites:
     - BIOL 1500: General Biology
   - Corequisites: None
   - MnTC Goals:
     - 03 – Natural Science

An introduction to Microbiology with a focus on microbe classification and biology, disease transmission, and pathogenesis, the immune response, and isolation and identification laboratory practices. Emphasis will be on microorganisms that cause local and systemic disease in humans with consideration of treatment options as well as infection control and prevention strategies. This course is intended for nursing students and other students pursuing careers in allied health fields. Meets MnTC Goal 3 Prerequisite BIOL1500 with a grade of C or better

B. Course Effective Dates: 2/1/10 – Present

C. Outline of Major Content Areas
   1. Connecting causative agents/pathogen to diseases
   2. How bacteria/viruses are structured
   3. How bacteria/viruses grow and can be controlled
   4. How microbes evade the immune system
   5. How the human immune system is structured
   6. How the human immune system works
   7. Looking at the differences and similarities between microbial diseases

D. Learning Outcomes
   1. Communicate effectively orally and in writing using the language of science
   2. Critically review current scientific literature
   3. Describe and identify bacteria, eukaryotic microbes, viruses
   4. Describe antimicrobial medications and their mechanisms of action
5. Describe host-microbe interactions
6. Describe immunologic disorders
7. Describe microbial disease of the various human systems
8. Describe the epidemiology of microbial infection
9. Describe the innate and adaptive immune responses
10. Identify and classify microorganisms
11. Understand and utilize proper specimen handling procedures and laboratory safety procedures
12. Understand and utilize the scientific method
13. Understand infection control and prevention practices
14. describe and identify HIV disease
15. describe and identify bacteria
16. describe and identify blood and lymphatic infections
17. describe and identify digestive system infections
18. describe and identify genitourinary infections
19. describe and identify nervous system infections
20. describe and identify respiratory system infections
21. describe and identify skin infections
22. describe and identify viruses
23. describe and identify wound infections
24. describe the adaptive immune response
25. understand and utilize aseptic technique
26. understand and utilize bacterial identification techniques
27. understand and utilize bacterial isolation techniques
28. understand and utilize microbial enumeration techniques
29. understand and utilize proper specimen handling procedures
30. understand bacterial growth curves and requirements
31. utilize personal protective equipment
32. utilize the light microscope and other laboratory equipment

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