Microbiology

BIOL2060

Instructor Information

Course Description

For HS and biology/science majors. A survey of microbiological principles related to human health. Covers taxonomy, cell structure, physiology, and genetics of microorganisms. Additional lab component (BIOL 2065) required.

Pre-Requisite(s): BIOL 1610 w/C grade or better AND BIOL 2065 w/C grade or better or BIOL 2065 must be concurrent.

Semester(s): All

Course Presentation

This is an ***in-person*** lecture that meets twice every week on Tuesday's and Thursday's at 10 - 11:20 a.m. at the Taylorsville-Redwood Campus.

Course Student Learning Outcomes

- Define the science of microbiology and describe some of the general methods used in the study of microorganisms.
- Discuss how Koch's postulates are used to establish the causal link between a suspected microorganism and a disease.
- Describe the appearance, composition, and function of various bacterial cell structures.
- Compare and contrast bacterial, archaeal, and eukaryotic cell structure and function.
- Describe bacterial gene expression and the mechanisms of bacterial recombination.
- Describe the major groups of bacteria and other microbes; and discuss some of the more important diseases caused by bacteria, protists, fungi, viruses, and prions.
- Discuss the major methods of controlling microbial growth and discuss the increasingly serious problem of drug-resistant pathogens.
- Describe virion structure and compare and contrast different viral genome types and life cycle strategies.
- Discuss the concepts of pathogens, disease, infection, and infectious disease and describe virulence factors of viruses and bacteria.
- Describe the elements of innate resistance and describe, compare, and contrast cell-mediated and antibody-mediated immunity.

College Wide Student Learning Outcomes

SLCC has identified nine essential capacities all students should strengthen, regardless of academic major or career plans, that will serve students in all aspects of life.

- The Core Themes of SLCC's Mission focuses on Access and Success, Transfer Education, Workforce Education and Community Engagement. As such, all courses and programs address one or more of the below College-Wide Learning Outcomes. Upon successful completion of any program at SLCC, students should:

- Acquire substantive knowledge in the discipline of their choice sufficient for further study, and/or demonstrate competencies required by employers to be hired and succeed in the workplace.
- Communicate effectively.
- Develop quantitative literacies necessary for their chosen field of study.
- Think critically and creatively.
- Develop civic literacy and the capacity to be community-engaged learners who act in mutually beneficial ways with community partners.
- Develop the knowledge and skills to work with others in a professional and constructive manner.
- Develop computer and information literacy.
- Develop the attitudes and skills for lifelong wellness.

Course Prerequisites

Prereq: BIOL 1610 (w/C grade or better) and BIOL 2065 w/C grade or better or BIOL 2065 must be concurrent.

Free STEM Tutoring

STEM Learning provides free tutoring services and textbook checkout to students enrolled in various courses offered by the School or Science, Math, and Engineering.

Tutoring is provided as a drop-in service only, except in certain circumstances.

Please visit https://www.slcc.edu/stem/tutoring/index.aspx for more information!

Required Textbook or Materials

Title: Microbiology
Authors: Parker N, Schneegurt M, Thi Tu A, Forster BM, Lister P.
Publisher: Rice University Openstax
Publication Date: Latest Update 2023
OID: https://openstax.org/books/microbiology/pages/preface

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Course Learning Environment

My hope is that all of us together will create a learning environment that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

- No discrimination is tolerated based on anyone's race, gender, sexuality, religion, abilities, English language proficiency or socio-economic circumstances. Please always choose kindness and patience in our class communications, there is space for all of us here.

- If you have a name and/or set of pronouns that differ from those that appear in your Canvas handle, please let me know so I can address everyone in a way that makes them feel comfortable and safe.

- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in any of the class materials and discussions (by anyone) that made you feel uncomfortable, please talk to me about it. You can email me directly or send feedback via the anonymous open survey on our Canvas site.

- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to let me know and request extra time on your course work. I want to be a resource for you and help you learn these materials without adding to anyone's level of stress and I promise to treat everyone with compassion.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Further Questions: The Microbiology Hallway	Discussion	0
	Introduce Yourself	Discussion	0
8/28	Microbiology Syllabus Quiz	Quiz	3
9/13	Unit 1 Class Exam	Assignment	75
9/13	Unit 1: Microbial Foundations DISCUSSION	Discussion	5
9/13	Assignment: Eukaryotic Cells Anatomy & Physiology Review	Assignment	4
9/13	Unit 1 Take-Home Exam Portion	Assignment	25
10/3	Metabolism Groupwork	Assignment	5
10/11	Microbe Proposal PLAN Assignment	Assignment	5
10/12	Unit 2: Microbial Essentials DISCUSSION	Discussion	5
10/15	Unit 2 Class Exam	Assignment	75
10/15	Genetics Homework	Assignment	5

Due Date	Assignment Name	Assignment Type	Points
10/15	Unit 2 Take-Home Exam Portion	Assignment	25
11/5	Unit 3 Other Viral Question	Assignment	1.5
11/12	Unit 3 Class Exam	Assignment	75
11/12	SARS-CoV2/CoVID-19 Discussion	Discussion	3
11/12	Unit 3: Acellular Microbiology and Immunology Overview DISCUSSION	Discussion	5
11/12	Unit 3 Take-Home Exam Portion	Assignment	25
12/5	ASSIGNMENT: Bacterial and Viral/Acellular Human Diseases	Assignment	8
12/5	FINAL Microbe Proposal Assignment	Assignment	25
12/5	Lecture Attendance	Assignment	13.5
12/5	Microbiology in the News	Assignment	2
12/5	MMWR Summary Homework	Assignment	5
12/12	Unit 4 and Comprehensive Final Exam	Assignment	175

Due Date	Assignment Name	Assignment Type	Points
12/12	Unit 4: Clinical Microbiology DISCUSSION	Discussion	5
12/12	Unit 4 Take-Home Exam Portion	Assignment	25

Description of Assignments/Exams

Unit Exams:

An exam will be given at the end of unit one through four. Unit exams will be scheduled throughout the semester and exam dates announced in class and posted on Canvas. Exams will be designed to check for student understanding of the information discussed and read. These paper-based exams will consist of a combination of objective (multiple choice, matching, true/false, fill-in-the-blank, etc.) and subjective (short answer, essay, critical thinking, etc.) questions. Students are responsible for all reading assignments, activities, and lecture material covered in the course on each exam. Students will be allowed a normal class-time period to complete the exam. Tentative exam dates are provided in the Syllabus Schedule; however, the exact date for each exam will be announced in class and on Canvas. Class unit exams one through three will be proctored at the Taylorsville-Redwood Campus Testing Center (Markosian Library Room 022). A two-day testing window will be provided where the student can sign up to take their exam.

General Unit Participation (e.g. Contribution, Assignments, Attendance):

Attendance will be taken each class with points applied toward the final grade (note that three absences are allowed with no penalty). A sign-in sheet will be used – students must only sign for themselves when present. Along with general class contribution, other assignments throughout the semester that will contribute to each student's grade may include large or small group discussion, student presentation, in-class and online

activities, reading assignments, writing assignments, quizzes, etc. These assignments will be updated and announced via Canvas. Students are responsible for all announcements, tests and information given in class.

Final Comprehensive Exam:

The final comprehensive exam is mandatory and will be combined to include approximately half ‘new’ Unit 4 material (i.e. material covered since the unit 3 exam) as well as approximately half comprehensive material covered cumulative throughout the semester. This exam is scheduled as follows, unless otherwise notified or updated, and will be held in our regular classroom:

- Final Exam will be Thursday, December 12, 2024 from 9:10 a.m. to 11:10 a.m.

Communication Plan

The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.

I will endeavor to respond to your questions and emails within 24-hours during the week (excluding weekends and holidays), with special focus on trying to reply by 5pm Monday through Friday. On weekends and holidays, although I often check in to the site and my email regularly, please do not expect that I will be able to respond until the next business day. I will attempt to provide timely feedback (e.g. within a week of final due dates) on all posts and written assignments.

Grading Scale

Assessment System:

The following grading system will be used to generate the course grade:

Three Unit Exams	300
General Unit Participation	100
Combined Last Unit & Comprehensive	200

Final Exam	
Total Possible Points	600

Final Grade Percentage Scale:

The following grading scale will be used to generate the course grade:

Final %	Point Range	Grade		Final %	Point Range	Grade
93-100%	555-600	A		73-76%	435-458	C
90-92%	537-554	A-		70-72%	417-434	C-
87-89%	519-536	B+		67-69%	399-416	D+
83-86%	495-518	B		63-66%	375-398	D
80-82%	477-494	B-		60-62%	357-374	D-
77-78%	459-476	C+		Below 60%	Below 356	E

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

You can access the document by clicking on the following link:
https://slcc.instructure.com/courses/530981/pages/institutional-syllabus

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, please visit the Institutional Syllabus under the Tutoring and Learning Support tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, please visit the Institutional Syllabus under the Advising and Counseling Support Services tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

General Course Policies

Attendance: Participation in the lecture course's Canvas site during the first week of the semester and completion of a Syllabus Quiz is **MANDATORY**. Students who do not attend or contact the instructor prior to the drop deadline for this class risk being dropped from the course. **This may also result in you being dropped from the BIOL2065 lab class that is to be taken concurrently.**

Face Coverings: While face coverings are not required at SLCC, the college has adopted a “mask-friendly” approach and encourages everyone to evaluate their situation and act accordingly. Face coverings provide a guard against spreading potentially infected droplets to other individuals and discourage people from touching their faces and possibly infecting themselves with unclean hands. Though optional, the use of face coverings by everyone, regardless of vaccination status, is strongly recommended while on campus and should at the very least be worn when sick when around others. Please see the CDC's website for the latest guidelines on face coverings.

Academic Dishonesty: Academic Dishonesty is absolutely NOT tolerated and includes all forms of cheating and plagiarism as outlined in the Code of Student Rights and Responsibilities and outlined here. There is NO tolerance for dishonesty. ***Academic dishonesty includes, but is not limited to, claiming another person’s work or words as one’s own, accessing answers to quizzes and exams from the Internet, completing quizzes or exams with other individuals, etc. Students must put any answers in their own words. Exams are to be completed individually by the student.*** Penalty for first offense may include a grade of “0” on the assignment or exam and second offense may result in an “E” for the course.

Generative artificial intelligence (AI) software is a rapidly emerging tool that students may be interested in using. If doing so, SLCC students are expected to adhere to the same standards as the Code of Student Rights and Responsibilities statement on plagiarism. ***Presenting generative AI software content as your own is a violation of academic integrity.*** If you use generative AI in your work, you must indicate that you have done so.

Electronic Devices: Electronic devices can be used for note-taking and course-related purposes ONLY but should not be used during class for working on other tasks (e.g. answer emails, Facebook, other classes, texting, etc.). Cell phones, pagers are to be on mute during class to minimize disruption. You may be asked to leave if your electronic device disrupts the class in anyway.

Classroom recordings: Students may not record or publish information from the class without written authorization from the instructor. If used without authorization you have violated Privacy/Intellectual Property Rights.

Emergency Evacuation Procedures: We will follow school guidelines in case of an emergency at: https://i.slcc.edu/emergency-prepare/emergency-procedures.aspx

Institutional Syllabus: More information regarding SLCC Institutional Policies, Learning Support and Tutoring Services, and Advising and Counseling Support Services can be found in Canvas through the Institutional Syllabus page (see the Global Navigation pane).

Drop, Withdraw and Incomplete Grade: The last day to drop this class with refund is January 29, 2024; last day to withdraw without refund is March 19, 2024. **It is the responsibility of the student to drop/withdraw from this class, not the instructors.** A grade of "I" (Incomplete) is the instructor's option and is not given except in the most extenuating of circumstances for which there is verifiable written documentation. In order to receive an incomplete, nearly all course work must have been completed (e.g. ~70%) with a passing grade.

SLCC Academic Policies: SLCC academic policies may be found in the SLCC Course Catalog, and the Code of Student Rights and Responsibilities.

Topic Schedule

Unit 1	**August 20nd – September 10th**	**Textbook Reading**
	An Invisible World	Chapter 1
	How We See the Invisible World	Chapter 2
	The Cell	Chapter 3
	Prokaryotic Diversity	Chapter 4
	Unit 1 Exam: September 12th – 13th	
Unit 2	**September 12th – October 10th**	**Textbook Reading**
	Microbial Biochemistry	Chapter 7
	Microbial Metabolism	Chapter 8
	Microbial Growth	Chapter 9
	Biochemistry of the Genome	Chapter 10
	Mechanism of Microbial Genetics	Chapter 11
	Unit 2 Exam: October 14th – 15th	
Unit 3	**October 15th – November 7th**	**Textbook Reading**
	Acellular Pathogens	Chapter 6
	Innate Immunity: Nonspecific Defenses of the Host	Chapter 17
	Adaptive Immunity: Specific Defenses of the Host	Chapter 18
	Diseases of the Immune System	Chapter 19
	Unit 3 Exam: November 11th – 12th	
Unit 4	**November 12th – December 5th**	**Textbook Reading**
	Control of Microbial Growth	Chapter 13
	Antimicrobial Drugs	Chapter 14
	Diseases and Epidemiology	Chapter 16
	Microbial Mechanisms of Pathogenicity	Chapter 15
	Human Diseases Caused by Bacteria and Viruses	
	Unit 4 and Comprehensive Final Exam: December 12th 9:10 – 11:10 a.m.	

Note: The chapter topic schedule in this syllabus may potentially change based on the instructor's discretion.

Dates of coverage are approximate. Students are responsible for all announcements, tests, and information given in class.

Syllabus Last Updated: Saturday, August 17, 2024