

Bossier Parish Community College
Master Syllabus

Course Prefix and Number: BLGY 206

Credit Hours: 3

Course Title: Principles of Microbiology

Course Prerequisites: CHEM 101 or 107 and one life science course (BLGY)

Textbook: Barry Chess; Foundations in Microbiology, 11th edition

Course Description:

Topics covered include microbial diversity, structure and function, physiology, genetics, as well as interactions with hosts and their environments. Lecture emphasizes medically important microbes, techniques used in their handling and control, immunology, and the role of microbes in disease.

Learning Outcomes:

At the end of this course, the student will

- A. correlate the discovery of unifying concepts of microbiology that undergird current microbial discoveries with significant historical events;
- B. apply concepts of transmission, control, and treatment of infectious diseases to the clinical setting;
- C. relate virulence factors of microbes to man's immune function and the development of disease;

To achieve these outcomes, the student will

- 1. explain the diversity of the microbial world, the history of its discovery, and methods used to examine its constituents. (A)
- 2. define what types of organisms constitute the microbial world. (A)
- 3. identify contributions to microbiology made by some early and current investigators. (A)
- 4. compare spontaneous generation and biogenesis. (A)
- 5. describe Koch's postulates and the germ theory of disease. (A,C)
- 6. compare classification schemes. (A)
- 7. give the basic structure and function of macromolecules of life. (A,B)
- 8. compare various types of light and electron microscopes. (A)
- 9. describe techniques for inoculation, isolation, inspection, and identification of microbes. (C)
- 10. give examples of various types of microbial media. (A)
- 11. describe methods to obtain a pure culture of bacteria. (A)
- 12. compare and contrast prokaryotic and eukaryotic cells. (A)

13. describe a cell membrane and bacterial cell walls (A,B)
14. give the importance of various staining techniques used in microbiology. (A,C)
15. list cellular structures of prokaryotic and eukaryotic cells and give their functions. (A)
16. give characteristics of fungi, algae, protozoans, and helminthes. (A,B,C)
17. describe and compare medically important fungi, protozoans, viruses, and bacteria. (A,B,C)
18. identify and characterize the most important systemic and superficial fungal pathogens of man. (B,C)
19. identify and characterize the most important protozoan and helminth parasites of man. (B,C)
20. differentiate viruses from other microbes. (A)
21. summarize viral culture and viral detection. (B,C)
22. explain steps in animal and bacterial virus replication. (B,C)
23. identify and characterize many of the viral diseases of man. (B,C)
24. discuss nutrients and environmental requirements for microbial growth. (A)
25. diagram a bacterial growth curve and tell what occurs in each phase. (A)
26. give characteristics of enzymes. (A)
27. detail and compare glycolysis, Krebs's cycle, and fermentation pathways. (A)
28. describe characteristics of DNA and how it carries the factors of heredity. (A)
29. detail protein synthesis. (A)
30. discuss DNA replication. (A)
31. relate microbial genetics, metabolism, and biological molecules. (A)
32. list causes of mutations. (A)
33. describe genetic transfer among bacteria. (A,B,C)
34. discuss ways to control microbial growth. (C)
35. compare Kirby-Bauer and MIC sensitivity tests. (A,C)
36. compare first, second, and third lines of defense. (A,B)
37. list characteristics of all antibodies. (A,B)
38. illustrate the role of the major types of T and B cells in immunity. (A,B)
39. compile functions of leukocytes and antibodies. (A,B)
40. differentiate humoral and cell mediated immunity. (A,B)
41. compare the four types of hypersensitivity reactions. (A,B)
42. define immunodeficiencies and autoimmune diseases. (A,B)
43. list modes of transmission of infectious agents. (A,B,C)
44. define nosocomial infection. (B,C)
45. specify virulence factors of microbes. (A,B,C)
46. identify a minimum of 30 pathogenic bacteria with the disease(s) it causes. (C)
47. describe infection and disease caused by *Mycobacterium tuberculosis*. (C)
48. employ critical thinking skills to analyze microbial case studies. (B)

Minimum Course Requirements

To earn a grade of "C" or higher the student must earn 70% of the total points for the course and meet all of the following course requirements.

- minimum average of 65% on lecture tests
- minimum average of 65% on homework assignments and/or quizzes

Course Grading Scale:

- A- 90% or more of total possible points and meet all minimum course requirements
- B- 80% or more of total possible points and meet all minimum course requirements
- C- 70% or more of total possible points and meet all minimum course requirements
- D- 60% or more of total possible points and meet all minimum course requirements
- F- less than 60% of total possible points or failure to meet one or more of the minimum course requirements

Attendance Policy: The college attendance policy is available at <http://catalog.bpcc.edu/content.php?catoid=5&navoid=369#class-attendance>

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Reviewed: E Cox, April 2022