Cell Biology

BIOL - 2020 001

Course Description

Prereq: BIOL 1610 w/C grade or better. Coreq: BIOL 2025. For biology/science majors. Topics covered include cell division, organelle structure and function, gene expression, cytoskeleton, and extracellular matrix. Three hours of lecture per week with additional lab component (BIOL 2025) required.

Semester: Fall & Spring

Course Presentation

SUMMARY COURSE OVERVIEW

Welcome to Biol 2020! This course will give you a good introduction to the key principles of cell biology. We will cover basic cellular chemistry and processes including transport mechanisms, membrane structure, organelle function, bioenergetics, cellular metabolism, gene structure and regulation of gene expression, cell division, cytoskeletal and extra-cellular matrix structures, cell-cell junctions, tissues and cellular communication. We will also introduce gene annotation and the use of bioinformatics, .

HOW THIS CLASS RUNS: Plan to attend class every Tuesday and Thursday, from 8:30 to 11:20 am. Usually we will have lecture each day, in which we will cover the course material. About half of the weeks, there will be a lab scheduled on either T or Th. Plan to meet for the full 3 hours every Tuesday and Thursday each week, whether there is a lab scheduled, or not. (unlike how the class appears when you register, there are not two separate classes - lecture and lab. Both are combined into a 3 hr block that is sometimes lecture, and sometimes lab). Please come to class prepared, by having read the text material for the chapter we are covering, and having viewed any assigned videos, before class. **Please print out the Course daily schedule and refer to it often so you know what**

we plan to cover each day. The schedule shows the topics to be covered each day, a summary of the recommended text book reading, and links to video supplements. We will have a lab about every other week. Labs may be scheduled on either Tuesday or Thursday. There are 7 labs plus a lab project and project presentations. Your lab work determines 20% of your grade in the Biol 2020 class. (There is no grade for Biol 2025. the work you do in the lab counts 20% towards your Biol 2020 grade). There are 4 midterm Exams, plus a comprehensive final. Exams count for 66% of your grade in total. Lab is 20%, and There are also a number of other assignments, such as discussions, papers to read and quiz assignments for the remaining 14% of your grade. Check your daily schedule for approximate due dates, and the canvas assignments for exact due dates. Turn assignments in on time. **LATE WORK POLICY:** Late work is accepted, but you lose points for each day that work is submitted late (1% per day).

You can access all course materials, including the text book, via canvas. We cover 1-2 chapters each week. The course moves quickly. But new course material builds on what you learned in earlier classes, so it should seem easier over time as you come to understand the course layout and what is expected of you. It is good to work ahead in your readings. The textbook is well written and has many built in review questions, to help you assess your understanding. You will earn extra credit if you do the text book reading and take the section quizzes built in to the text book. Reading the text before class will help you be familiar with material so class time can be used more effectively going over more difficult concepts. Try not to fall behind. It is difficult to catch up if you do so. Come see me early, if you are not sure what to do so you do not fall behind.

My lecture **powerpoint slides are posted on canvas**. The powerpoint numbers correlate with the chapter number that is being covered. To access course materials other than the textbook, go to the course schedule and click links there. All course materials, including the e-textbook, are located on the canvas Modules. There is a Summary test unit MODULE for each test unit. Within the modules you will find access to the powerpoints I used in class, to some of the videos shown in class, to other supplementary study resources, and also (in some cases) study pages which summarize what you should know about specific topics. For example, In test unit 1 we will be reviewing principles of cellular biochemistry. It is important you understand the difference between covalent, ionic and hydrogen bonds, and the nature of these chemical reactions: dehydration synthesis, hydrolysis and redox reactions. You should already have a good understanding of these concepts, from Biol

1610 and your chemistry classes- use the provided materials in the canvas module to review these concepts.

LAB: All lab materials are located on canvas. Lab protocols are located on the "Lab materials" module. Please read through the lab protocols prior to each lab and complete any pre-work before the lab is held.

NOTE: Missed labs generally can not be made up, so plan accordingly. If you need to miss a lab let me know well ahead of time so I can let you know about potential options.

LAB STRUCTURE: Most days we will have lecture and do review activities. About every other week we will have a lab. Check the course schedule for scheduled lab days. For LABs, about half your lab points come from being present to do the lab. You earn these protocol points by submitting your completed lab protocol report. The remaining points come from completing a quiz on that lab. The completed lab write up is usually due the next class day. Some protocols are submitted online and others are submitted as hard copies. Most Lab quizzes online. Online Lab Quizzes are timed. You may not make up protocol points for a missed lab, but I do allow you to take the quiz for a missed lab, if you prepare adequately by reading the lab.

Genome Annotation project (GAP): This project is worth about 40 pts of your lab grade (out of 150 lab points possible). Detailed instructions on completing your GAP project will be provided in class and on the GAP canvas module. Brief overview: In lab 4 you will map the genome of the SARS CoV2 virus. For your GAP project you will annotate assigned portions of this viral genome and do a class presentation describing the function of your assigned genes. We will use a bioinformatics platform called Geni-ACT to access programs needed to analyze the genome. (lab 4, the SARScoV2 lab and data for your GAP project can all be accessed from this site. You will have about a month to prepare your GAP project. You will present your findings/evidence to the class in the last week of the semester. You will take a quiz on using the bioinformatic programs.

Required Textbook or Materials

Title: Essential Cell Biology
Subtitle: The text book is linked into the canvas course- inclusive access
Authors: by Alberts et al.

Edition: 6th ed.

Title: ESSENTIAL CELL BIOLOGY 6E - SW5 (Custom)
ISBN: 9781324033486
Authors: Alberts et. al.
Publisher: W. W. Norton & Company, Incorporated
Edition: 6th

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

Lab (20% of your course grade)

This is a rough breakdown of the lab assignments you will complete. Assignments may be adjusted slightly, by varying point values or number of assignments. But all lab assignments together will always be worth 20% of your final grade (150 class pts). The due date posted in your assignments is the day we do the lab. The protocol report, and the lab quiz are due a few days later.

Biol 2020 Labs summary

Lab Number	Protocol pts	Quiz pts
1- microscopy, units and using micropipettes	8	10
2- enzyme analysis	8	10
4- mapping a genome	8	8
4a- Biology of SarsCoV2 lab	6	-
5- differential centrifugation	8	10
6 - immunohistochemistry	10	6
7- mitosis	8	10
Genome Annotation Project (GAP) (30 pts total- instructor and quiz)	20	10
Gene annotations- classmate grade (10 pts)	10	-
Total (activity pts) (quiz pts)	(86)	(64)
Total Lab pts	**150**	

Description of Assignments/Exams

NOTE: this information is also posted in similar format on the course home page. There are live links to many of the resources if you go there.

COURSE RESOURCES AND ACCESS TO ASSIGNMENTS:

You can access all course materials and assignments, including the text book, via canvas. We cover 1-2 chapters each week. The course moves quickly. But it should seem easier over time as new course material builds on what you learned in earlier classes, and as you come to understand my teaching style and what is expected of you. Please ask questions if you are unsure what is expected, or if you do not understand what I am talking about in class. If you have a question, probably other people do too, and they will be grateful if somebody asks.

This class builds heavily on principles learned in Biol 1610. I have included study pages to help you review some of these key concepts for test unit 1:

- Review the Chemistry essentials study page ahead of time to prepare for week 2. Also read chapter 2 of the textbook to review these concepts (you access your textbook by clicking the link at the top of this page). (NOTE: You will be tested on basic chemistry concepts on Test 1 but I will probably not review all of these concepts in class, unless you ask me about them.) Understanding the differences in structure of the 4 macromolecules of life is essential to understanding why they have their unique emergent properties enabling cells to perform complex functions. We will focus primarily on proteins in test unit 1, but you need to understand the structure and function of all 4 (proteins, Carbohydrates, Nucleic acids and Lipids).
- There is a study page to help remind you of the Two main kinds of cells- Prokaryotic and eukaryotic - and a study page to review the basic structure and function of the different organelles found in eukaryotic cells. Please use the schedule, and the Test #1 Materials Module pages to access these resources so you can come to class prepared

EXAM INFORMATION:

Typical Exam Structure (100 points each)

- Take-Home Questions/activities prior to test (open book) 10-15 points
- Part 1-Multiple Choice (in testing center) (50-60 questions) 50-60 points

- Short Answer portion) (5-15 questions) 25-30 points
- **TOTAL 100 points each**

TEST details: **Tests will each have 3 parts**. The first part is the take-home exam. This can be downloaded now, and I recommend you work on it as we cover new material in class each day. We have a review day, on the day each exam opens. **The takehome exam assignment is DUE the day the online exam opens**. You should have it completed before you come to class. Class will begin with a closed book quiz with a couple questions from this exam. Then we will review for the exam by going over the Takehome questions. You can correct your answers during the test review in class, before you turn it in online. I recommend you use the completed takehome as a study guide for the exam, and also as a review for the fnal exam which will be comprehensive. You get credit for completing the takehome exam by 1) taking the quiz on the takehome in class, and 2) submitting a copy of your completed worksheets.

The next part of each test is called Part 1. **Part 1 is a closed book online multiple choice Test . You will take this exam in a SLCC testing center.** I recommend using the Jordan Testing center, 045 JHS (see below). You must schedule a time to take the exam, within the testing center hours of operation. To do well on the exam you should plan to take about 1-1.5 hrs to complete this portion of the exam. You will have a 2-3 day window available in which you can schedule your exam appointment, at your convenience. Do not schedule during Class time, as we will hold class as usual on test days. You will be given scratch paper in the testing center. Use the scratch paper to draw out diagrams, and take notes to help order your thoughts and to keep track of questions you want to go back and double check.

The last part of the exam is called Part 2. Part 2 is the short answer portion of the test, where you will write out your answers or work problems. This part of the test is also online, but you will take it on your own computer, via canvas. Part 2 is open notes, but is also timed, so manage your time wisely. (about 1 hr) You will run out of time if you look many things up. If you do look something up, be sure to not plagiarize. **Answers need to be in your own words**, and should use information and terminology that we have been discussing in class. They should not include random details you found on google, unless you include explanation of what these terms mean and how they relate.

Unit tests 1-3 are worth a total of 100 pts each, plus some extra credit points.

The final exam has 4 parts and is worth a total of 198 pts. It consists of: A takehome test over unit 4 materials (called Takehome exam 4), a closed book multiple choice test over unit 4 materials (called Test 4), a closed book multiple choice test that is comprehensive over the whole year (called Final exam part 1) and a short answer portion (called final exam part 2) that is mostly over test unit 4, but also has 1 comprehensive question.

If you need to reschedule a test, you must speak with me ahead of time about your conflict and receive pre-approval. A rescheduled test must be completed before I return tests to the class. Makeup tests will not be given.

SCHEDULING AN EXAM: You can use any SLCC testing center to take Unit exams. See the "General course information/ How to take exams in the testing center Module" for more information. Here is a summary:

- Jordan Testing Center information:
- LOCATION Jordan testing center: Room 054 JHS (located on south end of the JHS, basement floor). phone: 801-957-6220
- You must schedule a time to take your test BEFORE you show up (see module in canvas course for steps of how to schedule an exam).
- Testing Center HOURS: Monday-Thursday | 8 a.m.-8 p.m. Friday | 8 a.m.-5 p.m. (closed: Saturday, Sunday, holidays, campus closures) – **Be sure to schedule you exam with adequate time for you to complete it before the testing center closes.** Your appointment will be scheduled for 1.5 hrs.

OTHER ASSIGNMENTS: Readings, activities and chapter quizzes (102 pts):

In addition to exams and laboratory assignments, there are about 100 additional class pts available to earn:

- Test units 1 -3 have discussion papers assigned. These are required reading on topics that coincide with topics being taught in that test unit. You read the paper and post a reflection to earn points. (1-2 per test unit).- due prior to the test open date
- Practical exam (we read a short paper and discuss points that pertain to that test unit) for test units 1-3- these are discussed in class on the test open date (review day) - we may or may not do these, depending on time.

- Test units 1 and 2 have discussion activities assigned for points'
- Test units 3 and 4 have assigned practice quizzes worth points.

These activities are designed to see how what you are learning applies in the real world. They are worth points to cushion your grade. These points are easy to earn, if you do the assignment and all together count about the same as one test. Doing well on them helps your grade. But if you do not do them, your grade will drop significantly.

General Course Policies

Attendance:

I will take roll daily. Attendance is mandatory the first 2 days of class. **If you do not attend the first week, you may be dropped** from the lecture and the lab courses. Contact me if you cannot attend the first day of class, but wish to remain enrolled. Please sign the roll daily. (note: it is your responsibility to drop the class if you decide not take it, but you may be dropped administratively if you do not attend during the first week, even if you did not wish to drop)

Attendance Extra Credit: Your attendance percent results in extra credit points in one of two ways: 1) Half of your percent attendance can be used to replace half of your lowest exam % score. For example, if you have 60% on a test, and 100% attendance you can raise that test score to 60/2 + 100/2 = 80%. Or, 2) IYou can get your % attendance X 5 pts. I will award whichever is higher.

You can also earn extra credit if you present your Genome Annotation Project at the SLCC UP^{3}RC conference in the last week of school. See me for more information.

Extra credit is also available based on the percent you completed of doing the textbook readings and completing the review quizzes. This data stores automatically, and at the end of the semester I will download your overall completion percent, and use that to determine your extra credit earned, up to 10 pts.

Academic Integrity:

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. I am ok with you using AI to help you get started, but it is important that you state you have done so, and that you edit so the final product is in your own words. Do not just cut and paste. That is cheating. You paid a lot of money to attend college. Value yourself by using the opportunity to become educated and proficient. Cheating will only hurt you in the long run, and will potentially hurt your future patients/customers as well, when you don't actually know what you are doing in your job.

Be excited about what you are learning. Be excited to develop new study skills so you will become a good decision maker who can handle stressful situations and perform well in your job. Don't be afraid of hard work. Hard work can be very satisfying, especially when you see the results of your effort paying off. If you actually learn the concepts in Biol 2020 it will make subsequent classes as you pursue your professional career in Biology or the Health fields so much easier. Develop good study habits for success in college, it will make all of your future classes much easier and much more enjoyable. Biol 2020 requires a lot of work to succeed. But it pays off because you will develop essential critical thinking skills and will develop a very good foundation in understanding how life works. Don't cut yourself short.

Due Dates and Late Work Policy:

Drop, Withdraw or Incomplete Grade: Last day to drop from class with refund is Sept 16. The deadline to withdraw or audit, without refund, is October 28th. A grade of "I" (Incomplete) is at the instructor's discretion and can be given if a student is facing extenuating circumstances preventing them from finishing the semester. In order to receive an incomplete, most of the course work must be completed (e.g. ~70%) and you must currently have a passing grade. If you have any questions about grades or grading policies please visit: https://www.slcc.edu/student/enrollment/grade-policies.aspx.

SLCC Academic Policies: SLCC academic policies may be found in the SLCC 2024-2025 Catalog, and the Code of Student Rights and Responsibilities.

Grading Scale

Grading Scale Biol
2020
Biol 2020: your grade is based on total class points earned out of 750 pts available

Grade	**point range**		**final %**
A	697.5	750	93-100
A-	675	697.5	90-92
B+	652.5	675	87-89
B	622.5	652.5	83-86
B-	600	622.5	80-82
C+	577.5	600	77-79
C	547.5	577.5	73-76
C-	525	547.5	70-72
D+	502.5	525	67-69
D	472.5	502.5	63-66
D-	450	472.5	60-62
E		<450	below 60

You earn class points from exams, quizzes, readings, extra credit and lab assignments. Lab is 20% of your grade. See assignments tab in your canvas course for the dates each exam will be available. All exams are taken in the Testing Center.

Grade Point breakdown		
Scoring	**Points**	**Percent of Grade**
Midterm #1	100	13.4
Midterm #2	100	13.4
Midterm #3	100	13.4
Midterm #4	83	11.0
other Assignments	102	13.5
Laboratory	150	20.0
Final Exam	115	15.3
_____	_____	_____
Total	750	100

Grade Point breakdown		
This break down may be altered slightly. High % class Attendance will yield extra credit.		

Summary of Test Unit topics

Test Unit Topic Summary:

Test Unit 1 (chapters. 1-4 & parts of ch. 5 and ch. 11 ,(Powerpoints 1-4): Cells and Life, Biological chemistry, Energy and Enzymes, Proteins)

Intro to cellular structure (prokaryotic vs eukaryotic) and review of biological chemistry. Review of the Central Dogma of biology with emphasis on understanding the role of DNA in determining protein structure. Emphasis on concept of SELF ASSEMBLING machines in cells (need to understand the chemistry, information flow and energetics of why self assembly of proteins and of membranes happens). Main focus of unit 1 is to understand how proteins fold into specific shapes to perform specific functions. Describe why cells must maintain homeostasis of pH. Use Toll Like Receptors and antibodies as examples to Define protein domains and protein families. Emphasis on the structure of amino acids and the sets of amino acids in a protein determines its final structure (and function). Particular emphasis on enzyme structure/function and the role of enzymes in regulating cellular activities, especially kinases. Brief Intros to endomembrane delivery system and to role of proteosome. Deep Intro to the physics of energy with emphasis on understanding how energy availability ultimately regulates the chemical processes occurring in cells (describe how energy released in exergonic processes can be harvested to drive endergonic processes). Emphasis on understanding the energetics of the protein folding landscape and of membrane formation. Describe how energetics determine if a process is spontaneous or requires energy input.

Test Unit 2: (chapters 5-8, and 15. ppts 5-8, 15: DNA & The Central Dogma, 3 Protein delivery mechanisms)

The Central Dogma: Main point of unit 2 is to describe how the structure of DNA contains information cells can use to direct the building of proteins. These proteins then determine how the cell will look and behave. Cell differentiation occurs based on a stepwise process

of activating or inactivating specific genes. Describe nucleic acid structure (RNA vs DNA). Describe key enzymes enabling the processes of Replication, Transcription, Translation. Contrast gene regulation in prokaryotes vs eukaryotes. Describe some basic DNA repair mechanisms. Describe purposes of RNA editing, roles of mRNA, tRNA, rRNA, snRNA and miRNA. Identify different levels of gene regulation (transcriptional, translational, post-translational). Describe function of the proteosome in posttranslational regulation of gene expression. Compare/contrast how transcription factors regulate gene expression in prokaryotes vs eukaryotes (ie- repressors/activators vs combinatorial control). Describe 3 protein delivery mechanisms (nuclear import, mitochondrial import and Endomembrane delivery system). Emphasis on concept : the function of an organelle is based on its protein content and membrane structure. How does the cell “know” how to deliver proteins to the correct destination? How do proteins “know” their job? Emphasis on understanding concept of genetic disease is due to the lack of, or misfolding or improper delivery of specific proteins. Explain how a mutation can result in improper delivery, improper function, or failure to be made at all. Where would the mutation occur in each case?

Test Unit 3: (chapters 11-14: Active/passive transport, Nerve signaling, Cellular respiration, Photosynthesis)

1) Active and passive Transport across membranes via channel and carrier proteins. Intro to epithelial tissue. Emphasis on the role of the 1o active Na+/K+ antiporter in establishing membrane potential, and on the structure and function of other proteins then enable 1o and 2o active transport in the gut epithelium. Emphasis on describing role of gated channel proteins (passive transport) in neuron function. Neurons are the functional unit of Nerve tissue. 2) Main point of unit 2 is understanding how cells produce and use ion gradients to harvest the energy used to power all the chemical processes of life: METABOLISM. Detailed understanding of the 4 steps of Aerobic cellular respiration and 2 steps of photosynthesis in harvesting energy. Emphasis on mitochondrial and chloroplast structure, role of specific enzymes in each of the steps of Respiration. Role of activated energy carrier molecules (ATP, NADH, NADPH). Is an energy carrier molecule an enzyme? Follow the flow of electrons from food to oxygen and explain how this exergonic flow enables production of ATP. Identify and describe the function of transport proteins that enable movement of ATP, ADP, Pi, H+, etc across mitochondrial membranes.

Test Unit 4: (chapters 17-20: Cytoskeleton, Cell division, regulation of cell cycle, Tissues and Cancer)

1) Describe the structure and function of cytoskeletal proteins (microtubules, microfilaments and intermediate filaments). Describe structure and function of the functional unit of muscle tissue (sarcomere). 2) Describe the Cell Cycle and explain how it is regulated. Describe the regulation of transition through the steps of mitosis. Contrast process and function of Mitosis and Meiosis. Relate meiosis to genetics. Define a complementation group and describe how these are used to determine number of enzymes needed in a biochemical process. Describe Role of specific proteins such as cyclins, cdks, APC, condensins, cohesins, securing, separase, proteosome, etc in regulation of the G2/M transition and progression through M phase. Also describe role of p53, p21, etc in regulating the cell cycle. Describe the G1/S transition with emphasis on understanding of how misregulation of the cell cycle leads to cancer. Describe Role of wnt signaling in maintaining stem cell populations, with emphasis on gut crypt as an example. Explain how mutations in wnt receptor or APC can lead to cancer. Would these mutations likely be dominant or recessive? Explain.

3) . Describe types of connective tissue (cells and matrix of each) with emphasis on loose connective tissue and the structure and function of collagen . Describe epithelial tissue structure with emphasis on structure and function of lateral and basal junctions found in epithelial cells.

Keys to Success

Class moves fast. For success, come to class prepared and do not fall behind. **Check the schedule often** to ensure you are completing required assignments on time. Read the prep material before class and review again after class. **STUDY TOGETHER!** Study vocab, the logic of steps in a process, and be able to describe and understand the function of key molecules based on their shape. When studying, focus on why a process is necessary for the cell to work properly, then focus on where the process takes place, and what structures are present to enable the process to take place there. Then focus on what individual molecules interact to form those structures and enable that process. Also focus on how the cell regulates if the process takes place or not, how quickly it takes place and where it takes place.

Summary of graded work:

1. **Genome annotation project:** The project includes online work using bioinformatic programs available through GeniACT.com and preparing an oral powerpoint presentation to the class.
2. **Labs** will be performed in class, but you will finalize your lab write-up outside class. Protocol reports are Monday following each lab (unless a test is scheduled). **Lab quizzes are taken online after lab. Missed Labs cannot be made up. Contact me early if you need to miss a lab.**
3. **Class readings/quizzes/discussions:** These assignments may be completed during class sometimes if there is time, but will usually be completed outside of class.
4. **Takehome tests:** Each Unit test includes a takehome portion. You answer these questions on your own, and correct them with other students, during our test review. You earn your points by completing the takehome test quiz and submitting our completed worksheets.
5. **4 Unit Tests plus a Final exam** : Unit tests 1-3 (100 pts each: include a multiple choice part taken in the testing center, and a short answer part). Final exam + Unit test 4 (198 pts total) (3 parts- test unit 4 material, short answer portion (over mostly test 4 material) and the comprehensive multiple choice final exam, covering material from the entire year).

Textbook info: How to OPT in or out of the Canvas Text Book

Currently the recommended textbook, Essential Cell Biology, 6th ed, is linked into your canvas site, via inclusive access.

You are charged a reduced cost for the textbook, of $75, on your tuition bill, for access. It is strongly recommended you use this text. If you do not wish to do so, you can choose to OPT out of having access to this text. An email, from the college, will be sent out over the weekend that will have instructions for opting out. Basically you go to the SLCC customer portal, and OPT out there. The link to this portal will be in the email.

If you Opt out, the refund (or removal of the charge) of the $75 will take place AFTER the drop deadline, (see academic calendar-student for dates). If you OPT IN, and pay for the book, you will have access to it until the end of the semester. You are basically renting the book for the semester.

Question: Can you access the text, to see if you want to use it, and then still opt out? The answer is YES, as long as you opt out by the deadline. In fact, you can opt out, and then decide you do want access and can opt back in again, if you wish.

Note: **I am offering extra credit for doing the reading and section quizzes built into the e-text.** Your work will score automatically as you complete these practice exercises. If you wish to opt out and use a hard copy text (on reserve in the library) you will not have access to this extra credit option.

I think you will like the textbook if you choose to use it. It has many built in study resources and practice quizzes with answers and good feedback. There are also other less expensive resources out there that will also work, they are just not as convenient to use. Contact me for more information on alternative options.

Note: **A hard copy of this text will be available on reserve in the Jordan Library** (currently they have the 5th edition available). I also have a couple copies of older editions that someone can borrow, if they would like (4th and 5th- first come first serve).

Course Prerequisites

BIOL 1610 grade of C or higher

Chem 1010 grade of C or higher, or concurrent

Engagement Plan

Contact me anytime, especially if you are confused early in the semester. You can meet me in person in my office, after class, or contact me by email. I will usually respond to email within 1-2 days. If I have not responded I probably accidentally missed it - in which case, please contact me again. Visit with me during office hours or at your convenience. See course homepage for office hours.

The best way to contact me is via the Canvas Inbox. I check this multiple times daily. You can also contact me by my SLCC email rebecca.sperry@slcc.edu (but response time is slower by this method as I check it less often).

I will communicate with the class via the course Announcements page. **Please set your canvas settings so you receive a text if I post an announcement and please check the Canvas announcements often**.

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!

Academic Integrity

The next tab- Assignment schedule is generated automatically. It is not very accurate. Please see the Course schedule (linked on the home page) or go to the Assigments tab in your canvas course to see accurate due dates and point values. See me if you have questions.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Biol 2020 e-text now available via canvas	Discussion	0
	Error correct Extra credit (EC)	Assignment	0
	Essential Cell Biology- link to etext (and reading assignments)	Assignment	100
	Final Exam score (parts 1 + 2)	Assignment	115

Due Date	Assignment Name	Assignment Type	Points
	final exams % (T4+Final p1+p2)	Assignment	0
	in class EC	Assignment	0
	lab%	Assignment	
	recording from Thursday 8/31 class	Discussion	0
	Roll Call Attendance	Assignment	100
	Test 1 score	Assignment	100
	Test 2 score	Assignment	100
	Test 3 score	Assignment	100
	Test 4 score	Assignment	83
	Total PTS	Assignment	750
7/26/25	Respiration PRACTICE quiz	Quiz	0
7/28/25	Attendance survey	Quiz	0
8/30/25	"What is life?" Introductory discussion	Discussion	6
8/30/25	Syllabus Quiz	Quiz	15
9/6/25	Macromolecule structure/function Discussion (for Test 1 prep)	Discussion	5
9/6/25	Discussion Paper#1: Molecules of the Cell Membrane	Discussion	8

Due Date	Assignment Name	Assignment Type	Points
9/6/25	Protein folding activity (6 pts)	Discussion	6
9/9/25	Lab 1-Microscopy, microscopic units & using Micropipettes	Assignment	3
9/9/25	LAB 1 activity: cell size/resolution Discussion	Discussion	3
9/11/25	Lab 4 quiz- Genome Mapping	Assignment	8
9/13/25	Lab 1 protocol Questions	Quiz	2
9/13/25	Lab 1 Quiz	Quiz	10
9/16/25	Lab 2- qualitative and quantitative enzyme analysis (Tissue print and raw extract)	Assignment	6
9/16/25	lab 2-Making Solutions worksheet QUIZ	Quiz	2
9/18/25	Takehome test #1 assignment	Discussion	10
9/22/25	Biol 2020 Test 1-PART I-Sperry 001	Quiz	65
9/22/25	Biol 2020 Test 1 - part II (ch. 1-4, 10,17,18) - short answer	Quiz	26
9/23/25	Lab 2 quiz	Quiz	10

Due Date	Assignment Name	Assignment Type	Points
9/27/25	Discussion Paper#2a: EPIGENETICS : role of Z DNA OR How hydras regenerate lost heads	Discussion	8
9/27/25	Test corrections - Test 1	Discussion	0
10/2/25	Lab 4- Mapping the SARS coV2 genome (AND info for Lab 4a:Biology of SarsCoV2)	Assignment	8
10/11/25	Discussion Paper #2b: Insulin Factory	Discussion	8
10/14/25	Lab 4a- Biology of SarsCoV2 (online lab- no quiz)	Assignment	6
10/18/25	DNA Extra credit papers for unit 2 (up to 2 pts)	Assignment	0
10/21/25	Takehome test #2 assignment	Discussion	15
10/24/25	Biol 2020 Test 2 -Part 1- Sperry 001	Quiz	60
10/24/25	Biol 2020 Test 2 part 2 (essay/short answer) (25 +5 pts EC)	Quiz	30
11/1/25	Nerve Signaling Quiz	Quiz	4

Due Date	Assignment Name	Assignment Type	Points
11/1/25	Oxidative phosphorylation Quiz	Quiz	6
11/6/25	Lab 5 - Differential Centrifugation	Assignment	8
11/6/25	Cellular respiration Quiz	Quiz	4
11/6/25	Glycolysis and Citric Acid cycle review quiz	Quiz	4
11/8/25	Aerobic Cellular Respiration discussion (test 3)	Discussion	4
11/8/25	Lab 5 Quiz (10 pts)	Quiz	11
11/8/25	Photosynthesis Quiz	Quiz	4
11/8/25	Test corrections test 2	Assignment	0
11/11/25	Takehome test #3 assignment	Discussion	9
11/14/25	Biol 2020 -Test 3 - part 1-SPERRY 001	Quiz	58
11/14/25	Biol 2020 Test 3- part 2 (short answer questions)	Quiz	35
11/15/25	Cytoskeleton quiz	Quiz	12
11/22/25	Cell Cycle quiz	Quiz	4
11/22/25	Meiosis Quiz	Quiz	7
11/22/25	Mitosis quiz	Quiz	8
11/22/25	Test corrections test 3	Assignment	0

Due Date	Assignment Name	Assignment Type	Points
11/25/25	Lab 6 - Immunohistochemistry	Assignment	10
12/2/25	Lab 6 quiz (7pts)	Quiz	9
12/4/25	genome annotation project	Assignment	40
12/6/25	Extra Credit (3 pts) Discussion Paper: Tissue Specificity OR Cancer OR p53 OR Irisin paper	Discussion	0
12/6/25	Quiz- epithelial and connective tissue, cancer	Quiz	8
12/9/25	Lab 7 - Mitosis and the cell cycle	Assignment	8
12/9/25	Takehome test #4 assignment	Discussion	10
12/10/25	UPRC poster EC (10 pts)	Assignment	0
12/13/25	Lab 7 quiz - Mitosis/regulation of Cell cycle	Quiz	10
12/16/25	Biol 2020 Final Exam part 1-mc-Sperry 001	Quiz	97
12/16/25	Biol 2020 Test 4- new material (cytoskeleton, cell division, cell junctions and ECM, cancer)	Quiz	73

Due Date	Assignment Name	Assignment Type	Points
12/16/25	Final exam part 2- essay portion	Quiz	22

Course Student Learning Outcomes

- Topics covered include cell division, organelle structure and function, gene expression, cytoskeleton, and extracellular matrix.

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

Course Learning Environment

NETIQUETTE for discussion posts: Comments on others' work should be polite and helpful. When voicing opinions there is no right or wrong answer. You should back up your opinion when you agree or disagree with thoughtful and evidence based comments. When explaining factual concepts do your best to speak correctly, but it is ok to make mistakes. This is how we learn. As you read other student's posts, consider if you agree that the factual information is correct and offer suggestions for improvement. Comment if the answer is correct but incomplete or if it shows incorrect reasoning. In particular, focus on correct use of appropriate vocabulary, complete answers and logical reasoning. You will find it is difficult to state exactly what you mean initially, but as you learn to use correct vocabulary and be precise in your language it will get easier. Commenting on posts will prepare you for writing complete answers on tests. When you can write a concise and factually correct explanation of a difficult concept, or logically diagram a process, this shows you understand the concept. Writing and then receiving comments to correct our work is a big part of the scientific method. We learn when we collaborate with others and have to organize our thoughts into written words. So do your best, but do not be afraid to say something wrong. Be bold in putting your ideas out there and then be eager to discover and correct misconceptions you may have had as your colleagues critique your ideas.

This also goes for class discussions. Don't be afraid to speak up and maybe saying something wrong. We learn more when we make mistakes than when we just listen to someone regurgitating correct answers, because we come to understand more deeply as we work to discover why a statement was incorrect. Speaking up, and sometimes making mistakes, helps us learn how to use new vocabulary correctly and how to think critically and speak logically so others can understand what we are talking about. We also learn more when we branch off from the core materials and ask questions about new situations, current events and concepts in other classes.

At SLCC, we hope 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. I will keep it confidential and strive to correct the situation.

- If you feel like your performance in the class is being affected by an emergency or any other situation outside of class, please let me know so that we can discuss the best course of action. I will not be disappointed in you if you can't complete everything on time, or don't perform to your full potential. I know everyone has a lot going on, and I understand that sometimes coursework is one of many priorities in your life. But I can't help you unless you communicate with me!

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.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus 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 Institutional Syllabus 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 Institutional Syllabus 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.