BCHM88A - Introductory Biochemistry, 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 BCHM88 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, 1:50 PM to 4:20 PM EST, Abelson-Bass: 126

Labs or sections
None

Student Hours
Monday, Tuesday, and Thursday, 1:20 PM to 1:50 PM 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.

Course Description

Course Prerequisite(s):
None

Textbook:
Essential Biochemistry, 5th Edition by Charlotte W. Pratt and Kathleen Cornely
ISBN: 978-1-119-71285-5

Loose Pages with Wiley Plus Access: ISBN: 9781119713258

Electronic version only with Wiley Plus Access: ISBN: 9781119719922

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 WILEY PLUS***. You can get access to our class following the directions I posted on Latte.

Supplementary Textbook:
Pushing Electrons by Weeks

This workbook is great for refreshing yourself on electron pushing mechanisms. I highly recommend it if you feel any unease with electron pushing. The third edition can be purchased on Amazon for less than $20.

Learning Goals:

Biochemistry illuminates the molecular details of living things. By the end of this course students should be able to:

- explain biological phenomena using chemical and biochemical terminology, facts and concepts;
- evaluate the relationship between molecular structure and function;
- describe and construct metabolic pathways; and
- communicate biochemical concepts effectively.

Success in this course will provide essential statistics skills that can be utilized as you move deeper into your science career. In general terms the course will cover biological macromolecules with heavy emphasis on proteins, equilibrium binding, enzyme mechanisms, and metabolism. These are the foundational concepts in biochemistry. Although some memorization is required, this course will be taught stressing thinking and problem solving. Biochemistry is also a comprehensive subject. Each class will build on those before it, thus all assessments utilized in the course will be comprehensive and cumulative.

This course is an INTENSIVE summer course. It is NOT a watered-down version of BCHM88 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 assignments. 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 Participation grade since if you are not present you cannot participate in real-time nor complete any in-class assignments.

Assignments
Reflections (20%) - 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 Wiley Plus (35%) - you will complete **10 questions for each chapter we discuss (13 sets total)** using Wiley Plus. These questions will be based on both the material covered in class as well as the text. You can attempt each question twice. Full-credit is earned if you are correct on the first attempt, a 25% penalty is imposed if you are correct on the second attempt, and no credit is earned if the second attempt is incorrect. **Each set of questions is due by Monday (or Friday 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.

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. 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 10% 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	Chemical Bonding Chemical Equilibrium Thermodynamics	Chemical Bonding on Latte Chapter 1 except 1-4	**Reflection 1 Due by 10:00 PM** **Chapter 1 HW on Wiley Plus due Sunday by 11:59 PM EST**
	2	Tue, Jun 4	Water Ionization	Chapter 2	**Reflection 2 Due by 10:00 PM** **Chapter 2 HW on Wiley Plus due Sunday by 11:59 PM EST**
	3	Thu, Jun 6	Amino Acids Polypeptides	Chapter 4	**Reflection 3 Due by 10:00 PM**
2	4	Mon, Jun 10	Protein Structure Protein Folding Biological Macromolecules	Chapter 4 Skim Chapters 3, 8, 11 (**Pre-recorded lecture posted on Latte watch at your leisure**)	**Reflection 4 Due by 10:00 PM** **Chapter 4 HW on Wiley Plus due Sunday by 11:59 PM EST** **Chapter 3, 8, 11 HW on Wiley Plus due Sunday by 11:59 PM EST**
	5	Tue, Jun 11	Ligand Binding Myoglobin Hemoglobin	Chapter 5-1	**Reflection 5 Due by 10:00 PM** **Chapter 5 HW on Wiley Plus due Sunday by 11:59 PM EST**
		Thu, Jun 13	NO CLASS		
3	6	Mon, Jun 17	Catalysis Enzymes Functions	Chapter 6-2 Chapter 6	**Reflection 6 Due by 10:00 PM** **Chapter 6 HW on Wiley Plus due Sunday by 11:59 PM EST**
	7	Tue, Jun 18	Enzyme Kinetics	Chapter 7	**Reflection 7 Due by 10:00 PM**
	8	Thu, Jun 20	Enzyme Inhibitors	Chapter 7	**Reflection 8 Due by 10:00 PM** **Chapter 7 HW on Wiley Plus due Sunday by 11:59 PM EST**
4	9	Mon, Jun 24	Metabolism Metabolic Toolbox Cofactors	Chapter 12 Handouts on Latte	**THE1 Due by 1:50 PM via Gradescope** **Reflection 9 Due by 10:00 PM** **Chapter 12 HW on Wiley Plus due Sunday by 11:59 PM EST**
	10	Tue, Jun 25	Glycolysis Fermentation Gluconeogenesis	Chapter 13	**Reflection 10 Due by 10:00 PM** **Chapter 13 HW on Wiley Plus due Sunday by 11:59 PM EST**
	11	Thu, Jun 27	TCA Cycle	Chapter 14	**Reflection 11 Due by 10:00 PM** **Chapter 14 HW on Wiley Plus due Sunday by 11:59 PM EST**
5	12	Mon, July 1	Electron Transport Chain Oxidative Phosphorylation	Chapter 15	**Reflection 12 Due by 10:00 PM** **Chapter 15 HW on Wiley Plus Due by Wednesday at 11:59 PM**
	13	Tue, Jul 2	Lipid Metabolism Nitrogen Metabolism	Chapter 17 Chapter 18	**Reflection 13 Due by 10:00 PM** **Chapter 17 and 18 HW on Wiley Plus Due by Wednesday at 11:59 PM**
		Wed, Jul 3			**Last Wiley Plus Assignments Due by 11:59 PM EST**
		Fri, Jul 5			**THE2 Due by 11:59 PM EST via Gradescope**

Evaluation and Grading

Class Element	Grade Percentage	Learning Goals	Due Date
Daily Reflections	20% 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 Wiley Plus	35% total	To allow you to build foundational knowledge using lecture and textbook material.	Monday by 11:59 PM EST for the first four weeks or Friday by 11:59 PM EST the fifth week.
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 24th by 1:50 PM EST via Gradescope
• *THE2*	17.5%		Friday, July 5th by 11:59 PM EST via Gradescope
Participation	10% 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.