Cell Biology

BIOL 2020[redacted]

Instructor Information

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

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

Please check the daily course schedule to find topics for each day, chapter reading, and live links to some assignments. (this file is linked in your course homepage.) Your other main reference for course materials is the Canvas Modules.

Please do the Introductory “What is Life” assignment Due by end of first week. Watch video Are viruses alive” by Karl Zimmer, and post a reflection in which you define life (this

is the only long video you will be asked to watch)- see link on canvas home page, or the hard copy syllabus.

Biology Department Biol 2020 COURSE LEARNING OUTCOMES to fulfill College-wide Learning goals. Upon completion of this Cell Biology course you will be able to:

- compare and contrast the general structures of prokaryotic and eukaryotic cells.
- describe the structure and functions of cellular macromolecules.
- describe major metabolic pathways in cells and the basics of enzyme action in cells.
- describe the structure of eukaryotic chromosomes, the anatomy of a gene and gene expression.
- describe the relationship between regulatory mechanisms, differentiation and cancer transformation of cells.
- describe the role of the cytoskeleton and the structure and functions of cells in each tissue.
- describe the structure of cellular membranes and mechanisms of transport across membranes.
- describe intracellular compartments and 3 mechanisms to transport proteins to their destinations.
- describe regulation of the cell cycle; and compare and contrast mitosis and meiosis.
- describe the cytoskeleton, extracellular matrix, and cell-cell junctions and the major organelles.
- describe cell signaling and signal transduction

Required Textbook or Materials

Title: Essential Cell Biology
Subtitle: The text book is linked in assignments in the course.
Authors: by Alberts et al.
Edition: 6th ed.

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

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. You can choose to OPT out of having access to this text if you wish. 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, see if you want to use it, and then still opt out? The answer is YES. In fact, you can opt out, and then decide you do want access and can opt back in again, if you wish.

Hope that clarifies things.

Note: **I am offering extra credit for doing the reading in the etext.** This will score automatically if you have access to that. If you wish to opt out and use a hard copy text (on reserve in the library) you will need to speak with me about how to get this credit.

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.

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).

Communication Plan

Visit with me during office hours or at your convenience. See course homepage for office hours.

Contact me anytime, especially if you are confused early in the semester. You can meet me in person in my office, or email me. I will usually respond to email within 1-2 days. If I have not responded I probably accidentally missed it - please contact me again.

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 [redacted]

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

Course Prerequisites

BIOL-1610 C or higher

Chem 1010 C or higher, or concurrent

Course Presentation

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

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. It shows the topic to be covered, and a summary of the recommended text book reading, and links to videos, for each day. 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. 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 towards your 2020 grade). There are 4 midterm Exams, plus a comprehensive final. Exams count for 66% of your grade. 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 due dates, and turn assignments in on time. Note: 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 definitely 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 reading and take the section quizzes. Reading 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 very difficult to catch up if you do so.

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 MODULE for each test unit. Within the modules you will find access to the powerpoints used in class, to some 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 dehydration synthesis, hydrolysis and redox reactions. You should

already have a good understanding of these concepts, from Biol 1610 and your chemistry classes.

LAB: Lab protocols are located on your Canvas site, on the “Lab materials” page. Print and read the protocol prior to each lab.

NOTE: missed labs may not be made up, so plan accordingly.

LAB STRUCTURE: Most days we will have lecture and review activities. About every other week we will have a lab. Check 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. Lab quizzes are sometimes online, sometimes in class. 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.

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.

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 definitely 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.

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 reading and take the section quizzes. Reading before class will help you be familiar with material so class time can be used more effectively delving into more difficult concepts. Try not to fall behind. It is very difficult to catch up if you do so.

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

- 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 vs eukaryotic cells 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 Materials Module pages to access these resources so you can come to class prepared, and ready to build on the foundation you started in Biol 1610.

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 go over the TH questions as review for the test. 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. You get credit for completing the takehome exam by 1) taking a quiz on the takehome, and 2)submitting a copy of your completed work.

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 t to take about 1.5 hrs to complete this exam. You will have a 2-3 day window available in which you can schedule your exam appointment, at your convenience. You will be given scratch paper. I recommend you write down questions you are unsure of on the scratch paper, and then you can go back and double check them. Also use the scratch paper to draw out diagrams, and take notes to help order your thoughts.

The last part of the exam is called Part 2. Part 2 is the short answer portion of the test, where you 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. You will run out of time if you look things up. (about 1 hr) If you look things up, be sure to not plagiarize. Answers need to be in your own words, and should reference information and use terminology that we have been discussing in class.

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 unit 4, but 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.

- 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 time for you to complete it before the testing center closes. The center estimates 1.5 hrs for tests.

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

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

- 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.

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).

Lab Number	Protocol pts	Quiz pts
1. microscopy	8	10
2- enzyme analysis	8	10
4- mapping a genome	8	8
4a- SarsCoV2 lab	6	
5- differential centrifugation	8	10
6 - immunohistochemistry	10	6
7- mitosis	8	10
Genome Annotation Project (GAP) (40 pts total) instructor grade	20	10
Gene annotations- student grade	10	
Total (activity pts) (quiz pts)	(86)	(64)

Total Lab pts **150**

Grading Scale

Biol 2020: you earn points based on a 750 pt grade scale.

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

Earn points from exams, quizzes, readings, extra credit and lab. Lab is 20% of your grade.

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
Assignments	102	13.5
Laboratory	150	20.0
Final Exam	115	15.3
_____	_____	_____
Total	750	100
This break down may be altered slightly. High Attendance % will yield extra credit.		

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) (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.

Summary of Test Units

Test Unit Topic Summary:

T**est Unit 1 (chapters. 1-4 & parts of ch. 5 and ch. 11 ,(Ppts 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, membranes, etc happens). Main focus of unit 1 is to understand how proteins fold into specific shapes to perform specific functions. Define protein domain and protein family. Emphasis on the structure of amino acids and proteins with particular emphasis on enzyme structure/function and the role of enzymes in regulating cellular activities. 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.

Test Unit 2: (chapters 5-8, and 15. ppts 5-8, 15: DNA & The Central Dogma, 3 Protein delivery mechanisms) The Central Dogma of Biology and Protein Delivery mechanisms: Main point of unit 2 is to describe how the structure of DNA contains information cells use to direct the building of proteins. Describe the enzymes enabling the processes of Replication, Transcription, Translation. Contrast gene regulation in prokaryotes vs eukaryotes. Describe nucleic acid structure. Describe DNA repair mechanisms. Describe types and purposes of RNA editing, describe how transcription factors regulate gene expression in prokaryotes vs eukaryotes. Describe 3 protein delivery mechanisms (nuclear import, mitochondrial import and Endomembrane delivery system). Emphasis on concept : the function of organelles is based on their protein content and membrane structure. How does the cell “know” where proteins should go

and what they should do? Emphasis on understanding concept of genetic disease is due to the misfolding or improper delivery of specific proteins. Explain why.

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 1o and 2o active transport in the gut epithelium. Emphasis on describing neurons as 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 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.

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 functional unit of muscle tissue (sarcomere). 2) Describe the Cell Cycle and how it is regulated. Describe the regulation of the steps of mitosis. Contrast Mitosis and Meiosis. Relate meiosis to genetics. Emphasis on understanding what a complementation group is, and how these are used to determine number of enzymes needed in a biochemical process. Role of specific proteins such as cyclins, cdks, p53, p21, etc in regulating the cell cycle. Describe regulation of the G2/M transition and progression through M phase. Also the G1/S transition with emphasis on understanding of how misregulation of the cell cycle leads to cancer. 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. Role of wnt signaling in maintaining stem cell poplulations, with emphasis on gut crypt as an example.

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!

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.)

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) You can get your % attendance X 5 pts. I will award whichever is higher.

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.

Due Dates and Late Work Policy:

Drop, Withdraw or Incomplete Grade: Last day to drop from class with refund is September 10th, withdraw without refund is October 22nd. 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%) with 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.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Biol 2020 e-text now available via canvas	Discussion	0
	Essential Cell Biology- link to etext (and reading assignments)	Assignment	100
	Final Exam score (parts 1 + 2)	Assignment	115
	final exams % (T4+Final p1+p2)	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
	UPRC EC	Assignment	0

Due Date	Assignment Name	Assignment Type	Points
4/27	Respiration PRACTICE quiz	Quiz	0
5/13	Attendance survey	Quiz	0
8/24	"What is life?" Introductory discussion	Discussion	6
8/24	Syllabus Quiz	Quiz	13
8/31	Macromolecule structure/function Discussion (for Test 1 prep)	Discussion	5
8/31	Protein folding activity (6 pts)	Discussion	6
9/4	Discussion #2- LAB 1 activity: cell size/resolution	Discussion	3
9/5	Lab 1-Microscopy, microscopic units & using Micropipettes	Assignment	3
9/7	Lab 1 protocol Questions	Quiz	2
9/7	Discussion Paper#1: Molecules of the Cell Membrane	Discussion	8
9/7	Lab 1 Quiz	Quiz	10
9/10	Lab 2- qualitative and quantitative enzyme analysis (Tissue print and raw extract)	Assignment	6

Due Date	Assignment Name	Assignment Type	Points
9/10	lab 2-Making Solutions worksheet QUIZ	Quiz	2
9/12	Takehome test #1 assignment-F22	Discussion	10
9/14	Lab 2 quiz	Quiz	10
9/16	Test 1 - part II (2020 ch. 1-4, 10,17,18) - short answer	Quiz	26
9/17	Biol 2020 Test 1-PART I-Sperry	Quiz	65
9/21	Discussion Paper#2a: EPIGENETICS : role of Z DNA OR How hydras regenerate lost heads	Discussion	8
9/21	Test corrections - Test 1	Discussion	0
9/28	DNA Extra credit papers for unit 2 (up to 2 pts)	Assignment	0
10/1	Lab 4- SARS coV 2 mapping (AND info on Lab 4a:Biology of SarsCoV2 LAB)	Assignment	8
10/3	Lab 4 quiz- Genome Mapping	Assignment	8
10/8	Biology of SarsCoV2 online lab	Assignment	6

Due Date	Assignment Name	Assignment Type	Points
10/9	Discussion Paper #2b: Insulin Factory	Discussion	8
10/10	Takehome test #2 assignment	Discussion	15
10/15	Biol 2020 Test 2 -Part 1- Sperry	Quiz	60
10/15	Test 2 part 2 (essay/short answer) (25 +5 pts)	Quiz	30
10/23	Test corrections test 2	Assignment	0
10/29	Nerve Signaling Quiz	Quiz	4
10/31	Lab 5 protocol- Differential Centrifugation	Assignment	8
11/2	Cellular respiration Quiz	Quiz	4
11/2	Glycolysis and Citric Acid cycle review quiz	Quiz	4
11/2	Oxidative phosphorylation Quiz	Quiz	6
11/2	Test 3 : Aerobic Cellular Respiration discussion	Discussion	4
11/5	Lab 5 Quiz (10 pts)	Quiz	11
11/5	Takehome test #3 assignment	Discussion	9

Due Date	Assignment Name	Assignment Type	Points
11/8	Biol 2020 -Test 3 - part 1-SPERRY	Quiz	58
11/8	Test 3- part 2 (short answer questions)	Quiz	35
11/9	Photosynthesis Quiz	Quiz	4
11/16	Cytoskeleton quiz	Quiz	12
11/16	Test corrections test 3	Assignment	0
11/19	Lab 6 protocol- Immunohistochemistry	Assignment	10
11/20	Cell Cycle quiz	Quiz	4
11/20	Mitosis quiz	Quiz	8
11/23	Lab 6 quiz (7pts)	Quiz	9
11/23	Meiosis Quiz	Quiz	7
11/26	Lab 7 protocol- Mitosis and the cell cycle	Assignment	8
11/30	Quiz- epithelial and connective tissue, cancer	Quiz	8
12/2	Lab 7 quiz - Mitosis/regulation of Cell cycle	Quiz	10
12/3	genome annotation project	Assignment	40
12/5	Spring 2024 Course Evaluations	Assignment	2

Due Date	Assignment Name	Assignment Type	Points
12/5	Takehome test #4 assignment	Discussion	10
12/7	Extra Credit (3 pts) Discussion Paper: Tissue Specificity OR Cancer OR p53 OR Irisin paper	Discussion	0
12/10	Biol 2020 Test 4- new material (cytoskeleton, cell division, cell junctions and ECM, cancer)	Quiz	73
12/10	Final Exam part 1-mc-comprehensive-Sperry	Quiz	97
12/10	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.

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.