Cells and Organisms – BIOL15a, Summer I, 2024

Contact Details

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Communication

A majority of communication will be performed using Latte and email. All communication should be through your official Brandeis email address.

The staff of BIOL15 is here to help you learn and understand the material in any way possible. Please remember, however, everyone has both personal and professional commitments beyond this course. All concerns and questions should be addressed during office hours or during appointments scheduled at least 72 hours in advance. Unannounced drop-ins and contacting a staff member by means not provided by that individual (cell-phones, personal residences, etc.) is not appropriate, and will not be tolerated.

Email is a reliable way to contact staff members. Please expect at least a 24-hour turnaround time on all email inquiries (longer over weekends or holidays) and plan accordingly.

Continuity

There will be limited issues if campus closes for any reason as we will simply shift to remote, synchronous Zoom classes if needed.

Meeting Times/Locations

Classes

Monday, Tuesday, and Thursday, 8:30 AM to 11:00 AM EST, Abelson-Bass: 126

Labs or sections

None

Student Hours

Monday, Tuesday, and Thursday, 11:00 AM to 11:30 AM EST and by appointment for office hours. Office hours are open to any student. Issues that need to be discussed privately require an appointment to be scheduled.

Accommodations

Brandeis seeks to create a learning environment that is welcoming and inclusive of all students, and I want to support you in your learning. If you think you may require disability accommodations, you will need to work with Student Accessibility Support (SAS) (781-736-3470, access@brandeis.edu). You can find helpful student FAQs and other resources on the SAS website, including guidance on how to know whether you might be eligible for support from SAS. If you already have an accommodation letter from SAS, please provide me with a copy as soon as you can so that I can ensure effective implementation of accommodations for this class. In order to coordinate exam accommodations, ideally you should provide the accommodation letter at least 48 hours before an exam.

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Course Description

Course Prerequisite(s):
None

Textbook:
Achieve for Biology: How Life Works, 3rd or 4th edition, Morris *et. al.*

We are going to be utilizing an online version of the textbook - you can purchase a physical textbook if you would like, but you ***MUST HAVE ACCESS TO ACHIEVE***. You can get access to our class following the directions I posted on Latte. This textbook is used for BIOL14, BIOL15, and BIOL16.

6-month access:
ISBN: 9781319392833

1-year access:
ISBN: 9781319376826

2-year access:
ISBN: 9781319284367

Learning Goals:
By the end of this course students should be able to:

- Explain basic concepts in biology including cellular structure, bio-macromolecule composition, structure, and synthesis
- Explain the concept of central dogma and its role in the cell.
- Describe how and why cells make and use energy.
- Describe the major characteristics of human organ systems and their functionality at the molecular level.
- Gain familiarity with reading primary literature and applying biological concepts to practical applications

Success in this course will provide essential statistics skills that can be utilized as you move deeper into your science career.

This course is an INTENSIVE summer course. It is NOT a watered-down version of BIOL15 course offered during a full semester. Not attending a single day of class means you are going to miss approximately 10% of the total class material. Attendance is therefore of the utmost importance.

The class will meet synchronously three days a week for two and a half hours at a time. A majority of the course will be lecture based, with activities designed to supplement the material being presented. Homework assignments will be assigned as a guide through the material.

The readings should be skimmed PRIOR to coming to class. The material may not be clear at this point, but the important points will be discussed in class. Read for the big picture and do not get bogged down in the minutia. After class, the readings should be much clearer. Not reading will almost certainly hurt

your performance on the exams. DO NOT let your reading lapse; the class moves too quickly for you to easily catch up once behind.

Credit Hours:
Success in this four-credit course is based on the expectation that students will spend a minimum of 20 hours of study time per week in preparation for class (readings, papers, discussion sections, preparation for the exams, etc.

This course cannot be added after the first full week of class has taken place.

Course Requirements

Attendance
Although formal attendance isn't taken during class, attendance is part of your In-Class Assignment grade since if you are not present you cannot complete those assignments in real-time as well as part of your participation grade.

Assignments
Reflections (15%) - you will submit **13 electronic reflections** by answering questions about that day's material. It is due by **10 PM THE SAME DAY OF CLASS** as stated in the course calendar. These reflections can help guide the material discussed. Absolutely no late reflections will be accepted. The reflections are graded for credit/no credit based on good faith effort. I will drop your lowest two reflection grades before calculating your final grade.

Homework on Achieve (25%) - you will complete **15 questions for each class (13 sets total)** using Achieve. These questions will be based on both the material covered in class as well as the text. You can attempt each question more than once, but there is a 33% penalty for each incorrect answer with up to 3 attempts allowed. **Each set of questions is due by Sunday (or Wednesday for the last week) at 11:59 PM, as specified in the class calendar.** For each day homework is late, 25% of the total grade will be removed for up to 4 days. I will drop your lowest ONE homework grade before calculating your final grade.

In-Class Activities on Achieve and Latte (20%) - during class, we will utilize many different activities such as case studies, animations, group work, on-line research, among others. You will be graded for each these assignments and will submit your final work to Latte. Sometimes the grades will be complete/incomplete and other times you will get a percentage grade. Overall, these in-class activities will constitute 20% of your overall grade with even distribution. I will drop your lowest ONE in-class actives grades.

Exams/Quizzes
Take Home Exams (THE) (35%) - you will complete **2 THEs** that are based on the material covered in class. The THEs are due **as stated on the course calendar**. You cannot collaborate with any other person, fellow student or not, on the THEs. A hard copy of the THEs will be handed out in class and the hard copy with your answers must be turned into me. If you do not turn it in by the deadline you will lose 25% of the total for the first 24 hours, an additional 25% of the total for the second 24 hours, or a zero if not turned in within 48 hours. THEs are graded for correctness.

Participation
Participation is worth 5% of your overall grade. This can be earned by speaking in class, submitting questions via email, or attending office hours. This part of your grade is holistic over the entire course.

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Course Plan

I reserve the right to change the topic schedule as needed to achieve the goals of the course. However, the assignment due dates will not change.

Week	Class	Date	Topics	Readings	Assignments (all times are EST)
1	1	Mon, Jun 3	Chemistry for Biology The Cell Introducing Biology's Building Blocks: DNA, RNA, Protein, Lipid	Chapter 1: 1.1 - 1.3 Chapter 5: 5.3 Chapter 2: 2.1 - 2.5	**Reflection 1 Due by 10:00 PM** **HW 1 Due by Sunday at 11:59 PM**
	2	Tue, Jun 4	Biology's Building Blocks: DNA, RNA, Protein, Lipid Replication	Chapter 3: 3.1 and 3.2 Chapter 4: 4.1 (just skim) Chapter 5: 5.1 Chapter 12: 12.1 and 12.2	**Reflection 2 Due by 10:00 PM** **HW 2 Due by Sunday at 11:59 PM**
	3	Thu, Jun 6	Transcription Translation	Chapter 3: 3.3 and 3.4 Chapter 4: 4.2	**Reflection 3 Due by 10:00 PM** **HW 3 Due by Sunday at 11:59 PM**
2	4	Mon, Jun 10	Protein Structure and Function Energy and Thermodynamics	Chapter 4: 4.1 Chapter 6: 6.1 – 6.3	**Reflection 4 Due by 10:00 PM** **HW 4 Due by Sunday at 11:59 PM**
	5	Tue, Jun 11	Enzymes and Reactions Cellular Respiration	Chapter 6: 6.4 and 6.5 Chapter 5.5	**Reflection 5 Due by 10:00 PM** **HW 5 Due by Sunday at 11:59 PM**
		Thu, Jun 13	NO CLASS		
3	6	Mon, Jun 17	Glycolysis acetyl-CoA Citric Acid Cycle (TCA Cycle) Electron Transport Chain	Chapter 7: 7.1 – 7.6	**THE1 Due by 8:30 AM** **Reflection 6 Due by 10:00 PM** **HW 6 Due by Sunday at 11:59 PM**
	7	Tue, Jun 18	Digestion and Nutrition	Chapter 38: 38.1 - 2 and 38.4	**Reflection 7 Due by 10:00 PM** **HW 7 Due by Sunday at 11:59 PM**
	8	Thu, Jun 20	Cell Signaling Signal Transduction	Chapter 9: 9.1 and 9.2 Chapter 9: 9.3 - 9.5	**Reflection 8 Due by 10:00 PM** **HW 8 Due by Sunday at 11:59 PM**
4	9	Mon, Jun 24	Cytoskeleton Cellular Movement and Adhesion	Chapter 10: 10.1 and 10.2 Chapter 10: 10.3 and 10.4	**Reflection 9 Due by 10:00 PM** **HW 9 Due by Sunday at 11:59 PM**
	10	Tue, Jun 25	Mitosis	Chapter 11: 11.1 – 11.2	**Reflection 10 Due by 10:00 PM** **HW 10 Due by Sunday at 11:59 PM**
	11	Thu, Jun 27	Meiosis Reproduction and Development	Chapter 11: 11.3 – 11.5 Chapter 40: 40.3 and 40.4	**Reflection 11 Due by 10:00 PM** **HW 11 Due by Sunday at 11:59 PM**
5	12	Mon, July 1	Immune System	Chapter 41: 41.1 - 41.4	**Reflection 12 Due by 10:00 PM** **HW 12 Due by Wednesday at 11:59 PM**
	13	Tue, Jul 2	Nervous System	Chapter 34: 34.1 - 34.5	**Reflection 13 Due by 10:00 PM** **HW 13 Due by Wednesday at 11:59 PM**
		Wed, Jul 3	Final Exam Period		**Last Achiever Assignments Due by 11:59 PM EST**
		Fri, Jul 5	Final Exam Period		**THE2 Due by 11:59 PM EST**

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Evaluation and Grading

Class Element	Grade Percentage	Learning Goals	Due Date
Daily Reflections	15% total	To allow you to get questions answered and reflect on the material of the week.	Each day of class by 10:00 PM EST
Homework on Achieve	25% total	To allow you to build foundational knowledge using lecture and textbook material.	Sunday by 11:59 PM EST for the first four weeks or Wednesday by 11:59 PM EST the fifth week.
In-class Activities	20% total	To provide formative assessment and demonstration of knowledge transfer	As assigned in class.
Take Home Exams	35% total	To allow you to demonstrate knowledge gained by answering questions about material learned using calculations.	
• *THE1*	17.5%		Monday, June 17th by 8:30 AM EST via Gradescope
• *THE2*	17.5%		Friday, July 5th by 11:59 PM via Gradescope
Class Participation	5% total	To allow you to earn credit for interaction during or after class.	Each class.

Your final grade will be determined using the table below. I do NOT round final grades to whole numbers. A scaling factor can be applied to the entire class if necessary, which can only improve your grade, not reduce it.

Letter Grade	**Percentage Grade**
A	93.33 or more
A-	90.00 to 93.33
B+	86.67 to 90.00
B	83.33 to 86.67
B-	80.00 to 83.33
C+	76.67 to 80.00
C	73.33 to 76.67
C-	70.00 to 73.33
D+	66.67 to 70.00
D	63.33 to 66.67
D-	60.00 to 63.33
E	60.00 or less

Important Policies and Resources

Academic Integrity

Every member of the University community is expected to maintain the highest standards of academic integrity. A student shall not submit work that is falsified or is not the result of the student's own effort. Infringement of academic integrity by a student subjects that student to serious penalties, which may include failure on the assignment, failure in the course, suspension from the University or other sanctions. Please consult Brandeis University Rights and Responsibilities for all policies and procedures related to academic integrity. Students may be required to submit work via TurnItIn.com or similar software to verify originality. A student who is in doubt regarding standards of academic integrity as they apply to a specific course or assignment should consult the faculty member responsible for that course or assignment before submitting the work. Allegations of alleged academic dishonesty will be forwarded to the Department of Student Rights and Community Standards. Citation and research assistance can be found at Brandeis Library Guides - Citing Sources.

Classroom Health and Safety

- Register for the Brandeis Emergency Notification System. Students who receive an emergency notification while attending class should notify their instructor immediately. In the case of a life-threatening emergency, call 911. As a precaution, review this active shooter information sheet.
- Brandeis provides this shuttle service for traveling across campus or to downtown Waltham, Cambridge and Boston.
- On the Brandeis campus, all students, faculty, staff and guests are required to observe the university's policies on physical distancing and mask-wearing to support the health and safety of all classroom participants. Face coverings must be worn by all students and instructors in classes with in-person meetings. Students and faculty must also maintain the appropriate 6 feet of physical distance from one another when entering, exiting, or being in the classroom and continue to sit in seats assigned by the professor to assist the university in its contract-tracing efforts. All faculty and students must also clean their work areas before and after each class session, using the sanitizing wipes provided by the University. (Classrooms will also be professionally cleaned by Brandeis custodial staff multiple times per day.) Review up to date COVID-related health and safety policies regularly.

Course Materials/Books/Apps/Equipment

If you are having difficulty purchasing course materials, please make an appointment with your Student Financial Services or Academic Services advisor to discuss possible funding options, including vouchers for purchases made at the Brandeis Bookstore.

LATTE

LATTE is the Brandeis learning management system. Login using your UNET ID and password. For LATTE help, contact Library@brandeis.edu.

Library

The Brandeis Library collections and staff offer resources and services to support Brandeis students, faculty and staff. Librarians and Specialists from Research & Instructional Services, Public Services, Archives & Special Collections, Sound & Image Media Studios, MakerLab, AutomationLab, and Digital Scholarship Lab are available to help you through consultations and workshops.

Privacy

To protect your privacy in any case where this course involves online student work outside of Brandeis password-protected spaces, you may choose to use a pseudonym/alias. You must share the pseudonym/ alias with me and any teaching assistants as needed. Alternatively, with prior consultation, you may submit such work directly to me.

Student Support

Brandeis University is committed to supporting all our students so they can thrive. If a student, faculty, or staff member wants to learn more about support resources, the Support at Brandeis webpage offers a comprehensive list that includes these staff colleagues you can consult, along with other support resources:

- The Care Team
- Academic Services (undergraduate)
- Graduate Student Affairs
- Directors of Graduate Studies in each department, School of Arts & Sciences
- Program Administrators for the Heller School and International Business School
- University Ombuds
- Office of Equal Opportunity.