# Microbiology

BIOL - 2060 002

# 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

# Engagement Plan

I will respond in 24-48 hours during the normal work week.

I will offer feedback on major assignments within 1 week of the due date

# Course Presentation

In Person Lecture Sessions: Mondays and Wednesdays: 11:30am-12:50pm

# Course Prerequisites

Biol 1610 w/ C grade or better and Biol 2065 w/ C grade or better or Biol 2065 must be concurrent.

# 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.

# Required Textbook or Materials

**Title: Microbiology** 

**Subtitle:** Electronic Version: Biol 2060 Textbook (free)

**Publisher:** OpenStax

**OID:** <a href="https://sites.google.com/view/biol2060textbook/home">https://sites.google.com/view/biol2060textbook/home</a>

For more information on textbook accessibility, contact Accessibility & Disability Services at <a href="mailto:ads@slcc.edu">ads@slcc.edu</a>.

# Description of Assignments/Exams

Plagiarism Tutorial (Required): To help students better understand what plagiarism is and how to avoid it, students will be required to take a <u>plagiarism pre-test/tutorial</u> <u>here</u> and achieve a score of 100% on the post-test. While this assignment is of no point value, you are expected to submit a copy of your test in the <u>plagiarism tutorial completion</u> <u>assignment on Canvas</u>. Do it as soon as possible as **no assignments or exams will be graded until this is complete**.

**Classroom Engagement (15%)**: This classroom is an active one which means we will be working in class frequently to complete group activities such as case studies, worksheets, etc. Studies have shown that active learning is an excellent method of mastering material — better than listening to a lecture the entire session or passively reviewing powerpoint slides. Student engagement enhances the discussions in the classroom, especially if all are willing to share their unique experiences and perspectives. Everyone has something to contribute!

- Points are awarded for completing in class activities/discussions.
- Points will be deducted for disruptive behavior, missing portions of the class/activity, or disengagement (such as looking at your phone rather than discussing with your peers).
  - The lowest three in-class activity scores will be dropped to accommodate personal situations/emergencies.
    - This does not include the Module 13 activities on aseptic techniquethose cannot be dropped. It is important for all students to participate in these two activities.

**Assignments (35% total):** Throughout the semester assignments will be given to help students in learning crucial concepts. Assignment instructions and points values will be listed in Canvas and will be discussed in class as well. The following are included in this category:

- Course Material Quizzes (20%): I will post the readings and videos for each class/week on Canvas the week before our scheduled lecture days.
  - **Pre-class quiz (10%):** Each module will have a pre-class quiz that must be completed the day BEFORE class. These quizzes will test your comprehension

of the material in that module

- Post-class quiz (10%): Each module will also have a post-class quiz that
  must be completed the day AFTER class. These quizzes will test not only your
  comprehension of the particular modules material, but will also bring in
  comprehensive questions for the past modules we have covered in class so
  help keep the material fresh.
  - The lowest three quiz scores in each category will be dropped to accommodate personal situations/emergencies.
- **JEDI Case Study (5%)**: Students will choose a JEDI-STEM case study to study/complete during the course of the semester. Assignment instructions and the case study description, along with any other pertinent information, will be listed in Canvas. While this is an individual effort and assignment, working and brainstorming in groups is helpful and ENCOURAGED! This is to be submitted through Canvas.
- Research Activity and Presentation (10%): As a class, all students will be asked to participate in a Research and Presentation activity with a group of 2-3 people. Each group will pick a human disease that is caused by a microorganism and will gather material on that disease to be presented to the class. The presentation is to be in a PowerPoint format. The file will be submitted through Canvas by the posted date in the schedule. Groups will also be asked to generate multiple choice questions based on the topic and complete a group evaluation form. This project will be presented during the last few days of class. Grading will be based on the grading rubric provided on Canvas.

**Exams (50%):** There are a total of five exams during the course: 4 unit exams during the semester and 1 final comprehensive exam during finals week. The availability dates are listed in the attached course schedule and on Canvas. All exams are to be taken outside of regular class time at the SLCC testing centers. For more information on the format of the exams, expectations, and tips, see the Exam information and tips page under the General Course Information Module. Exams are only available during dates listed in the syllabus. **Students are expected to take the tests at the scheduled dates and times. If you have a conflict with an exam date please talk to me as soon as possible**: if plenty of notice is given, and I feel it is appropriate, then a student (on a case by case basis) <u>may take the exam early</u>. **No exams will be given after the assigned date.** If there is to be a

change in this schedule you will be informed at the earliest opportunity. Remember these dates are subject to change at the discretion of the instructor.

- **Unit Exams 1-4 (40%)**: There will be four unit exams worth 100 points each. The exams will be closed book. Exams will not be comprehensive; however some concepts build on previous material.
- **Final Exam (10%):** The final exam will consist of approximately 40% material from the whole course and 60% new material covered since Exam 4.

**Practice quizzes and additional assignments (optional):** Online practice quizzes and assignments for the chapter material will be available through Canvas. These are to help enhance student learning and help students determine how well they have mastered chapter concepts. The practice quizzes and additional assignments are of no point value and will not affect student's grades. In class, a series of practice exam questions will be given out and small groups will work to complete them together to help prepare students for examinations.

**Extra credit (optional):** There are three guaranteed extra credit opportunities in the course- the syllabus quiz, the performance prognosis inventory survey, and the ask a librarian human disease discussion. There may be an additional extra credit assignment, but this is not guaranteed. Keep in mind that if there is another extra credit assignment, it will be worth a small amount of points so you should not count on this to raise your grade. Any extra credit will be announced in class or on Canvas. **Do NOT ask for a special extra credit assignment just for you, to raise your grade. This is inappropriate and unfair to your fellow students.** 

# **Grading Scale**

Grading: It is your responsibility to monitor your grade. Remember that you EARN your grade! Scores and grades will not be curved. Letter grades are related to a percentage score on a scale below:

Microbiology Percentage Distribution			
Performance Item Percentage			
Exams (#1-4)	40		
Exams (Final)	10		

Classroom Engagement	10
Pre-Class Quizzes	10
Post-Class Quizzes	10
JEDI Case Study	5
Aseptic Technique Assignment	5
Research activity	10
Total Course Percentage	100

Microbiology Final Grading Scale			
Grade	Final %		
А	93-100		
A-	90-92		
B+	87-89		
В	83-86		
B-	80-82		
C+	77-79		
С	73-76		
C-	70-72		
D+	67-69		
D	63-66		
D-	60-62		
Е	Below 60		

# Course Learning Environment

**Diversity and Inclusivity:** The microbial world affects people of all nationalities, ethnicities, races, ages, genders, sexualities, religions, abilities, socioeconomic levels etc. It

is a universal truth that microbiology touches all our lives in some way. Historically only select voices were heard and expressed in the field of microbiology, but in this classroom students of all identities are welcome and needed to enhance our understanding of the subject. Everyone's individual experiences and perspectives are invaluable to our discussions in class. To create an essential learning environment that supports all (identities, thoughts, perspectives and experiences), I ask that students do the following:

- If you have a name and/or set of pronouns that differ from those on the official school records, please let me know
- If you have a disability and believe you need accommodations to improve access to learning materials or the learning environment, please contact the Accessibility and Disability Service: Phone: 801-957-4659; Email: ADS@slcc.edu; ADS Website. I will work directly with this center and they are a great resource for students
- Please honor your classmates by giving full consideration that we all come from different life experiences. Many students may have different viewpoints from your own that are valuable and potentially enlightening. If you have a concern with a specific classmate or issue, please reach out to me (in person or electronically)
- IMPORTANTLY: If conditions inside or outside the classroom are negatively impacting your performance/experience in class, please reach out to me (in person or electronically). Let's work together to find options to help you achieve your full potential.

**Class conduct:** Let's work together to make sure everyone feels welcomed and valued. Each student has the right to receive a quality education; any student that impedes on that student right is in violation of the class conduct guidelines of SLCC.

- During class, please silence your electronic devices and keep unrelated discussions to a minimum. It can be very difficult for some to take notes with audible distractions.
- Keep your language clean- this is a professional environment and should be treated as such.
- Please be aware of start and stop times. Coming in late or leaving early can be a disruption to the entire class and will negatively impact your learning experience and overall grade in the course.

 Please double-check the tone of all of your messages, posts, E-mails, etc. to your classmates and instructor. All forms of communication between students and with the instructor are to be civil and polite! It is easy to say things in an email that you would not say to someone face-to-face. Personal attacks, cursing, sexual connotations, and general rudeness are not acceptable. Be courteous at all times!

**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, social media, other classes, texting, etc.). Cell phones are to be on silent during class to minimize disruption. You may be asked to leave if your electronic device disrupts the class in any way.

**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.

**Illnesses/COVID-19**: if you are feeling unwell, please contact me as soon as possible. We will work together to find a way for you to stay up to date in the course on a case by case basis.

**Emergency Evacuation Procedures:** We will follow school guidelines in case of an emergency. Those guidelines can be found here: <u>emergency evacuations</u>.

**Safety and Security:** The safety and security of all our students, faculty, staff and visitors is of utmost importance to the Campus Police Department. We rely on each of you to be an additional set of ears and eyes to help maintain campus safety. Please be diligent in your efforts to report suspicious or unusual behavior or circumstances to the Campus Police Department. Trust your instincts when something doesn't look, seem, or feel right and tell someone. The Campus Police can be reached at 801-957-3800. Additional safety information can be found on the website here: <u>SLCC Campus Policy safety information</u>.

### Keys to Success

**Time commitment:** Microbiology can be challenging for students and may require more time than spent in earlier biology courses. Assess your current situation and set aside a consistent time in your day/week to focus on the course

#### **Preparation expectations:**

**Prior** to starting any assignments or attending lecture sessions, students are expected to:

- Read all relevant textbook chapters
- View related videos
- Complete the pre-class quizzes

After attending lecture sessions, students are expected to:

- Review class notes for clarity and questions
- Complete the post-class quizzes

#### **Best Practices:**

- Before class, it is to your benefit to create a series of notes and chapter
   outlines from your readings/viewings. The process of writing or transcribing thoughts
   can dramatically increase your ability to remember and understand concepts and
   skills you are learning.
  - textbook and video skeletal outlines are provided and it is strongly recommended that students fill these in as they study the material
- Attend all class sessions and take notes during the class in a format that will help you remember the information. Studies have shown that hand written notes lead to increased retention of material when compared to "typing" notes on an electronic device.
- Refer back to your notes shortly after class to identify areas that may need more clarification and study; consider forming a study group with other student and utilize the STEM center
- Be aware and mindful of assignment deadlines and **submit early** this will help if there are any technical hiccups that need to be sorted. While late work is accepted, you will lose points so it is in your best interest to meet those deadlines.
- When in doubt, ask! I am more than happy to help so please reach out to me either in class, via canvas, or email if you have questions, don't know what to do next, or need help in any way.

• For more suggestions see the **best practices and tips page** listed under the General Course Information module.

#### General Course Policies

#### Attendance: In-person attendance is required

**Technology:** While this is a traditional face-to-face class, Canvas will be heavily used to post class announcements, lecture material, assignments, and grades. You will need access to the internet in order to engage with the Salt Lake Community College Canvas site

**Communications:** I will be posting Canvas announcements regarding weekly expectations, assignments, or exam reminder dates and any changes to this syllabus or the course. Please be sure to check announcements frequently as **you are held responsible for the information posted there!** 

Additionally, Canvas provides an email system which can be used to contact fellow students and me as the instructor. Each of you has also been assigned a SLCC email account. Please make sure it is active and you check it frequently. I will be using these accounts (Canvas and student email) if I need to contact you.

**Course Evaluation:** Course performance and grading will be based on classroom engagement, course assignments, and course exams.

- Students are expected to attend and participate in class.
- Students should read the assigned chapter material, view the related videos, and complete the pre-quiz prior to the lecture session to get the most out of time in class.
- Lecture will vary from week to week, depending upon the nature of the material covered, but will include both individual and collaborative efforts.

See the Exam/Assignment Point Distribution and Final Grading Scale tables below for more specific grading information.

**Academic Integrity:** You demonstrate academic integrity when you submit your own work or properly acknowledge the work of others. Even though you may work in groups for

some specific assignments, all work must be in YOUR OWN WORDS unless specifically instructed.

Additionally, 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.

**Academic Dishonesty:** Any form of academic dishonestly will NOT be tolerated and includes all forms of cheating and plagiarism as outlined in the Code of Student Rights and Responsibilities and outlined here.

- Academic dishonesty includes, but is not limited to, claiming another person's work
  or words as one's own, claiming Al generated content as your own, accessing
  answers to lab reports, 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

**Due Dates and Late Work Policy:** Submission of work by the assigned deadlines will earn you credit in the course and contribute to your overall grade. These deadlines are designed to ensure that work completion is in line with the purpose of the assignment and the timing of material presented in class. Deadlines for all course work will be posted in Canvas as well as the syllabus.

While it is preferred that work is submitted on time, sometimes circumstances arise that are out of our control or you may just need a bit more time to finish up an assignment.

Please note that late work will incur a penalty of 10% per day late, up to a 50% deduction. Late work will be accepted up to the day before the exam opens for that particular assignment. Once the exam opens, no late work will be accepted.

#### **Drop, Withdraw or Incomplete Grade**:

• The last day to drop this class with a refund is September 16, 2025

#### • The last day to withdraw without refund is October 28, 2025

It is the responsibility of the student to drop/withdraw from this class, not the instructor's.

Incomplete Grade: A grade of "I" (Incomplete) is within the instructor's discretion and is not given except in the most extenuating circumstances for which there is verifiable written documentation. In order to receive an incomplete, nearly all course work must have been completed (e.g.  $\sim$ 75%) with a passing grade.

**SLCC Academic Policies**: SLCC academic policies may be found in the <u>SLCC 2023-2024</u> <u>Catalog</u>, and the <u>Code of Student Rights and Responsibilities</u>.

## General Overview and Unit Schedule

		Module 1: An Invisible World	
Unit 1	August 27- Unit 1	Module 2: How We See the Invisible World	Exam Window: September 22-
	September 22	Module 3: The Cell	24
		Module 4: Prokaryotic Diversity	
		Module 5: Microbial Biochemistry	
Unit 2	September 24- October	Module 6:Microbial Metabolism	Exam Window:
Offit 2	13	Module 7: Microbial Growth	October 13-15
		Module 8: Microbial Genetics	
		Module 9: Acellular Pathogens	
	October 15-	Module 10: Innate Host Defenses	Exam Window:
Unit 3	November 5	Module 11: Adaptive Host Defenses	November 5-7
		Module 12: Disease of the Immune System	
Unit 4	November 10- December 1	Module 13: Control of Microbial Growth	Exam Window: December 1-3

		Module 14: Microbial Drugs	
		Module 15: Microbial Pathogenicity	
		Module 16: Disease and Epidemiology	
Human Disease	December 3- December 10	Module 17: Various topics/diseases from Chapters 21 - 26	Exam Date: Included in the final exam (comprehensive)
Final Exam	December 15- 18	Comprehensive for all semester material	Exam Window: Dec 15-18

# Microbiology Lecture and Assignment Schedule

Week	Date	Topic (Monday)	Topic (Wednesday)	Task(s) of the Week	Due Date
				Syllabus Quiz	8/30
1	August		Introduction to Class	Plagiarism	
I	27			Tutorial	8/30
				(required)	
2	Sept 1/3	No Class: Labor	Module 1: An	Case Study	9/6
_	Sept 1/3	Day Holiday	Invisible World	Selection	9/0
		Module 2: How We		Bacterial Speed	
3	Sept 8/10	See the Invisible	Module 3: The Cell	Dating	9/15
		World		Preparation	
4	Sept	Module 4:	Module 4: continued	Case Study Part	0./00
	15/17	Prokaryotic		1	9/20
	Diversity	_			
		Bacterial Speed		Bacterial Speed	9/20
		Dating activity In		Dating	

		Class			
	Cont	Catch up and Review Day	Module 5: Microbial		
22/24	EXAM 1: Opens Available Sept 22- 24	Biochemistry	Exam 1	9/24	
	Sont	Module 6: Microbial Metabolism	Module 7: Microbial	Case Study Part	
6	Sept 29/Oct 1	Human Disease Groups/Topics Assigned in class	Growth	2	10/4
7	Oct 6/8	Module 8: Microbial Genetics	Module 8: continued	Case Study Part 3	10/11
		Catch up and	Module 9: Acellular	Exam 2	10/15
	Oct	Review Day	Pathogens		10/18
8	13/15	Exam 2: Opens Available October	Viral Match-up Activity	Viral Match-Up	
		13-15	In Class		
	Oct	Module 10: Innate	Module 10 Continued	Cooo Study Dort	
9	20/22	Host Defenses	Case Study Part 4 activity In Class	Case Study Part 4	10/22
10	Oct 27/29	Module 11: Adaptive Host Defenses	Module11: continued	Work on Human Disease Project PPTX	11/1
		Module 12: Disease	Catch up and Review Day		
11	Nov 3/5	of the Immune System	EXAM 3: Opens Available November 5-7	Exam 3	11/7
12	Nov 10/12	Module 13: Control of Microbial	Module 13: Control of Microbial Growth	Aseptic	11/15
		Growth  Aseptic Technique	cont.  Aseptic Technique	Technique Pt 1	

		activity in Class	activity in Class cont.		
13	Nov 17/19	Module 14: Antimicrobial drugs	Module 15: Microbial Pathogenicity	Human Disease PPTX files due	11/25
14	Nov 24/26	Module 16: Disease & Epidemiology	No Class: Thanksgiving Break	Module 13 Aseptic Technique Part 2	11/30
		Catch up and Review Day	Human Disease Student Presentations	Exam 4	12/3
15	Dec 1/3	Exam 4: Opens Available December 1-3		Student Presentations	12/3
16	Dec 8/10	Human Disease Student Presentations	Human Disease Student Presentations	Student Presentations	12/8 12/10
Finals	Dec 15- 18	FINAL EXAM: Decem	nber 15-18	Final Exam	12/18

This schedule is subject to change to enhance the learning experience. Students will be notified either orally and/or via Canvas if changes are made

### 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 <a href="https://www.slcc.edu/stem/tutoring/index.aspx">https://www.slcc.edu/stem/tutoring/index.aspx</a> for more information!

# How to Navigate to Canvas

# 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.

- Acquire substantive knowledge in the intended major and throughout General Education
- Communicate effectively
- Develop quantitative literacies necessary for the chosen field of study
- Think critically
- Express themselves 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 information literacy
- Develop computer literacy

### 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.

For more information, navigate to the Institutional Policies tab on the <u>Institutional Syllabus</u> page.

# 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, visit the <u>Institutional Syllabus</u> page under the Tutoring and Learning Support tab. 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, visit the <u>Institutional Syllabus</u> page under the Advising and Counseling Support Services tab. 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.

# Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Additional Material:  Module 2: Parts of the Compound Microscope and Gram Staining	Assignment	
	Additional Material:  Module 3: Cells Alive!	Assignment	
	Ask SLCC librarian Amy Scheelke! Librarian help with assignment research	Discussion	0
	In Class Activity Introduction	Assignment	10
	In Class Activity  Module 1	Assignment	10
	In Class Activity  Module 2	Assignment	10
	In Class Activity  Module 3	Assignment	10
	Introduce Yourself	Discussion	0
	Module 1 practice quiz	Assignment	
	Module 2 practice quiz	Assignment	
	Module 3 practice quiz	Assignment	
	Repeat Module 1 Pre- class quiz	Quiz	0

Due Date	Assignment Name	Assignment Type	Points
	Repeat Module 2 Pre- class quiz	Quiz	0
	Repeat Module 3 Pre- class quiz	Quiz	0
8/30/25	<u>Microbiology</u> <u>Syllabus Quiz</u>	Quiz	10
8/30/25	Plagiarism tutorial completion	Assignment	0
9/2/25	Module 1 Pre-Class Quiz	Quiz	10
9/4/25	Module 1 Post-Class Quiz	Quiz	10
9/6/25	Case Study Selection	Quiz	0
9/7/25	Module 2 Pre-Class Quiz	Quiz	10
9/9/25	Module 2 Post-Class Quiz	Quiz	10
9/9/25	Module 3 Pre-Class Quiz	Quiz	10
9/11/25	Module 3 Post-Class Quiz	Quiz	10
9/20/25	Bacterial Speed  Dating Player for In  Class Activity for  Module 4	Assignment	10
9/24/25	Unit 1 Exam	Quiz	100
9/24/25	Unit 1 Exam B	Quiz	100

Due Date	Assignment Name	Assignment Type	Points
9/24/25	Unit 1 Exam C	Quiz	100
10/4/25	Performance Prognosis Inventory	Assignment	10