BIO 202 Fundamentals of Biology: Molecular and Cellular Biology
Summer 2018: Extended Session 1 ONLINE
Tuesday, May 29th to Friday, July 20th
DEC: E, SBC: STEM+

BIO 202.30 and BIO 202.60 in the summer are administered entirely online except for:
Three required in-person exam sessions consisting of:

Exam 1 (Wed. June 13th from 6:30 to 8:15 PM)
Exam 2 (Wed., June 27th from 6:30 to 8:15 PM)
Exam 3 – Cumulative Final (Wed. July 18th from 6:30-9:00 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
(Registered for Section 60)
OR
Throughout the United States via approved Remote Test Center Sites
(Registered for Section 30).
Anyone wishing to schedule a remote test center exam should contact Prof. Souza for
approval of the site prior to June 3rd.
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

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COURSE DESCRIPTION: A component of the three-semester series on Principles of Biology, BIO202 introduces students to molecular, cellular, and genetic aspects of living systems, with a focus on the relationship between structure and function. These fundamental insights are vital to the understanding of all of biology. Prerequisites: Level 3 or higher on the mathematics placement examination or BME 100 (for Stony Brook Students) Pre- or Co-requisites: Basic chemistry (CHE 129 or 131 or 141); basic calculus (MAT 125 or higher or AMS 151 for Stony Brook Students)

COURSE LEARNING OBJECTIVES: Upon completion of BIO 202 students will be able to:
1. Recognize structure and explain function of four major types of biological molecules, polysaccharides, lipids, proteins, nucleic acids.
2. Compare and contrast structure of eukaryotic and prokaryotic cells and explain functions of their individual compartments.
3. Explain concepts and main mechanisms of communication between cells.
4. Explain how all cells produce energy that they need to function.
5. Explain how plant cells produce chemical compounds from the energy of light (photons).
6. Describe biological activities and regulation of enzymes.
7. Describe how cells store and utilize energy.
8. Explain function of nucleic acids as carriers of genetic information.
9. Provide a conceptual framework for mechanisms of storage, preservation and replication of genetic information in cells.
10. Explain mechanisms of flow of genetic information from nucleic acids to proteins.
11. Explain mechanisms by which cells divide to produce somatic and germ cells.
12. Describe basic laws of inheritance of genetic traits.
13. Explain modern technologies based analysis and manipulation of genetic material.

We expect that completion of this course not only will provide the students with academic foundation for future training in bioscience and biotechnology, but also allow them to function as informed citizens able to form independent and scientifically sound opinions about a wide spectrum of political, social, and ethical issues that involve applications of modern science.

COURSE ORGANIZATION: This course is organized in thirds with a live, in-person evening exam given at the end of each third to assess your mastery of the content presented. The final exam is cumulative but is weighted more heavily to the content in the last third of the course (for a total of three live exam sessions). These exams may be taken in one of three ways:
1. At the Stony Brook University West Campus at 100 Nichols Road, Stonybrook, NY (Section 30)
2. At our Manhattan Exam Center at SUNY Optometry at 33 West 42nd Street, NY (Section 60 ONLY)
3. At a remote test center approved by Stony Brook University. (Section 30) See statement at top of syllabus and Contact Prof. Souza at joanne.souza@stonybrook.edu for more information. You must schedule any remote test by the end of the first week of classes (June 2nd).

All other features of the course are online and delivered through Blackboard. The content of the course is accessible to you via video lectures, lecture Power Points for note taking, and through readings in the 11th Edition of the Campbell Biology textbook.

This is an online course; therefore, the online learning assets are a crucial component for learning. One content quiz per week and one, well-written and well researched discussion post per week are required. Discussion posts will include outside research and discussion with colleagues required. This portion of your work will also serve as a powerful study aid for mastery of key concepts and performing well on the exams as well as to increase your critical thinking and communication skills. The objective is also to help you learn to synthesize information from various sources and critically evaluate possible applications of the science. Grading for this portion of the course will consist of the assessment of your critical thinking and application skills as guided by the discussion board rubric shown on blackboard.
REQUIRED TEXTBOOK
Campbell BIOLOGY 11th edition (older editions are fine). There is a loose-leaf option as well as an ebook available. Either of these is fine as well as long as it is the Campbell Biology text.

EXAMINATIONS AND GRADES: Grades are a combination of two in-person midterm exams, and an in-person cumulative final, two weekly learning asset assignments. All students must participate in the learning asset assignments.

Your course grade will be determined as follows:
Average of 2 midterm exams and your total learning asset total grade: 60 %
Cumulative final: 40 %
Final course grades will be assigned on a curve.

EXAMS: All exams will be given in the evening. See schedule below for dates, times and places or see the Biology ONLINE website at: http://www.stonybrook.edu/commcms/biology-online/courses/bio202.php for details. The material in the last third of the course will also be covered on the cumulative final exam. Be sure NOT TO register for any other courses that conflict with the exam schedule as conflicting exam schedules are not an accepted reason for a makeup exam.

Please let Prof. Souza know by email immediately if you plan to be taking any exam at a remote location other than West Campus or our Manhattan campus. All test centers must be approved by June 2nd. Do not bring pagers, beepers, or receivers to the exam. Cell phones must be TURNED OFF before entering the room and stowed with your bags/book. Based on university policy, a ringing cell phone during an exam represents academic dishonesty. If you are caught cheating, you will receive an F for the course and be reported to the academic judiciary committee.

LEARNING ASSETS:

A. ONLINE QUIZZES: 30% of your total learning asset grade.
Quiz 1 is the academic integrity video/exam location quiz. It is 10 questions worth 10 points. This quiz grade MAY NOT BE DROPPED.
- Learning asset content quizzes are due on Thursday each week.
- They are comprised of 5 multiple choice questions focused on your understanding of basic principles.
- Each question is worth 2 points.
- There are 7 learning asset content quizzes in total. We drop the lowest score of these 7 for a total of 6 quizzes counted for grading.
- In light of the one dropped quiz, NO MAKEUPS OR LATE SUBMISSIONS ARE ACCEPTED.

B. DISCUSSION BOARD POSTS (DB): 70% of your learning asset grade.
- Discussion posts are due on Sunday each week.
- THERE ARE 8 DISCUSSION POSTS DUE on Blackboard throughout the course. (See the Assignments tab on Blackboard each week for details).
- You are required to write one well-written, substantial and researched documented post per week.
- Raw Score Grading is on a categorical scale of 0, 4, 7 and 10. Each post will be graded according to the critical thinking rubric provided.
- We drop the lowest scoring post for a total of 7 graded posts.
- In light of the one dropped post, NO MAKEUPS OR LATE SUBMISSIONS ARE ACCEPTED.

Your total and combined learning asset grade (Quizzes 30% + Discussions 70%) percentage is averaged along with your two midterm scores (percentage) for a total of 60% of your final grade. Quizzes are due by Thursday each week, Discussion posts by Sunday at midnight (end of the day) EST.
Learning Objectives of Group Discussion:
1. Sharpen your scientific and intellectual critical thinking skills including learning the skill of attempts at falsification of potential answers/solutions (a key element of scientific inquiry).
2. Achieve complete mastery of fundamental biological concepts as a foundation for mastery of the details of biological systems with minimal memorization and maximal understanding.
3. Learn the hierarchically nested combinatorial nature of all biological systems.
4. Enhance your understanding beyond your current knowledge so as to improve your exam scores.
5. Link fundamental knowledge to current and future applications of that knowledge to real world applications to aid long term retention.
6. Begin to learn to peruse and utilize the primary source (academic, peer-reviewed) scientific literature.
7. Learn to communicate and debate your understanding at a detailed level with your colleagues in a professional written format including proper internal and external citations.
8. Overcome areas identified by prior exam analysis as being difficult for students so as to improve student knowledge, understanding and retention

ALL DISCUSSION POSTS will be monitored by plagiarism check software and all cases of suspected breaches in academic integrity will be turned over to the Academic Judiciary. Breaches include but are not limited to copying another student’s post with or without their knowledge, working together and submitting identical work, submitting work previously turned in for another class, plagiarism, improper or no citation, and anything listed on the Academic Integrity website. *The penalty is an F in the course!* Use your own words and reference all sources. ALL Posts are checked with computer software BETWEEN groups and from prior courses as well as the Internet.

BE SURE TO READ THROUGH THE DISCUSSION BOARD RUBRIC AND EXAMPLES OF GRADED DISCUSSION BOARD POSTS BEFORE CRAFTING YOUR POST.

RULES OF THE GAME FOR DISCUSSIONS: Please be aware that the information provided by other students in your group is not necessarily correct information. The purpose of discussion groups is to give you the chance to clarify your understanding and sharpen your intellectual skills. Authoritative factual information for EXAM purposes comes from lecture, the textbook, lecture Power Points, and faculty responses to discussions, which will be provided the week after your discussion with your colleagues is over in the discussion clarification document posted on blackboard. This is important to remember when studying for exams.

The following behaviors during Group Discussion are unacceptable and will result in your being excluded from Discussion Group and forfeiting that portion of your grade that week.
- Using abusive, disrespectful or foul language.
- Using sexually suggestive language (either explicit or implicit) that could be perceived as offensive or harassing.
- Threatening others.
- Insulting others or denigrating the opinions of others. Of course, you may respectfully, even strongly, disagree or challenge the opinions of others, but we attack positions, NEVER individuals in scientific debate.
- If any inappropriate behavior of the sort listed above should occur, the offender will be issued one and only one warning. A second offense will be grounds for excluding the offender from Discussion Group and forfeiting all his/her credit for this course requirement.
- Plagiarism of any sort – either copied work from other sources or from other student’s posts – will not be tolerated. There is zero tolerance for plagiarism of any sort. Discussion posts should be in your own words only and sources referenced however – no direct quotes permitted. Also see our Academic Honesty statement in the course syllabus.

Any academic dishonesty will be reported to the Academic Judiciary and can result in an F in the course.

HOW TO SUCCEED IN BIO202:
- WATCH THE ORIENTATION VIDEO: The orientation video will take you through how the course is managed and set up on Blackboard so you can spend your time learning content during the term.
• **WATCH ALL ECHO CONTENT LECTURES:** The lectures show you which topics to emphasize, how much detail you need to know, and how the topics fit together. Chapters from the book listed in the Course Schedule will help you to find the relevant material for each lecture. Use the textbook to supplement material presented in the lectures. The exams are based on the lectures and PowerPoints, which may contain some material that is not found in the textbook; so do not miss any lectures.

• **COMPLETE ALL ASSIGNMENTS ON TIME!** Weekly assignments with due dates are posted under assignments on the Blackboard site with the assignment at the top being the one due for the week. You may wish to print out lecture PowerPoints given in the assignments prior to watching lectures for note taking. Put your best foot forward during the discussion board portion of the course and do not miss any due dates.

**BIO 202 ONLINE BLACKBOARD SITE:** The course is managed completely through the Blackboard site at [https://blackboard.stonybrook.edu](https://blackboard.stonybrook.edu). All syllabus and grading information is posted along with assignments and lecture videos. Discussion board forums are provided. Pay attention to all announcements.

If you have used Stony Brook's Blackboard system previously, your login information (Username and Password) has not changed. If you have never used Stony Brook's Blackboard system, your initial password is your SOLAR ID# and your username is the same as your Stony Brook username, which is generally your first initial and the first 7 letters of your last name. For help or more information see [https://it.stonybrook.edu/services/ltt-student-help-desk](https://it.stonybrook.edu/services/ltt-student-help-desk). For problems logging in, go to the helpdesk in the Main Library SINC Site or the Union SINC Site, you can also call 631-632-9602 or email helpme@stonybrook.edu.

**SOURCES OF HELP:**
1. Administrative Questions Forum: There is a forum under your discussion board for all administrative questions – all questions placed here will be answered within 24 hours.
2. TA’s: Undergraduate TA’s will monitor your discussion boards and assist you in critical thinking skills as applied to content.
3. Prof. Citovsky is available for web office hours, for any content-related questions.
4. Prof. Souza will answer any Blackboard-related and grading concerns regarding the discussion posts.
5. Kristen Slovak is available for additional content assistance. Her contact information will be on blackboard.

**AMERICANS WITH DISABILITIES:** If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

**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 Judicial Affairs 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.

**ACADEMIC INTEGRITY:** 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 instance of academic dishonesty will be reported to the Academic Judiciary. Examples of academic dishonesty include:

EXAMS: Use of books, notes, or other aids during an exam, copying from another student, or letting another student copy from you, use of any electronic devices (cellular phones, computers, beepers, speakers, calculators and headphones) during an exam, taking an exam for someone else, or permitting someone else to take an exam for you.

DISCUSSION BOARD: Posting a discussion post that is not your own, or copied from someone else, including the Internet. All posts must be entirely in your own words and properly referenced. You cannot use your own posts or work submitted for a different course or the same course taken in a prior semester.
Any suspicious behavior will be reported, with a recommended penalty of an F in the course. 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/.

COURSE CONTENT: Course material accessed from Blackboard, 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 and Student Conduct Codes http://www.stonybrook.edu/uaa/academicjudiciary/policies.shtml (you may have to copy and paste the address in a browser).

COURSE SCHEDULE

(Weekly Assignments referred to below are available through the Blackboard site under the ASSIGNMENTS (Button on the left menu)

WEEK 1: May 29th – June 3rd

Assignment 1: Due Thursday, May 31st:
Due: Introductory Post for Orientation/Academic Integrity Video
Content Quiz 1 Lectures 1-3
Due Sunday, June 3rd: (Academic Integrity/Exam location quiz) and Discussion Post 2 for Lectures 1, 2, 3, 4, or 5

1A. Orientation Video and Academic Integrity Video
1. Echo Lecture 1: Atoms and Molecules in Biology
   Campbell Text: Chapter 2
2. Echo Lecture 2: Chemical Bonds, Functional Groups
   Campbell Text: Chapters 3 and 4
   Campbell Text: Chapter 5
4. Echo Lecture 4: Macromolecules 2: Nucleic Acids
   Campbell Text: Chapter 5
5. Echo Lecture 5: Macromolecules 3: Proteins
   Campbell Text: Chapter 5

WEEK 2: June 4th – June 10th

Assignment 2: Due Thursday, June 7th:
Due Content Quiz 2 Lectures 6-9
Due Sunday, June 10th - Discussion Post 3 for Lectures 9, 10, or 11

Study for Exam 1 Lectures 1-12

6. Echo Lecture 6: Protein structure, enzymes and catalysis
   Campbell Text: Chapter 8
7. Echo Lecture 7: Enzymes and regulation of enzymes
   Campbell Text: Chapter 8
8. Echo Lecture 8: Energy in Biology, ATP
   Campbell Text: Chapter 8
9. Echo Lecture 9: Cell Structure, organelles 1
   Campbell Text: Chapter 6
10. Echo Lecture 10: Organelles 2
    Campbell Text: Chapter 6
11. Echo Lecture 11: Cytoskeleton 1
    Campbell Text: Chapter 6
WEEK 3: June 11th – June 17th
Exam 1 Lectures 1-12: Wednesday, June 13th from 6:30 – 8:15PM
Assignment 3: Due Thursday, June 14th - Content Quiz 3 Due Lectures 13-14
Due Monday June 18th: Discussion Post 4 for Lectures 13, 14, 15 or 16

12. Echo Lecture 12: Cytoskeleton 2, intercellular connections  
   Campbell Text: Chapter 6
13. Echo Lecture 13: Membrane Structure  
   Campbell Text: Chapter 6, 7
14. Echo Lecture 14: Osmosis, transport across membranes  
   Campbell Text: Chapter 7
15. Echo Lecture 15: Cell communication and signaling 1  
   Campbell Text: Chapter 11
16. Echo Lecture 16: Cell communication and signaling 2  
   Campbell Text: Chapter 11

WEEK 4: June 18th – June 24th
Assignment 4: Due Thursday, June 21st: Content Quiz 4 Lectures 17-19  
Due Sunday, June 24th: Discussion Post 5 for Lectures 17, 18, 19, 20, 21, 22, or 23

17. Echo Lecture 17: Cell communication and signaling 3  
   Campbell Text: Chapter 11
18. Echo Lecture 18: Cellular respiration, glycolysis  
   Campbell Text: Chapter 9
19. Echo Lecture 19: Krebs cycle, fermentation, control of respiration  
   Campbell Text: Chapter 9
20. Echo Lecture 20: Photosynthesis 1  
   Campbell Text: Chapter 10
21. Echo Lecture 21: Photosynthesis 2  
   Campbell Text: Chapter 10
22. Echo Lecture 22: Chromosomes and cell division. Mitosis  
   Campbell Text: Chapter 12
23. Echo Lecture 23: Cell cycle. Introduction to cancer  
   Campbell Text: Chapter 12

WEEK 5: June 25th – July 1st
Exam 2 Lectures 13-24: Wednesday, June 27th from 6:30 – 8:15PM
Assignment 5: Due Thursday, June 28th Content Quiz 5 Lectures 25-26  
Due Sunday, July 1st: Discussion Post 6 for Lectures 25, 26, or 27

24. Echo Lecture 24: Meiosis  
   Campbell Text: Chapter 13
25. Echo Lecture 25: Mendel and the gene idea  
   Campbell Text: Chapter 14
26. Echo Lecture 26: Mendelian patterns in human inheritance  
   Campbell Text: Chapter 14
27. Echo Lecture 27: Chromosomal basis of inheritance  
   Campbell Text: Chapter 15
WEEK 6: July 2nd – July 8th

Assignment 6: Due Thursday, July 5th, Content Quiz 6 Lectures 28-30
Due Sunday, July 8th Discussion Post 7 for Lectures 28, 20, 31, 32, or 33

28. Echo Lecture 28: Genetic variation: exceptions to Mendel’s law
   Campbell Text: Chapter 15
29. Echo Lecture 29: DNA: the genetic material
   Campbell Text: Chapter 16
30. Echo Lecture 30: DNA replication
   Campbell Text: Chapter 16
31. Echo Lecture 31: Transcription and RNA processing
   Campbell Text: Chapter 17
32. Echo Lecture 32: Translation
   Campbell Text: Chapter 17
33. Echo Lecture 33: Mutations, Bacterial Genetics
   Campbell Text: Chapter 17 & 18

WEEK 7: July 9th – July 15th

Assignment 7: Due Thursday, July 12th, Content Quiz 7 Lectures 34-36
Due Sunday, July 15th Discussion Post 8 for Lectures 34, 35, 36, 37, 38 or 39 by Sunday, July 15th

34. Echo Lecture 34: Regulation of eukaryotic gene expression
   Campbell Text: Chapter 18
35. Echo Lecture 35: Introduction to protein structure
   Campbell Text: Chapter 18
36. Echo Lecture 36: Eukaryotic genomes
   Campbell Text: Chapter 21
37. Echo Lecture 37: Bacteria, viruses
   Campbell Text: Chapter 19
38. Echo Lecture 38: Biotechnology 1
   Campbell Text: Chapter 20
39. Echo Lecture 39: Biotechnology 2
   Campbell Text: Chapter 20

WEEK 8: July 16th – July 22nd

Cumulative Final Lectures 1-42: Wednesday, July 18th from 6:30 – 9:00PM
Assignment 8: NOTHING DUE – Final Exam

40. Echo Lecture 40: Fertilization and early development
   Campbell Text: Chapter 21, 47
41. Echo Lecture 41: Mechanisms of Development 1
   Campbell Text: Chapter 18, 47
42. Echo Lecture 42: Mechanisms of Development 2
   Campbell Text: Chapter 20, 47