Cells and Organisms – BIOL15a, Summer I, 2021

Contact Details
Kene N. Piasta
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Office location: Shapiro Science Center, 0-16E
Telephone: (781) 736-3159

Teaching Assistants:
None

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
As this course is most likely fully remote due to the enrollment, there will be limited issues if campus closes for any reason.

Meeting Times/Locations

Classes
Monday, Tuesday, Wednesday, and Thursday, 9:00 AM to 11:00 AM EST, synchronous classes where attendance is required. Here is the link https://brandeis.zoom.us/j/94979589825 (and the necessary password is posted on Latte. YOU MUST USE YOUR BRANDEIS ZOOM ACCOUNT TO LOG INTO CLASS VIA ZOOM. Directions are posted on Latte.

Labs or sections
None

Student Hours
Tuesday and Thursday 11:30 AM to 12:30 PM EST and by appointment for office hours. Office hours will use the same link as above since they are just a continuation of class. Office hours are open to any student. Issues that need to be discussed privately require an appointment to be scheduled. YOU MUST USE YOUR BRANDEIS ZOOM ACCOUNT TO LOG INTO OFFICE HOURS VIA ZOOM. Directions are posted on Latte.

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.

Course Description

Course Prerequisite(s):
None

Textbook:

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.

Remote learning is very different from in-person learning. For that reason, I want you all to know that I reserve the right to modify the course in real-time. I hope not to have to do so, but if as a group we find that something isn’t working, we should and will make modifications. I ask for your patience and honesty as we optimize the class.
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 four days a week for two 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.

Assignments
Reflections (15%) - you will submit 18 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 (20%) - you will complete 10 questions for each class (18 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 Friday for the last week) at 11:59 PM, the same week of class they are assigned. 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, Socrative, and Latte (15%) - 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 two in-class actives grades.
Problem Sets (25%) - you will complete 2 problem sets that are based on the material covered in class. The problem sets are due at the start of class, 9:00 AM as stated on the course calendar. You cannot collaborate with any other person, fellow student or not, on the problem sets. The problem sets will all be open-ended questions and may require drawing. The problem sets are due uploaded to Gradescope. If you do not upload it by the 9:00 AM 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. Problem Sets are graded for correctness. Please see the Gradescope documentation posted on Latte.

Open-Ended Questions (OEq) (25%) – much of biology is conceptual in nature. In order to probe these concepts, you will answer 2 sets of open-ended questions in a paragraph form using Latte. More details will be discussed in class and posted on Latte. It is due as stated on the course calendar. If you do not upload your answer 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. You must work on your open-ended questions alone.

Exams/Quizzes
None

Participation
A few things about our synchronous sessions. First, I will be recording them so I can post the lectures for you all to review. This means your video and audio will also be recorded. Please tell me as soon as possible if this will be an issue. Second, I greatly prefer that you leave your camera on during class. It is incredible hard to teach without being able to read your faces for looks of confusion or panic. I realize that not everyone is comfortable having their camera on, but I do want you to reach out to me if you plan to have your camera off regularly. Third, if a lot of people are not participating and not asking questions during class with their videos muted, I am going to assume you are not attending. If this starts to happen, I reserve the right to stop posting the recordings of the lectures. I post the lectures for review of the material, not so you don’t have to attend at 9:00 AM! Fourth, I welcome questions during class either orally or via the chat. That being said, the chat is most useful when everyone can see the questions so I would urge you to send the question to everyone. If you are not asking a question, I would ask you to keep you microphone muted as feedback is very distracting for everyone.

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.

<table>
<thead>
<tr>
<th>Week</th>
<th>Class</th>
<th>Date</th>
<th>Topics</th>
<th>Readings</th>
<th>Assignments (all times are EST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Tue, Jun 1</td>
<td>Biology’s Building Blocks: DNA, RNA, Protein, Lipid,</td>
<td>Chapter 1: 1.1 - 1.3</td>
<td>Reflection 1 Due by 10:00 PM</td>
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<tr>
<td></td>
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<td></td>
<td>Chapter 2: 2.1 - 2.5</td>
<td>HW 1 Due by Sunday at 11:59 PM</td>
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<td></td>
<td></td>
<td>Chapter 3: 3.1 and 3.2</td>
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<tr>
<td>2</td>
<td>2</td>
<td>Wed, Jun 2</td>
<td>Replication</td>
<td>Chapter 12: 12.1 and 12.2</td>
<td>Reflection 2 Due by 10:00 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transcription</td>
<td>Chapter 3: 3.3 and 3.4</td>
<td>HW 2 Due by Sunday at 11:59 PM</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Thu, Jun 3</td>
<td>Transcription 2</td>
<td>Chapter 4: 4.2</td>
<td>Reflection 3 Due by 10:00 PM</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Translation</td>
<td></td>
<td>HW 3 Due by Sunday at 11:59 PM</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Mon, Jun 7</td>
<td>Protein Structure and Function</td>
<td>Chapter 4: 4.1</td>
<td>Reflection 4 Due by 10:00 PM</td>
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<td></td>
<td></td>
<td></td>
<td>HW 4 Due by Sunday at 11:59 PM</td>
</tr>
</tbody>
</table>
| Day  | Date    | Topic                                      | Chapters                                      | Reflection Due by 10:00 PM  
|------|---------|--------------------------------------------|------------------------------------------------|----------------------------------  
| 5    | Tue, Jun 8 | Energy and Thermodynamics                  | Chapter 6: 6.1 - 6.4                          | HW 5 Due by Sunday at 11:59 PM  
| 6    | Wed, Jun 9 | Enzymes and Reactions Cellular Respiration | Chapter 6: 6.5  
|      |          |                                            | Chapter 7: 7.1                                | HW 6 Due by Sunday at 11:59 PM  
| 7    | Thu, Jun 10 | Glycolysis acetyl-CoA                      | Chapter 7: 7.2  
|      |          |                                            | Chapter 7: 7.3                                | Reflection 7 Due by 10:00 PM  
| 3    | Mon, Jun 14 | Citric Acid Cycle (TCA Cycle) Electron Transport Chain | Chapter 7: 7.4  
|      |          |                                            | Chapter 7: 7.5                                | HW 7 Due by Sunday at 11:59 PM  
| 9    | Tue, Jun 15 | Digestion and Nutrition                    | Chapter 38: 38.1-2 and 38.4                   | HW 9 Due by Sunday at 11:59 PM  
| 10   | Wed, Jun 16 | Cell Signaling                             | Chapter 9: 9.1 and 9.2                         | HW 10 Due by Sunday at 11:59 PM  
| 11   | Thu, Jun 17 | Signal Transduction                        | Chapter 9: 9.3 - 9.5                           | HW 11 Due by Sunday at 11:59 PM  
| 4    | Mon, Jun 21 | Cytoskeleton Cellular Movement and Adhesion | Chapter 10: 10.1 and 10.2  
|      |          |                                            | Chapter 10: 10.3 and 10.4                      |Reflection 12 Due by 10:00 PM  
| 13   | Tue, Jun 22 | Mitosis                                    | Chapter 11: 11.1 and 11.2                      | HW 13 Due by Sunday at 11:59 PM  
| 14   | Wed, Jun 23 | Meiosis                                    | Chapter 11: 11.3 – 11.5                        | HW 14 Due by Sunday at 11:59 PM  
| 15   | Thu, Jun 24 | Reproduction and Development               | Chapter 40 40.3 and 40.4                       | Reflection 15 Due by 10:00 PM  
| 5    | Mon, Jun 28 | Immune System                              | Chapter 41: 41.1 - 41.4                       | HW 15 Due by Sunday at 11:59 PM  
| 17   | Tue, Jun 29 | Nervous System                             | Chapter 34: 34.1 - 34.5                        | HW 17 Due by Friday at 11:59 PM  
| 18   | Wed, Jun 30 | Float Day                                  |                                                 | HW 18 Due by Friday at 11:59 PM  
|     | Fri, Jul 2 |                                            |                                                 | QEO2 Due by 11:59 PM  

Problem Set 1 Due by 9:00 AM EST  
Reflection 8 Due by 10:00 PM  
HW 8 Due by Sunday at 11:59 PM  
Reflection 9 Due by 10:00 PM  
HW 9 Due by Sunday at 11:59 PM  
Reflection 10 Due by 10:00 PM  
HW 10 Due by Sunday at 11:59 PM  
Reflection 11 Due by 10:00 PM  
HW 11 Due by Sunday at 11:59 PM  
OEQ1 Due by 9:00 AM  
Reflection 12 Due by 10:00 PM  
HW 12 Due by Sunday at 11:59 PM  
Reflection 13 Due by 10:00 PM  
HW 13 Due by Sunday at 11:59 PM  
Reflection 14 Due by 10:00 PM  
HW 14 Due by Sunday at 11:59 PM  
Reflection 15 Due by 10:00 PM  
HW 15 Due by Sunday at 11:59 PM  
Reflection 16 Due by 10:00 PM  
HW 16 Due by Friday at 11:59 PM  
Reflection 17 Due by 10:00 PM  
HW 17 Due by Friday at 11:59 PM  
Reflection 18 Due by 10:00 PM  
HW 18 Due by Friday at 11:59 PM  
OEQ2 Due by 11:59 PM
Evaluation and Grading

<table>
<thead>
<tr>
<th>Class Element</th>
<th>Grade Percentage</th>
<th>Learning Goals</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Reflections</td>
<td>15% total</td>
<td>To allow you to get questions answered and reflect on the material of the week.</td>
<td>Daily by 10:00 PM EST</td>
</tr>
<tr>
<td>Homework on Achieve</td>
<td>20% total</td>
<td>To allow you to build foundational knowledge using lecture and textbook material.</td>
<td>Friday by 11:59 PM EST each week</td>
</tr>
<tr>
<td>In-class Activities</td>
<td>15% total</td>
<td>To provide formative assessment and demonstration of knowledge transfer</td>
<td>As assigned in class.</td>
</tr>
<tr>
<td>Problem Sets</td>
<td>25% total</td>
<td>To allow you to demonstrate knowledge gained by answering questions about material learned using calculations.</td>
<td></td>
</tr>
<tr>
<td>• Problem Set 1</td>
<td>12.5%</td>
<td></td>
<td>Monday, June 14th by 9:00 AM EST to Gradescope</td>
</tr>
<tr>
<td>• Problem Set 2</td>
<td>12.5%</td>
<td></td>
<td>Monday, June 28th by 9:00 AM EST to Gradescope</td>
</tr>
<tr>
<td>Open-Ended Questions</td>
<td>25% Total</td>
<td>To allow you to demonstrate knowledge gained by answering questions about material learned excluding calculations.</td>
<td></td>
</tr>
<tr>
<td>• Open-Ended Questions 1</td>
<td>12.5%</td>
<td></td>
<td>Monday, June 21st by 9:00 AM EST to Latte</td>
</tr>
<tr>
<td>• Open-Ended Questions 2</td>
<td>12.5%</td>
<td></td>
<td>Friday, July 2nd by 11:59 PM EST to Latte</td>
</tr>
</tbody>
</table>

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.