

DRAFT

Summer 2024 BIO 310.30 Cell Biology Stonybrook University

June 17th -August 16th, 2024

This is an 8-week asynchronous online course with 3 synchronous, online proctored exams. A computer*, webcam, microphone, and reliable internet service is required to take this course.

Exam 1 (Wednesday, July 3th 6:30-8:30 PM)

Exam 2 (Wednesday July 24th 6:30-8:30 PM)

Exam 3 (Wednesday, August 14th 6:30-8:30 PM)

***remote proctor application will not work on iPads, Chrombooks tablets or phones**

Course Information:

Instructor Information

Online Course Faculty: Dr. Stefan Tafrov, PhD

Life Sciences Room: 376

Office Hours: By Appt. E-mail to schedule: Phone appt. or Zoom virtual office hours through Brightspace

E-mail: Stefan.Tafrov@stonybrook.edu

Course Administrator: Kristen Slovak, Instructional Support Technician, Biology Online.

Office: Life Science Building, Room 372

Office Hours: By Appt. Email to schedule: Zoom appt.

Office Telephone: 631-632-1127

Email: Kristen.Slovak@stonybrook.edu

Teaching Assistants:

TBD

UGTAs

TBD

Course Description

Much of what is presented in BIO 310 is an in-depth extension of what you learned in your prerequisites. It is a good idea for you to review the cell biology that you learned in these courses because you will need to draw from that knowledge base constantly in this course.

At the end of this course a student will have an understanding of eukaryotic

cellular architecture and the molecular basis for most general cellular functions. Students will also have an understanding of the application of experimental techniques in cell biology and their use in biological research.

Prerequisite: Grade of C or higher in:

- BIO 202 and BIO 203 (Fundamentals of Biology: Molecular and Cellular Biology AND Fundamentals of Biology: Cellular and Organ Physiology)
- CHE 321 (Organic Chemistry I) or CHE 331 (Honors organic chemistry)

Textbook

Essential Cell Biology, 5th edition, by Alberts et al. Norton 2019.

Course Technical Requirements– An internet connection that can support video is a requirement to take this course.

Computer with working webcam and microphone

Stable and Reliable high-speed Internet connection

Access to SBU Brightspace

Course Structure

This course will be delivered online asynchronously through the Brightspace course management system. In Brightspace, you will have access to lecture Powerpoints, lecture videos, discussion assignments and chapter quizzes. For current Stony Brook students: You will use your NetID account to log in to the course from the [Brightspace login page \(https://mycourses.stonybrook.edu/d2l/login\)](https://mycourses.stonybrook.edu/d2l/login). For visiting students you will receive your NETID account after registering at <http://www.stonybrook.edu/summer-session/visiting-students/> then you will sign onto Brightspace at <https://mycourses.stonybrook.edu/d2l/login>. If you need technical assistance at any time during the course or to report a problem with Brightspace you can Visit the Stony Brook University [Student Help Desk Page](#), Phone: (631) 632-9602, E-Mail: helpme@stonybrook.edu.

Course Learning Objectives

Upon completion of BIO 310, students will be able to:

1. Describe the evolutionary origin of eukaryotic & prokaryotic cells, and the endosymbiotic origin of cells.
2. Identify the structure and regulatory role of cellular membranes.
3. Explain the structure of the genetic material and its relationship to the nuclear structure and function.
4. Describe the structure, roles and interactions of organelles.
5. Provide a conceptual framework for the mechanisms by which proteins, lipids, and nucleic acids, and carbohydrates are moved from their sites

- of synthesis to their ultimate locations.
6. Explain the mechanism and regulation of transport of membrane vesicles to their destinations.
 7. Identify the mechanism and regulation of gene expression.
 8. Compare and contrast the molecules and molecular interactions that cells utilize to transduce diffusible extracellular signals into biochemical changes within the cell.
 9. Recognize the structure and function of the extracellular matrix.
 10. Describe the molecules and molecular interactions that cells utilize to communicate and sense neighboring cells and the structural environment.
 11. Explain the structure, roles, interactions and regulation of the cytoskeletal elements of the cell.
 12. Recognize the mechanisms of cellular motility and the role of the cytoskeleton.
 13. Describe the cellular mechanisms and regulation of immune system function.
 14. Compare and contrast the molecules and molecular interactions that execute and regulate the cell cycle.
 15. Explain the cellular changes and their consequences that lead to cancer.
 16. Describe the basic mechanism of programmed cell death and necrotic cell death.
 17. Provide a conceptual framework for the basic mechanisms and regulation of cellular aging
 18. Describe the definitions and regulation of stem cells.
 19. 19. Synthesize cell biological concepts to understand how cells interact and function to produce a properly developed multicellular organism.

You will meet the objectives and learning outcomes listed above through a combination of the following required course activities provided in the weekly assignment folders on Brightspace:

- Watch assigned lecture videos with associated Powerpoints
- Review the comparable content in the textbook.
- Complete the chapter quizzes. These quizzes are open book/notes. They are not timed or proctored. See course schedule for quiz assignments and due dates.
- Complete the three synchronous, video-proctored exams. See course schedule for exam dates.

Exams:

Exams 1, 2 and 3 are unit exams; there is no cumulative final in this course. All exams and the syllabus/academic integrity quiz, will be taken through **Respondus Lockdown Browser / Respondus Monitor. See detailed instructions for use and download at the end of this document.**

Grading Policy

Course Numerical Grades are determined as follows:

Percent of Final Grade	Description
15%	average of top 10 content quizzes and 4 Discussion Posts + syllabus/academic integrity quiz
85%	average of Exams 1 ,2 and 3
100%	

Conversion of course numerical grades is determined as follows*:

Letter Grade	Course numerical grade	
A Range (A- thru A)	88% and up	
B Range (B-, B, B+)	75 - 87.9%	
C Range (C and C+)	58 - 74.9%	
D	50 - 57.9%	
F	Below 50%	

*NOTE: These letter grades are threshold scores only. Actual final scores needed to earn a certain letter grade may be lowered if warranted based on overall student performance. In other words, if your course numerical grade is 58%, you are guaranteed a C.

Course Policies

Course Withdrawal and Incomplete

It is the student's responsibility to understand when they need to consider dropping the course. Consult the Academic Calendar for the official Add/Drop deadline. Incompletes are granted only under significant and documented emergencies. Contact Professor Erster to discuss the situation and options.

STATEMENTS:

STUDENT ACCESSIBILITY SUPPORT CENTER STATEMENT:

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact the Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation are confidential.

ACADEMIC INTEGRITY STATEMENT:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong.

No course materials, exams and exam answers should be uploaded to any internet resources or shared with others in any way, even after completion of the course.

We take seriously our responsibility to give students an accurate and fair evaluation of their performance in the course. We therefore have a “zero tolerance” policy towards cheating in any form for all exams and assignments. Anyone caught cheating will be reported to the Academic Judiciary Committee. Our recommended penalty for students found guilty of academic dishonesty is an F for the course.

Examples of academic dishonesty include but are not limited to:

- During exams, the use of cell phones, smart watches, headphones or any other digital devices aside from the computer you are using to take the exam. University policy regards receiving a cell phone call during an exam, even if it is unrelated, as cheating.
 - Use of books, notes, or other aids during an exam, copying from another student, or letting another student copy from you during an exam or quiz, taking an exam or quiz for someone else, or permitting someone else to take an exam or quiz for you.
- Collaborating with others in any way during exams.
- Failing to provide a thorough environment check or turning off or obstructing your camera in any way during exams.
 - Misrepresenting your work or the work of others in any way.
 - Sharing your NetID and/or password with anyone else.
 - For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

CRITICAL INCIDENT MANAGEMENT:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

COURSE MATERIALS AND COPYRIGHT STATEMENT:

Course material accessed from Brightspace, SB Connect, SB Capture or a Stony Brook Course website is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.

HONOR CODE STATEMENT - CLOSED BOOK EXAMS

All exams are CLOSED BOOK and will be recorded via Respondus monitoring software. You will have to download and install this software to use for the Academic Integrity quiz which is due the first week of classes. You must take the quiz and the exams independently with no assistance from any other person,

without the aid of any unauthorized materials, and without access to any digital devices aside from the computer you are using to take the quiz or exam. You will be expected to show your picture ID clearly, to perform a thorough environment check when prompted moving your camera to show your environment, and to stay clearly in the frame of your camera at all times. No other person should be in the room or communicating with you at any point.

The following materials **are** permitted for Exams.

Scrap paper – you must show the scrap paper to be utilized to the camera, front and back at the beginning of the exam. You must show the paper again at the end of the exam front and back so we can see what is written on it.

Picture ID - either your Stony Brook ID or any government-issued photo ID. You must show this ID clearly with your picture and name visible to the camera at the start of the exam.

The following materials **are not** permitted as all exams are closed book:

Phone of any type

Tablet or iPad

Other digital devices, including but not limited to smart watches, calculators, headphones, earbuds, or air pods.

Another person

Other websites or apps, including group chats and AI programs

Notes, textbook, study material - again, this is a closed book exam, so any materials accessed in any way are not permitted.

Content questions will not be answered during exams.

Violations will result in exam disqualification and/or a report to the Academic Judiciary. If found responsible by Academic Judiciary, the recommended penalty is an F for the course.

ONLINE COMMUNICATION GUIDELINES AND LEARNING RESOURCES

STATEMENT:

The classroom is a professional environment where academic debate and learning take place. You are expected to respect the opinions, ideas, and beliefs of other students. Offensive language or rudeness will not be tolerated. We reserve the right to remove any comments or questions posted on the course forums that display inappropriate language or content.

If you post questions to the content or administrative question forums, try to include specific details such as question, slide, and page numbers.

Please read the questions posted by your classmates to see if your question has already been answered. If you think you know the answer to a classmate's content question, feel free to post it with references.

Email Policies

Email sent via Brightspace is the principle way we will officially communicate with you for this course. It is your responsibility to make sure you read your email in

your official University email account. For most students that is Google Apps for Education (<https://www.stonybrook.edu/mycloud>)

If you need technical assistance, please contact Client Support at (631) 632-9800 or supportteam@stonybrook.edu

Course policies are subject to change. It is the student's responsibility to check Brightspace for corrections or updates to the syllabus. Any changes will be posted in Brightspace.

Course Schedule

Important Note: Refer to the Weekly Assignments on Brightspace for specific lectures and graded assignment due dates for each week. Activity and assignment details will be explained in detail within each week's corresponding folders. If you have any questions as to the administration of the course, please contact Kristen Slovak at kristen.slovak@stonybrook.edu or post your question in the administrative forum on Brightspace.

Course Schedule – NEXT PAGE

DRAFT**SUMMER 2024 BIO 310 CANCER BIOLOGY COURSE SCHEDULE**

Week #	Lecture Topic	Reading	Lecture Videos	Assignment	Due Date
Week 1 6/17	Orientation, Academic Integrity	Syllabus & Course Info	Academic	AIQ/ Syllabus Quiz & Post 1	11:59 PM 6/23
	Cell Membrane Structure	Ch 11 365-408	1-2	Content Quiz 1	11:59 PM 6/23
	Membrane Transport & Electrical properties	Ch 12 389-408	2-4	Quiz 2	11:59 PM 6/23
Week 2 6/24	Cell compartments, cell sorting, ER	Ch 15 495-510	4-5	Quiz 3	11:59 PM Sun 6/30
	Vesicular transport, mitochondrial bioenergetics	Ch 15 511-530 Ch 14 455-477	5-6	Quiz 4 Post 2	11:59 PM Sun 6/30
Week 3 7/1 EXAM 1 WEDNESDAY 7/3 6:30-8:30 PM (LECTURES 1-6, QUIZZES 1-4)					
Week 4 7/8	Cell Cycle & Apoptosis	Ch 18 609-647	7-9	Quiz 5	11:59 PM Sun 7/7
	Cancer, Development, Stem cells	Ch 20 709-733	9-12	Quiz 6	11:59 PM Sun 7/7
Week 5 7/15	DNA, chromatin, chromosomes	Ch 5 174-192	13	Quiz 7	11:59 PM Sun 7/14
	DNA replication and repair	Ch 6 200-223	14	Quiz 7	11:59 PM Sun 7/14
	Gene Expression	Ch 7 228-259, Ch 8 260-292	15	Quiz 8 Post 3	11:59 PM Sun 7/21
Week 6 7/22 EXAM 2 WEDNESDAY 7/24 6:30-8:30 PM (LECTURES 7-15, QUIZZES 5-8)					
Week 7 7/29	Analyzing and visualizing cells, gene therapy	Ch 10 334-361	16-17	Quiz 9	11:59 PM Sun 8/4
	Cell Signaling	Ch 16 533-569	18	Quiz 10	11:59 PM Sun 8/4
	Cytoskeleton, Contraction & Motility	Ch 17 573-606	19	Quiz 10 Post 4	11:59 PM Sun 8/4
Week 8 8/5	Pathogens	Web reading	20	Quiz 11	11:59 PM Sun 8/11
	Innate & Adaptive Immunity	Web reading	21-22	Quiz 11	11:59 PM Sun 8/11
	Cancer therapies		23	Quiz 12	11:59 PM Sun 8/13
	Analyzing and visualizing cells part 2	Ch 1 6-14	24	Quiz 12 Post 5	11:59 PM Sun 8/11
Week 9 8/12 EXAM 3 WEDNESDAY 8/14 6:30-8:30 PM (LECTURES 16-24, QUIZZES 9-12)					