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**Biology Department, College of Arts & Sciences, Valdosta State University**  
**SPRING 2011----SUPPLEMENT TO COURSE SYLLABUS FOR BIOL 5100\***

**BIOL 5100, Sections A & B. Microbiology (CRN 21231& 21232) – 4 credit hours**

**This supplement accompanies the course syllabus for BIOL 3100/5100, and is only for students taking BIOL 5100.**

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**\*This is a tentative supplement. Changes to this supplement will be announced during class or laboratory periods; alternatively, changes will be posted on BlazeView or discussed with the student(s).**

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**Instructor:       Dr. Jenifer Turco**

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**Course Objectives: (Page 2 shows how the objectives below are aligned with the VSU General Education Outcomes and the Biology Department Graduate Program Educational Outcomes.)**

**After successful completion of this course, the student should be able to:**

- A. List and describe the three domains of living organisms.
- B. List and describe the three types of noncellular infectious agents.
- C. List several activities of microorganisms that are beneficial to humans and the environment.
- D. List and briefly explain several current challenges in medical microbiology and infectious diseases.
- E. Compare and contrast the structure and function of the microorganisms in the domains Bacteria, Archaea, and Eukarya.
- F. List and describe the various strategies used by microorganisms to obtain carbon, energy, and electrons.
- G. Describe the growth of a pure culture of bacteria in a closed system, and perform mathematical calculations related to the exponential growth phase. Explain several ways in which bacterial growth can be measured. N. Briefly explain the role of m
  - O. List and describe a variety of methods and approaches that are used to detect noncellular infectious agents.
  - P. Explain how physical methods and chemical agents (antiseptics and disinfectants) are used to control the growth of noncellular infectious agents.
  - Q. State the mechanisms of action of various antibacterial, antifungal, and antiviral agents.
  - R. Discuss the problem of antimicrobial drug resistance, and explain several ways in which the growth of bacteria can be minimized.
  - S. Give examples of beneficial interactions between: (i) microorganisms and humans, (ii) microorganisms and plants, and (iii) different types of microorganisms.
  - T. Describe the role of microorganisms in the cycling of nutrients, using examples of the nitrogen and sulfur cycles.
  - U. Describe in detail: (i) the innate defenses of humans and (ii) the adaptive immune response.
  - V. Explain how infectious diseases are transmitted, giving specific examples.
  - W. List the major types of virulence factors observed in pathogenic bacteria.
  - X. List and describe several human diseases that are due to specific bacteria.
  - Y. Describe the general course of the disease caused by human immunodeficiency virus (HIV).
  - Z. Properly handle microorganisms in a biosafety level 2 laboratory.
  - ZA. Use a compound light microscope to examine various types of microorganisms.
  - ZB. Keep accurate records of microscopic observations, as well as other laboratory data.
  - ZC. Use culture media to grow bacteria and fungi in the laboratory, and maintain accurate records of growth.
  - ZD. Use staining techniques, physiological tests, and rRNA sequences as aids in identifying microorganisms.
  - ZE. Use dilutions to determine the colony-forming units per milliliter in a bacterial suspension and the plaque-forming units per milliliter in a viral suspension.
  - ZF. Work with others to formulate an answerable question, develop a hypothesis, design an experiment, collect data, and organize data, and write a formal report in the format used in a scientific journal.
  - ZG. Use library and electronic resources to obtain formal scientific articles related to the course.
  - ZH. Read the articles mentioned in objective ZG and give an oral presentation on the findings.
  - ZI. Read one or more primary scientific research articles and write a paper based on the findings.

**Alignment of Assignments with Course Objectives:**

The course objective(s) aligned with each assignment are given below.

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