

BIOL 5840 - Advanced Microbiology

Fall 2026 Syllabus, Section 01, CRN 40537,

Credit hours: 3

Public Instructor Information

Jonathan Caguiat

Professional Qualifications:

Postdoctoral, Microbiology, The University of Georgia

Ph. D., Microbiology, The Michigan State University

Bachelor's, Biology – Cell & Molecular Biology, The University of Michigan

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Course Description

5840. Advanced Microbiology. Molecular mechanisms for virulence of pathogenic organisms. Prereq.: BIOL 3702 or equivalent. 3 s.h.

This is an oral intensive course in which students lecture on topics that were not covered in Microbiology (Biology 3702). Topics include bacterial and eukaryotic cell structure, recombinant DNA technology, microbial genomics, infection, immunology, epidemiology, antimicrobial therapy and diseases caused by bacteria, viruses, protists and fungi.

Course Readings

Group	Title	Author	ISBN
Required	Prescott's Microbiology	by Joanne M. Willey, Kathleen M. Sandman, Sarah N. Salm and Nathan W. Rigel	9781264658626

The book can be found at the following bookstore link.

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Tentative Course Schedule

Day	Date	Reading(s)	Proposed Topic	Due/To Prepare for Class
Mon	8/24	None	Introduction	
Wed	8/26	Chapter 3 - Slides 2-12 Chapter 3 - Slides 13-22	Bacterial Cell Structure	8/26/26
Fri	8/28	Chapter 3 - Slides 23-33 Chapter 3 - Slides 34-42	Bacterial Cell Structure	8/28/28
Mon	8/31	None	Sign up for Presentations	
Wed	9/2	Chapter 3 - Slides 43-52 Chapter 3 - Slides 53-67	Bacterial Cell Structure BLAST Exercise Introduction	9/2/26
Fri	9/4	Chapter 4 - Slides 2-13 Chapter 4 - Slides 14-20 and Chapter 5 Slides 2-8	Archaeal Cell Structure Eukaryotes	9/4/26
Mon	9/7	No Class		
Wed	9/9	Chapter 5 - Slides 9-24 Chapter 5 - Slides 25-41	Eukaryotes	9/9/26
Fri	9/11	Chapter 14 - Slides 2-12 Chapter 14 - Slides 13-23	Regulation of Bacterial Cellular Processes	9/11/26



Mon	9/14	Chapter 14 - Slides 24-34 Chapter 14 - Slides 35-46	Regulation of Bacterial Cellular Processes	9/4/26
Wed	9/16	Chapter 14 - Slides 47-52 and Chapter 17 - Slides 2-9 Chapter 17 - Slides 10-23	Regulation/Recombinant DNA Technology Recombinant DNA Technology	9/16/26
Fri	9/18	Chapter 17 - Slides 24-37 Exam 1 - Review BLAST Exercise Due	Recombinant DNA Technology	9/18/26
Mon	9/21	Chapter 18 - Slides 2-12 Chapter 18 - Slides 13-22	Microbial Genomics	9/21/26
Wed	9/23	Chapter 18 - Slides 23-32 Chapter 18 - Slides 33-42	Microbial Genomics	9/23/26
Fri	9/25	Chapters 3, 4, 5 and 14	Exam 1	
Mon	9/28	Chapter 23 - Slides 2-16 Chapter 23 - Slides 17-31	The Protists	9/28/26
Wed	9/30	Chapter 23 - Slides 32-44 Chapter 24 - Slides 2-16	The Protists The Fungi	9/30/26
Fri	10/2	Chapter 24 - Slides 17-31 Chapter 25 - Slides 2-16	The Fungi	10/2/26
Mon	10/5	Chapter 25 - Slides 17-30 Chapter 25 - Slides 31-44	The Viruses	10/5/26
Wed	10/7	Chapter 25 - Slides 45-58 Chapter 9 - Slides 2-19	The Viruses Antimicrobial Chemotherapy	10/7/26
Fri	10/9	Chapter 9 - Slides 20-38 Exam 2 Review	Antimicrobial Chemotherapy	10/9/26
Mon	10/12	Chapter 9 - Slides 39-56 Chapter 31 - Slides 2-16	Antimicrobial Chemotherapy Innate Host Resistance	10/12/26
Wed	10/14	Chapter 31 - Slides 17-31 Chapter 31 - Slides 32-47	Innate Host Resistance	10/14/26
Fri	10/16	Chapters 17, 18, 23, 24 and 25	Exam 2	
Mon	10/19	Chapter 31 - Slides 48-63 Chapter 32 - Slides 2-15	Innate Host Resistance Adaptive Immunity	10/19/26
Wed	10/21	Chapter 32 - Slides 16-29 Chapter 32 - Slides 30-42	Adaptive Immunity	10/21/26
Fri	10/23	Chapter 32 - Slides 43-55 Chapter 32 - Slides 56-68	Adaptive Immunity	10/23/26
Mon	10/26	Chapter 33 - Slides 2-16 Chapter 33 - Slides 17-31	The Microbe-Human Ecosystem	10/26/26
Wed	10/28	Chapter 33 - Slides 32-40 and Chapter 34 - Slides 2-10 Chapter 34 - Slides 11-26	The Microbe-Human Ecosystem/ Pathogenicity and Infection Pathogenicity and Infection	10/28/26
Fri	10/30	Chapter 34 - Slides 27-43 Chapter 35 - Slides 2-15	Pathogenicity and Infection Epidemiology	10/30/26
Mon	11/2	Chapter 35 - Slides 16-29 Chapter 35 - Slides 30-42	Epidemiology	11/2/26
Wed	11/4	Chapter 36 - Slides 2-19 Chapter 36 - Slides 20-37	Clinical Immunology	11/4/26
Fri	11/6	Chapter 37 - Slides 2-19 Exam 3 Review	Viral and Prion Diseases	11/6/26
Mon	11/9	Chapter 37 - Slides 20-37 Chapter 37 - Slides 38-55	Viral and Prion Diseases	11/9/26
Wed	11/11	No Class		
Fri	11/13	Chapters 9, 31, 32, 33, 34 and 35	Exam 3	



Mon	11/16	Chapter 37 - Slides 56-74 Chapter 38 - Slides 2-18	Viral and Prion Diseases Bacterial Diseases	11/16/26
Wed	11/18	Chapter 38 - Slides 19-36 Chapter 38 - Slides 37-54	Bacterial Diseases	11/18/26
Fri	11/20	Chapter 38 - Slides 55-72 Chapter 38 - Slides 73-90	Bacterial Diseases	11/20/26
Mon	11/23	Chapter 38 - Slides 91-110 Chapter 39 - Slides 2-18	Bacterial Diseases Fungal and Protist Diseases	11/23/26
Wed	11/25	No Class		
Fri	11/27	No Class		
Mon	11/30	Chapter 39 - Slides 19-29 Chapter 39 - Slides 30-46	Fungal and Protist Diseases	11/30/26
Wed	12/2	Chapter 40 - Slides 2-13 Chapter 40 - Slides 14-25	Food Microbiology	12/2/26
Fri	12/4	Chapter 40 - Slides 26-34 Exam 4 Review	Food Microbiology	12/4/26
Fri	12/11	Chapters 36, 37, 38, 39 and 40	Exam 4 Please Note: Exam 4 begins at 10:30 AM	12/11/26

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.