

BIO369: Biology of the Microbes

Fall Semester Course (2017)

This course gives an overview of the cell biology, genetics, development, physiology, ecology, and pathology of a wide variety of prokaryotic and eukaryotic microbes. The course also includes information about the immune system and its interactions with microbes. Students taking the course will learn the basic concepts of microbiology, understand the role that microbes play in the environment, and have an appreciation for how the immune system works.

LEC –MWF 9:00-9:50 Knox 14

Textbook: Brock Biology of Microorganisms (14th Edition) by Madigan, Martinko, Bender, Buckley, and Stahl (Pearson Benjamin Cummings publishers) ISBN# 13:978-0-321-89739-8 or 10:0-321-89739-0

Prerequisites: BIO205 (Biochemistry)

Course Instructor: Dr. Stephen J. Free (email free@buffalo.edu)

Office hours: MWF 10:00-11:00 or by appointment in Cooke 370

Attendance: Since the exams will largely reflect material covered during the lectures, students should attend all of the lectures. To encourage lecture attendance, lecture notes will not be posted online. Some class discussion will take place during the lectures.

Exams: There will be 4 short answer exams given during the semester. The penalty for cheating on an examination will be an F grade for the course, and a letter indicating the F grade was given for dishonesty will be placed in the student's file.

Grades: Each of the 4 exams will count for 100 points (400 total points). 360 points guarantees an A - 320 points guarantees a B - 280 points guarantees a C - 240 points guarantees a D. Depending on the difficulty of the exams, Dr. Free may adjust the grading scale downward from these values.

Lecture Schedule for Fall 2016:

I. The Microbial World

1. (8/28) Chpt 1 Microorganisms and Microbiology
2. (8/30) Chpt 2 Microbial Cell Structure and Function
3. (9/1) Chpt 2 Microbial Cell Structure and Function
4. (9/6) Chpt 2 Microbial Cell Structure and Function

5. (9/8) Chpt 4 Molecular Microbiology
6. (9/11) Chpt 4 Molecular Microbiology
7. (9/13) Chpt 6 Microbial Genomics
8. (9/15) Chpt 8 Viruses and Virology
9. (9/18) Chpt 9 Viral Genomes and Diversity
10. (9/20) Review Session
11. (9/22) Exam #1

II. Growth, Metabolism, and Systematics

12. (9/25) Chpt 10 Genetics of Bacterial and Archaea
13. (9/27) Chpt 7 Gene Regulation
14. (9/29) Chpt 11 Genetic Engineering and Biotechnology
15. (10/2) Chpt 5 Microbial Growth and Growth Control
16. (10/4) Chpt 3 Microbial Metabolism
17. (10/6) Chpt 13 & 20 Metabolic Diversity and Nutrient Cycles
18. (10/9) Chpt 12 Microbial Evolution and Systematics
19. (10/11) Chpt 14 Functional Diversity of Bacteria
20. (10/13) Chpt 15-17 Diversity of Microorganisms
21. (10/16) Review Session
22. (10/18) Exam #2

III. Microbial Ecology and Immunology

23. (10/20) Chpt 18 Methods in Microbial Ecology
24. (10/23) Chpt 19 Microbial Ecosystems
25. (10/25) Chpt 21 Microbiology in the Built Environment
26. (10/27) Chpt 22 Microbial Symbioses
27. (10/30) Chpt 24 Immunity and Host Defense

28. (11/1) Chpt 25 Immune Mechanisms
29. (11/3) Chpt 25 Immune Mechanisms
30. (11/6) Chpt 26 Molecular Immunity
31. (11/8) Chpt 26 Molecular Immunity
32. (11/10) Review Session
33. (11/13) Exam #3

IV. Microbial Diseases

34. (11/15) Chpt 23 Microbial Interactions with Humans
35. (11/17) Chpt 27 Diagnostic Microbiology
36. (11/20) Chpt 28 Epidemiology
37. (11/27) Chpt 29 Person-to-Person Bacterial and Viral Diseases
38. (11/29) Chpt 29 Person-to-Person Bacterial and Viral Diseases
39. (12/1) Chpt 30 Vectorborne and Soilborne Bacterial and Viral Diseases
40. (12/4) Chpt 30 Vectorborne and Soilborne Bacterial and Viral Diseases
41. (12/6) Chpt 31 Water and Food as Vehicles of Bacterial Diseases
42. (12/8) Chpt 32 Eukaryotic Pathogens: Fungal and Parasitic Diseases
43. Review Session – to be scheduled.
44. (12/14) Exam #4 - the final exam is scheduled at 8:00 am in