Stony Brook University | Department of Biochemistry & Cell Biology

BIO 202 Fundamentals of Biology: Molecular and Cellular Biology
Summer 2017: Extended Session 1 ONLINE
Tuesday, May 30th to Friday, July 21st
DEC: E, SBC: STEM+

BIO 202.30 in the summer is administered entirely online except for:
Three required in-person exam sessions consisting of:
Exam 1 (Wed. June 14th from 6:30 to 8:30 PM)
Exam 2 (Wed., June 28th from 6:30 to 8:30 PM)
Exam 3 – Cumulative Final (Wed. July 19th from 6:30-9:30 PM)

Exams are given on West Campus in the Javits Lecture Hall Room 100
OR
Throughout the United States via approved Remote Test Center Sites.
Anyone wishing to schedule a remote test center exam should contact Prof. Souza for approval of
the site. See http://www.ncta-testing.org/find-a-cctc-participant
for potential sites near you. You must schedule any remote test by the end of the first week
of classes (June 3rd).
Fees for remote test centers are the responsibility of the student and are paid to the test center
directly.

Course Content Instructor
(Including exam content):
Prof. Vitaly Citovsky, Ph. D.
Dept. of Biochemistry & Cell Biology
Life Science Room 414
Phone: 631-632-9534
Email: Vitaly.Citovsky@stonybrook.edu
Office Hours: by E-mail

Video Lecturers: Prof. Vitaly Citovsky, Ph.D. and Prof. Deborah Brown, Ph.D.
Dept. of Biochemistry & Cell Biology

Online Resource Management Faculty
(Including blackboard, exam scheduling and any discussion board-related questions):
Prof. Joanne Souza, Ph.D.
Dept. of Biochemistry & Cell Biology
Director, Biology ONLINE program
Phone: 631-632-8548
LSB Room 378
Email: Joanne.Souza@stonybrook.edu

Administrative Support
Ms. Diane Pauciullo, Exam Issues
108 Centers for Molecular Medicine
Phone: 631-632-8171
Email: Diane.pauciullo@stonybrook.edu

Ms. Lynette Giordano
Course Registration and Waitlist Management
110 Centers for Molecular Medicine
Phone: 631-632-8530,
Email: Lynette.Giordano@stonybrook.edu
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 two ways:
1. At the Stony Brook University West Campus in Javits 100
2. At a remote test center approved by Stony Brook University. 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 3rd).

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 10th Edition of the Campbell Biology textbook.

This is an online course, therefore the discussion boards are a crucial component for learning. Multiple choice sample questions covering challenging content will be the basis of your discussions with peers in the asynchronous discussion groups. Two substantial, well-written and well researched posts per week in most weeks discussing these questions with your colleagues are 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 (below).
REQUIRED TEXTBOOK
Campbell BIOLOGY 10th edition (older editions are fine). An SBU custom edition, containing only the chapters covered in BIO 202, is also available. You may also purchase access to “Mastering Biology”, the online support, but this is optional. Available at: http://www.stonybrook.edu/commcms/fsa/bookstore/students/index.html

EXAMINATIONS AND GRADES: Grades are a combination of two in-person midterm exams, an in-person cumulative final, and two substantial weekly discussion posts. All students must participate in the discussion boards.

Your course grade will be determined as follows:
Average of 2 midterm exams and your discussion grading: 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.
Please let Prof. Souza know by email immediately if you plan to be taking any exam at a remote location. All test centers must be approved by June 3rd. 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.

DISCUSSION BOARD POSTS (DB): THERE ARE 12 DISCUSSION POSTS DUE on Blackboard (+ one Academic integrity/Test location quiz) throughout the course. (See the Assignments tab on Blackboard each week for details). In Week 1 you will be required to watch an orientation video and an academic integrity video. Before beginning the discussions, you will also be required to take the academic integrity/test location quiz on blackboard. This quiz will count as your first discussion grade and CANNOT BE DROPPED. The balance of the DB Requirements are a minimum of two well-written, substantial and researched documented posts per week for most weeks. 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 2 lowest scoring posts for a total of 11 posts (+ the Equiz). This will give you a raw score of 120 points possible. Your final discussion board grade percentage is averaged along with your two midterm scores (percentage) for a total of 60% of your final grade. The first post is due by Thursday each week, and the second 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 (sparky) 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/tlt-student-help-desk](https://it.stonybrook.edu/services/tlt-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.
5. The access code, inside the textbook, provides access to the “mastering biology” website, which has chapter reviews, study guides, and interactive practice quizzes. If you do not have an access code, you can purchase one online from the website www.masteringbio.com

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 4th

Assignment 1: Discussion Post 1 Due: Introductory Post for Orientation/Academic Integrity Video by Thursday, June 1st

Take e-quiz 0 (Academic Integrity/Exam location) and complete Discussion Post 2 for Lectures 1, 2, 3, 4, or 5 by Sunday, June 4th

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 5th – June 11th

Assignment 2: Discussion Post 3 for Lectures 6, 7, or 8, by Thursday, June 8th

Discussion Post 4 for Lectures 9, 10, or 11 by Sunday, June 11th

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 12th – June 18th

Exam 1 Lectures 1-12: Wednesday, June 14th from 6:30 – 8:30PM in Javits 100

Assignment 3: No post due Thursday, June 15th

Discussion Post 5 for Lectures 13, 14, 15 or 16 by Sunday, June 18th

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 19th – June 25th**

Assignment 4: Discussion Post 6 for Lecture 17, 18, or 19 by Thursday, June 22nd
Discussion Post 7 for Lectures 20, 21, 22, or 23 by Sunday, June 25th

17. Echo Lecture 17: Cell communication and signaling
   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 26th – July 2nd**

Exam 2 Lectures 13-24: Wednesday, June 28th from 6:30 – 8:30PM in Javits 100
Assignment 5: No Post Due Thursday, June 29th
Discussion Post 8 for Lectures 25, 26, or 27 due by Sunday July 2nd

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 3rd – July 9th**

Assignment 6: Discussion Post 9 for Lectures 28, 29, or 30 by Thursday, July 6th
Discussion Post 10 for Lectures 31, 32, or 33 by Sunday, July 9th

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 10th – July 16th
Assignment 7: Discussion Post 11 for Lecture 34, 35, or 36 by Thursday, July 13th
Discussion Post 12 for Lectures 37, 38 or 39 by Sunday, July 16th

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 17th – July 22nd
Cumulative Final Lectures 1-42: Wednesday, July 19th from 6:30 – 9:30PM in Javits 100
Assignment 8: NO POST 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