This is an 8 week asynchronous online course with live, proctored exams.
For more information go to:  http://www.stonybrook.edu/commcms/biology-online/courses/bio310.php

**BIO 310 in the Summer Session 2 extended term is administered entirely online except for:**

Three required in-person exam sessions consisting of:
- Exam 1 (Tuesday, July 7th from 6:30 to 8:15 PM)
- Exam 2 (Tuesday, July 28th from 6:30 to 8:15 PM)
- Exam 3 (Tuesday, August 11th from 6:30 to 8:15 PM)

Exams are given on our West Campus at 100 Nichols Road, Stony Brook, New York (Register for Section 30)
Or at our Manhattan location at the SUNY School of Optometry at 33 West 42nd Street, NY, NY (Register for Section 60)
OR
Throughout the United States via approved Remote Test Center Sites (Register for Section 30).
Anyone wishing to schedule a remote test center exam should contact Prof. Souza for approval of the site prior to June 28th.
See http://www.ncta-testing.org/find-a-cctc-participant for potential sites near you.
Fees for remote test centers are the responsibility of the student and are paid to the test center directly

**Syllabus**

**Part 1: Course Information**

**Instructor Information**

**Course Content Instructor:** Susan Erster, PhD
**Office:** Life Science Building, Room 316
**Office Hours:** By Appt. E-mail to schedule: Phone appt. or Adobe Connect access through Blackboard or Skype (headsets recommended)
**Office Telephone:** 631-632-8562
**E-mail:** Susan.Erster@stonybrook.edu
Online Course Faculty Administrator: Joanne Souza, PhD
Office: Life Science Building, Room 378
Office Hours: By Appt. Email to schedule: Phone appt.
Office Telephone: 631-632-8548
Email: Joanne.Souza@stonybrook.edu

Course Description

The cell is studied as the unit of structure, biochemical activity, genetic control, and differentiation. The principles of biochemistry and genetics are applied to an understanding of nutrition, growth, and development.

Prerequisite

C or higher in BIO 202 or equivalent; C or higher in BIO 203; CHE 321 or CHE 331 or CHE 341

Textbook & Course Materials

Required Text


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

- Internet connection (DSL, LAN, or cable connection desirable)
- Access to Blackboard
  - Browsers by Operating System
    - Windows 8, Windows 10
      - Internet Explorer 11
      - Firefox 31+
      - Chrome 36+
    - Windows 7, Vista
      - Internet Explorer 11
      - Firefox 31+
      - Chrome 36+
    - Mac OS X 10.7, 10.8, 10.9, 10.10, 10.11 & 10.12
      - Safari 6+
      - Firefox 31+
      - Chrome 36+
- Adobe Acrobat Reader and Quicktime and/or Windows media
- Java: Update to newest version, if prompted
Course Structure

This course, except for three live, proctored exams (See page one of this syllabus) will be delivered entirely online, asynchronously, through the Blackboard course management system.

For current Stonybrook students: You will use your NetID account to log in to the course from the Blackboard login page (http://blackboard.stonybrook.edu).

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 blackboard at http://blackboard.stonybrook.edu

- In Blackboard, you will have access to the following:
- Course content lectures and learning objectives
- Video lecture modules and animated movies (45 hours total)
- Online quizzes- designed to assist you in gaining higher levels of content mastery.
- Asynchronous discussion resources - Discussion board submissions consist of student collaborative brainstorming sessions where you will discuss strategy together mentored by teaching assistants with the purpose of helping you to solve more difficult, complex questions. These discussions will be mentored by Teaching Assistants and faculty. You will be expected to work through and discuss strategies, needed relevant concepts, potential solutions, and falsification of potential solutions to arrive at the most likely correct solutions to stated problems.

Estimated Weekly Time Budget:

Video lecture hours: approx. 6
Textbook : 2
Quiz hours : 2
Discussion hours : 1

- Each week, you will access the lecture folders assigned for the week under your assignments tab on Blackboard. Within those folders will be the lecture videos separated into video modules (usually A, B, C, D), textbook readings, movie assets, lecture
PowerPoints, and graded assignment due dates for the week.

- After watching each lecture module, you will complete a graded learning asset Equiz consisting of between 5 and 9 questions of varying levels of difficulty beginning at the foundational conceptual/definitional level, then adding detail of understanding and complexity, and lastly applications of content. These quizzes are designed to assist you in learning content while building your skill level in answering more complex questions per module of the course. Each correct answer will earn one point toward your learning asset grade. See detailed directions on Blackboard.

- Each week you will also be asked to contribute to brainstorm toward the solving of a more complex/novel problem via discussion board work/debate. See grading rubric on Blackboard for more information. You are expected to only work on one question of 5-6 questions available but to post more than once during the week to the joint problem solving session until the due date on Sunday.

- These quizzes and discussion sessions are designed to help you learn and retain the material in the course and to solve more complex problems such as those on the exams and later standardized preparatory exams (MCAT, DAT, etc) as well as those in research and medical applications. These assets are in place to assist you to do better on your exams and beyond so we suggest you use them toward that end.

- In addition, there will be a general discussion board that is ungraded where students can ask questions of the faculty and the teaching assistants in any area of the course.

- There are three in-person, proctored exams, each covering approximately one third of the content, given at either Stony Brook University West Campus in the evening or other approved remote testing facilities in the United States. If you cannot make it to West Campus for exams, contact Prof. Joanne Souza at joanne.souza@stonybrook.edu prior to Sunday, July 1st to schedule your exams at approved remote testing facilities.

- If you need technical assistance at any time during the course or to report a problem with Blackboard you can:
  - Visit the Stony Brook University Student Help Desk Page
  - Phone: (631) 632-9602
  - E-Mail: helpme@stonybrook.edu
  - Live Chat: Chat Live with the TLT Student Help Desk!
Part 2: Course Learning Objectives

The course is designed for students with a strong background and interest in biology. The course will present our current understanding of eukaryotic cellular architecture and the molecular basis for most general cellular functions. Emphasis will be placed on the methodologies and approaches of ongoing research efforts, so that students will be more prepared to read research papers published in scientific journals.

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

1. Differentiate between eukaryotic & prokaryotic cells, and describe the endosymbiotic theory.
2. Describe the structure or cellular membranes, and correlate membrane structure with membrane functions.
3. Explain the structure of the genetic material and its relationship to nuclear structure and function. Define chromatin remodeling and correlate chromatin structure with gene expression and cell cycle progression.
4. Discuss the structure, roles and interactions of organelles. Integrate the abundance/absence of organelles with cellular activities.
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. Predict the mechanisms involved in cellular trafficking of a given macromolecule.
6. Explain the mechanism and regulation of transport of membrane vesicles to their destinations. Differentiate the various modes of vesicular transport.
7. Discuss gene expression, and correlate the multiple levels of gene expression regulation with cell activity.
8. Define signal transduction, and compare and contrast the molecules and molecular interactions utilized by cells to transduce diffusible extracellular signals into biochemical changes within the cell.
9. Describe the molecules and molecular interactions utilized by cells to communicate and sense neighboring cells and the structural environment.
10. Explain the structure of the cytoskeleton and demonstrate an understanding of the ways the cytoskeletal elements enable cell activities such as motility, intracellular transport, and regulation of gene expression.
11. Elaborate on the nature of pathogens, and differentiate between the innate and adaptive immune responses to pathogens.
12. Provide a conceptual overview of cell cycle regulation. Correlate the abundance, location, and activation of cell cycle regulators with cell cycle progression.
13. Articulate the ways in which cell processes such as signal transduction and cell cycle regulation can be altered, resulting in cancer.
14. Describe the basic mechanism of programmed cell death and necrotic cell death. Establish the impact of proliferative and apoptotic signaling in normal and abnormal cells.

You will meet the objectives and learning outcomes listed above through a combination of the following activities in this course:

- Watch assigned lecture module videos and movie assets
- Review the comparable content in the textbook
- Complete graded learning assets quizzes per module
- Participate in all the discussion board sessions per module
- Complete the three live proctored exams.

**Part 3: Grading Policy**

**Graded Course Activities**

Visit the Assignments link in Blackboard for details about each weekly assignment and the due dates.

<table>
<thead>
<tr>
<th>Percent of Final Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>25 %</td>
<td>Approx. 64 quizzes &amp; 8 extensive and comprehensive discussion assignment due Quiz 0 (exam location quiz = 4 bonus quiz points)</td>
</tr>
<tr>
<td>25 %</td>
<td>Exam 1</td>
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<td>25 %</td>
<td>Exam 2</td>
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<td>25 %</td>
<td>Exam 3</td>
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<td>100%</td>
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</table>

**Late Work Policy**

Be sure to pay close attention to deadlines—there will be no make-up quizzes, discussions, or exams accepted without documentation of serious and compelling issues submitted within ONE WEEK OF THE MISSED ASSIGNMENT or EXAM.
**Viewing Grades in Blackboard**

Points you receive for graded activities will be posted to the Blackboard Grade Book. Click on the My Grades link on the left navigation to view your points.

We will update the online grades each time a grading session has been complete—typically within 5 days following the completion of an activity. You will see an announcement on Blackboard when grades are available.

**Letter Grade Assignment**

Final letter grades assigned for this course will be based on the percentage of total points earned and may be assigned as follows*:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Range (A- thru A)</td>
<td>88 and up</td>
<td>Nearly Excellent/Excellent Work</td>
</tr>
<tr>
<td>B Range (B-, B, B+)</td>
<td>75-87%</td>
<td>Mostly good work/good work/very good work</td>
</tr>
<tr>
<td>C Range (C and C+)</td>
<td>58 – 74%</td>
<td>Acceptable Work/marginally good work</td>
</tr>
<tr>
<td>D</td>
<td>45-57%</td>
<td>Poor Work</td>
</tr>
<tr>
<td>F</td>
<td>Below 45%</td>
<td>Failing Work</td>
</tr>
</tbody>
</table>

*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 the difficulty of the exams. In other words, if your final total points in the course equal a 89%, you will not earn less than a grade in the A Range (A- to A).

**Part 4: Course Policies**

**Participation**

Students are expected to participate and submit, by the published due dates, all online activities as listed in the weekly assignments. Your participation in the discussions is also required by the due dates noted in the assignments. Faculty will clarify all discussions so as to help you clear up any confusion before exams.

All discussion post submissions are monitored for plagiarism through Safe Assign. **All cases of possible plagiarism, including cheating on exams, or other violations of academic integrity will be reported to Academic Judiciary and if found guilty, will result in an F in the course.** Please be sure all work is in your own words and properly referenced with internal citations and full references. The discussion board grading rubric showing grading criteria is available on Blackboard.
Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that we can help you find a solution including potentially dropping the course.

Complete Assignments

All learning assignments for this course will be submitted electronically through Blackboard and dated according to the date/time submitted as shown on Blackboard. Assignments must be submitted by the given deadline. Extensions will not be given beyond the next assignment except under extreme, documented circumstances.

Understand When You May Drop This Course

It is the student’s responsibility to understand when they need to consider dropping a course. Students are expected to finalize their class schedules by the end of the “Add/Drop” period, which normally ends at the end of the second week of classes during the Fall or Spring semester. The Add/Drop period is shorter during the Summer and Winter Sessions, so always consult the Academic Calendar for the official deadline. Failure to finalize your course registration by the end of the Add/Drop period may have significant consequences; therefore, you should always consult with your Undergraduate College Advisor prior to the Add/Drop deadline if you are having trouble completing your schedule. See the Academic Advising website for more information at https://you.stonybrook.edu/firstyear/chapter-ten-academic-advising/

Incomplete Policy

Under emergency, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an Incomplete. Inform your instructor of any accommodations needed.

Withdrawals from Classes: The academic calendar, published in the Undergraduate Class Schedule, lists various dates that students must follow. Only the Arts and Sciences Committee on Academic Standing and Appeals or the Engineering and Applied Sciences Committee on Academic Standing may grant permission for a student to withdraw from a course after the deadline. The same is true of withdrawals that will result in an academic under-load. A note from the instructor is not sufficient to secure a withdrawal from a course in the above circumstances.
**Student Accessibility Support Center Statement**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact 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 is confidential. https://www.stonybrook.edu/commcms/studentaffairs/sasc/facstaff/syllabus.php

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: https://ehs.stonybrook.edu/programs/firesafety/emergency-evacuation/evacuation-guide-people-physical-disabilities

**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. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

**Academic Integrity/Honesty 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. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at: http://www.stonybrook.edu/commcms/academic_integrity/index.html

The Biology Department at Stony Brook University takes 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. Anyone caught cheating in any way will be reported to the Academic Judiciary Committee and, if found guilty, given an F for the course
Email Policies

Email sent via Blackboard 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 (http://www.stonybrook.edu/mycloud)

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

Part 5: Topic Outline/Schedule

Important Note: Refer to the Weekly Assignments on Blackboard 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 Lecture folders. If you have any questions as to the administration of the course or grading, please contact Prof. Souza at joanne.souza@stonybrook.edu or post your question in the administrative forum on Blackboard for a response within 24 hours.

<table>
<thead>
<tr>
<th>Week #</th>
<th>Lect #</th>
<th>Lecture Name</th>
<th>Text Reading</th>
<th>Lecture Video Modules</th>
<th>Quiz &amp; Discussion</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 6/22</td>
<td>0</td>
<td>Orientation, Academic Integrity, Exam Location</td>
<td>Syllabus &amp; Course Information</td>
<td>Orientation &amp; Academic Integrity Videos</td>
<td>Quiz 0 Disc. Post 1 Introduction</td>
<td>Wednesday June 24th 11:59 PM</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Cells, Evolution of Life, Macromolecules, Proteins</td>
<td>Chapters 1 &amp; 2</td>
<td>Module 1A Module 1B Module 1C Module 1D</td>
<td>Quiz 1 – 1A Quiz 2 – 1B Quiz 3 – 1C Quiz 4 – D/E</td>
<td>Wednesday June 24th 11:59 PM</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>DNA, Chromosomes Replication, Proofreading and Repair</td>
<td>Chapters 4 &amp; 5</td>
<td>Module 2A Module 2B Module 2D Module 2E</td>
<td>Quiz 5 – 2A Quiz 6 – 2BC Quiz 7 – 2D Quiz 8 – 2E</td>
<td>Saturday June 27th 11:59 PM</td>
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<tr>
<td>3</td>
<td></td>
<td>Gene Expression: Transcription</td>
<td>Chapters 6 &amp; 7</td>
<td>Module 3A Module 3B Module 3C Module 3D</td>
<td>Quiz 9 – 3AB Quiz 10 – 3C Quiz 11 – 3D Discussion 2 Lectures 1-3</td>
<td>Saturday June 27th 11:59 PM</td>
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<tr>
<td>Week 2 6/29</td>
<td>4</td>
<td>RNA Processing, Protein Folding</td>
<td>Chapter 6</td>
<td>Module 4AB Module 4C Module 4D</td>
<td>Quiz 12 – 4AB Quiz 13 – 4C Quiz 14 – 4D</td>
<td>Wednesday July 3rd 11:59 PM</td>
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<tr>
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<td></td>
<td>Research Methods</td>
<td>Chapters 8 &amp; 9</td>
<td>Module 5A Module 5B Module 5C Module 5D</td>
<td>Quiz 15 – 5A Quiz 16 – 5B Quiz 17 – 5C Quiz 18 – 5D</td>
<td>Wednesday July 1st 11:59 PM</td>
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<tr>
<td>6</td>
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<td>Cell Membranes</td>
<td>Ch10</td>
<td>Module 6A Module 6B Module 6C</td>
<td>Quiz 19 – 6A Quiz 20 – 6B Quiz 21 – 6C</td>
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<td>Week #</td>
<td>Lect #</td>
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<td>Lecture Video Modules</td>
<td>Quiz &amp; Discussion</td>
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<td>7</td>
<td>7</td>
<td>Membrane Transport</td>
<td>Ch 11</td>
<td>Module 7A Module 7B Module 7C</td>
<td>Quiz 22 – 7A Quiz 23 – 7B Quiz 24 – 7C Discussion 3 Lectures 4-7</td>
<td>Saturday July 4th 11:59 PM</td>
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<tr>
<td>3</td>
<td>7/6</td>
<td>Exam 1 Tuesday July 7th</td>
<td></td>
<td>Lectures 1-7</td>
<td>6:30 – 8:15 PM Place see Blackboard</td>
<td>Saturday July 11th 11:59 PM</td>
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<tr>
<td>8</td>
<td>8</td>
<td>Endoplasmic Reticulum</td>
<td>Chapter 12</td>
<td>Module 8A Module 8B Module 8C</td>
<td>Quiz 25 – 8A Quiz 26 – 8B Quiz 27 – 8C</td>
<td>Saturday July 11th 11:59 PM</td>
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<tr>
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<td>9</td>
<td>Golgi, Lysosomes</td>
<td>Chapters 12 &amp; 13</td>
<td>Module 9A Module 9B Module 9C</td>
<td>Quiz 28 – 9A Quiz 29 – 9B Quiz 30 – 9C Discussion 4 Lectures 8-9</td>
<td>Saturday July 11th 11:59 PM</td>
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<tr>
<td>4</td>
<td>7/13</td>
<td>Post-Trans targeting to nucleus, mitochondria, chloroplasts</td>
<td>Chapters 12 &amp; 13</td>
<td>Module 10A Module 10B Module 10C Module 10D</td>
<td>Quiz 31 – 10A Quiz 32 – 10B Quiz 33 – 10C Quiz 34 – 10D</td>
<td>Wednesday July 15th 11:59 PM</td>
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<tr>
<td>12</td>
<td>12</td>
<td>Cytoskeleton</td>
<td>Chapter 16</td>
<td>Module 12A Module 12B Module 12C Module 12D</td>
<td>Quiz 39 – 12A Quiz 40 – 12B Quiz 41 – 12C Quiz 42 – 12D Discussion 5 Lectures 10-12</td>
<td>Saturday July 18th 11:59 PM</td>
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<tr>
<td>14</td>
<td>14</td>
<td>Immune system</td>
<td>Chapter 24</td>
<td>Module 14A Module 14B Module 14C</td>
<td>Quiz 48 – 14A Quiz 49 – 14B Quiz 50 – 14C Discussion 6 Lectures 13-14</td>
<td>Saturday July 25th 11:59 PM</td>
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<tr>
<td>6</td>
<td>7/27</td>
<td>Exam 2 Tuesday July 28th</td>
<td>Lec 8-14</td>
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<td>6:30 – 8:15 PM Place: See blackboard</td>
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<td>Week #</td>
<td>Lect #</td>
<td>Lecture Name</td>
<td>Text Reading</td>
<td>Lecture Video Modules</td>
<td>Quiz &amp; Discussion</td>
<td>Due Date</td>
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<tr>
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<td>Cell Cycle Part 1 Intro</td>
<td>Chapter 17</td>
<td>Module 16A Module 16B Module 16C</td>
<td>Quiz 55 – 16AB Quiz 56 – 16C Discussion 7 Lectures 15-16</td>
<td>Saturday August 1st 11:59 PM</td>
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<tr>
<td>Week 7 8/3</td>
<td>17</td>
<td>Cell Cycle Part 2 G1, S</td>
<td>Chapter 17</td>
<td>Module 17A Module 17B Module 17C</td>
<td>Quiz 57 – 17A Quiz 58 – 17BC</td>
<td>Wednesday August 5th 11:59 PM</td>
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<tr>
<td>18</td>
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<td>Cell Cycle Part 3 G2, M</td>
<td>Chapter 17</td>
<td>Module 18A Module 18B Module 18C</td>
<td>Quiz 59 – 18A Quiz 60 – 18B Quiz 61 – 18C</td>
<td>Wednesday August 5th 11:59 PM</td>
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<tr>
<td>19</td>
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<td>Cancer</td>
<td>Chapter 20</td>
<td>Module 19A Module 19B Module 19C</td>
<td>Quiz 62 – 19A Quiz 63 – 19B Quiz 64 – 19C Discussion 8 Lectures 17-19</td>
<td>Saturday August 8th 11:59 PM</td>
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<tr>
<td>Week 8 8/10</td>
<td></td>
<td>Study for Exam 3</td>
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</table>

Exam 3 Tuesday 8/11 Lectures 15-19 6:30 – 8:15 PM Place: See BB

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