

BCH 3025: Fundamentals of Biochemistry

BCH 3025

Section F2FB

Class #27461

4 Credit Hours

Fall 2022

**Location and Time: Monday and Wednesday, 8:30 am to 9:20 am, CSE 0GE121
Friday, 8:30 am to 10:25 am, LIT 0G0101**

Instructor: Diana H. Taft, Ph.D. (pronouns are she/her)
dianataft@ufl.edu
(352)294-3577

Office Hours: Dr. Taft will remain available for students for 20 minutes after each class session (if you plan to leave and return, please let Dr. Taft know BEFORE you leave). Dr. Taft is also available for office hours by Zoom. Please email to arrange a time.

Course Website:

Required Text: Biochemistry by Miesfeld and McEvoy, second edition 2021.

Optional Resources: The Manga Guide to Biochemistry by Takemura, Kikuyara, and Sawa

Prerequisites: CHM2210, CHM2211, and CHM 2211L (or CHM2200 and CHM2200L, but the two semester series is STRONGLY preferred) with a minimum grade of C

Purpose of Course: The course should introduce each student to biochemical concepts and provide different mechanisms for each student to demonstrate to future admission committees or employers the ability to:

- Answer questions about biochemical concepts and facts;
- Critically read the biochemical literature and communicate the finding to peers;
- Utilize the internet to find the most recent credible information concerning biochemical concepts and questions.

Course Goals and/or Objectives: By the end of this course, students will:

1. Appreciate why the broad spectrum of biochemistry is important in medicine, agriculture, pharmaceuticals, and ethics;
2. Understand the basis for the molecular structure of different biochemical compounds;
3. Understand the biosynthesis of basic biochemical "building blocks";
4. Understand the conformation, dynamics, and function of proteins;
5. Understand the generation and storage of metabolic energy;
6. Understand overall aspects of the integration of metabolic processes;

7. Have developed the skills to accumulate, integrate, and apply biochemical information in their own field of study.

Grading Policies:

Assignment	Percentage of Final Grade
Complete Homework	10%
Midterm exam (two exams given, lowest grade dropped)	30%
Final exam	30%
Final paper	30%

Homework: All homework assignments are due by 11:59 pm ET on the due date. Homework will be graded complete/incomplete. For a complete, an attempt at answering every question must be made regardless of whether or not the answers are correct. Writing "I don't know" in an answer will result in an incomplete, getting an answer completely wrong in a good-faith attempt will still count for a complete grade. No extensions will be given on homework assignments, however, you may skip 2 of the 12 assignments without grade penalty and no questions asked. It is to your benefit to complete all homework assignments if you can, as assignments are meant to help you prepare for the final paper and exams. If you complete a homework assignment late, I will correct it so you can learn from the assignment, but you will not receive credit for completing the assignment on time.

Final paper: There are two deadlines for the final paper. **NO EXTENSIONS WILL BE GRANTED AFTER THE FIRST DEADLINE.** Because learning to write well is a process that often requires multiple rounds of revision, if you turn in your paper by or on the first deadline, you will receive your grade on the paper with comments at least 1 week before the second deadline, and have the opportunity to revise your paper for a higher grade prior to the final deadline. If you turn your paper in at least one week prior to the second deadline, I will do my best to get comments to you on a first-come first-served basis, but I cannot promise you will have enough time to complete revisions. The second deadline can be seen as an automatic extension – if you need extra time to finish the paper, the time between the two deadlines is your extension. You don't have to ask, you don't have to explain, the extension is there if you need it. However, you will lose the guaranteed opportunity to revise your paper for a higher grade if you do not turn your paper in for the first deadline.

Midterm exams: Midterm exams will be in class and closed book. If you need an accommodation (e.g. separate room, longer time) please let Dr. Taft know ASAP so she can make the necessary arrangements. The lowest of the two midterm exam grades will be dropped – even if you don't take the exam at all. This is meant to be an accommodation in case of illness or other emergency.

Final exam: The final exam will be in person. Please do not plan to leave campus before you take the final.

Masking: Currently, the CDC is recommending everyone mask in all indoor spaces due to COVID19. I promise to wear my mask at all classes until cases fall below an average 5 cases per 100,000 persons per day, and I will resume wearing my mask when cases reach an average of 10 cases per 100,000 persons per day. This is an access issue, as masking at these levels will help to ensure that students who have pre-existing conditions (e.g. type 1 diabetes, asthma) or who live with someone who is immunocompromised are able to attend an in

person class with a reasonable level of risk. While I cannot require masks, I ask everyone to at a minimum follow CDC guidelines, and to please consider masking at the same level I do so that this in-person class is accessible to everyone.

Extra Credit: THERE WILL BE NO EXTRA CREDIT GIVEN FOR ANY REASON. There is flexibility built into assignments instead, and I feel extra credit is inherently unfair to students who have additional responsibilities and may not have the time to complete extra assignments.

A note on classes: Absences are fine and do not require an explanation. My lecturing for 4 hours a week will present material, but won't necessarily help you learn. Plus, I expect you to read the textbook and I do not want class time to be just me reading slides of information already covered in the book. Therefore, I will frequently seek to use interactive activities instead of a PowerPoint lecture. This means if you miss a class, there may not be slides for you to review. I am happy to review the material with you if you come to office hours, including any missed activities. The more classes you miss, the less helpful I will be in office hours (for example – one missed activity, no problem, I will review it with you. Two weeks of missed classes? Then you are going to have to wait until I've helped everyone else who has come to office hours and try to squeeze all your questions into whatever time remains.) There is an online section of this course if you need more flexibility than an in-person course can provide.

WEEKLY SCHEDULE

Week 1 – August 24 to August 26		
Wednesday	Class activity: what is a donut anyway? Review of course expectations and syllabus	Please read Chapter 1.1 and 1.2 [EXCEPTION: Reading is not expected to be completed before class]
Friday	PLEASE NOTE CLASS IS IN MARSTON LIBRARY ROOM 308 Searching the biochemical literature and citing research	Homework #1: Finding biochemistry papers assigned
Week 2 – August 29 to September 2		
Monday	Lecture: Genetic information and structure and function	Please read Chapter 1.3 and 1.4
Wednesday	Lecture: Physical Biochemistry	Please read Chapter 2
Friday	Lecture: Finish material from Wednesday Class Activity: Modeling cell membranes	Homework #1 Due Homework #2: Physical Biochemistry work sheet assigned Suggested: Finalize selection of news article for final paper
Week 3 – September 5 to September 9		
Monday	No Class, Happy Labor Day!	NA
Wednesday	Lecture: Nucleic Acid Structure and Function	Please read Chapter 3
Friday	Finish material from Wednesday Class Activity: Tracking COVID19 variants	Homework #2 Due Homework #3: Nucleic acid worksheet assigned

Week 4 – September 12 to September 16		
Monday	Lecture: Amino Acids and Proteins	Please Read Chapter 4
Wednesday	Lecture: Proteins, continued	Please Read Chapter 4
Friday	Class Activity: Fold It!	Homework #3 Due Homework #4: Protein Worksheet assigned
Week 5 – September 19 to September 23		
Monday	Lecture: Protein Functions	Please Read Chapter 6.1 and 6.2 Suggested date to have found the key paper
Wednesday	Lecture: Enzymes	Please Read Chapter 7
Friday	Class Activity: All about enzymes	Homework #4 Due Homework #5: Enzyme worksheet assigned (optional – turn in next Monday for comments before the exam, required due date after exam)
Week 6 – September 26 to September 30		
Monday	Lecture: Cell signaling (NOT on midterm 1)	Please read chapter 8.1, 8.2, and 8.5 If HW #5 is returned today, I will return comments to you before the midterm
Wednesday	Midterm Exam Review Session	Midterm covers material discussed through 9/21 (Chapters 1 to 4, 6.1, 6.2, and 7)
Friday	Midterm Exam #1	
Week 7 – October 3 to October 7		
Monday	Lecture: Glycolysis	Please Read Chapter 9
Wednesday	Class Activity: glycolysis	Homework #5 Due Homework #6 Assigned
Friday	No Class - Happy Homecoming!	
Week 8 – October 10 to October 14		
Monday	Lecture: The citrate cycle	Please Read Chapter 10 Suggested date to have finished identifying resources to cite in paper
Wednesday	Lecture: The citrate cycle, continued	Please Read Chapter 10
Friday	Class activities: The citrate cycle	Homework #6 Due Homework #7 Assigned
Week 9 – October 17 to October 21		
Monday	Lecture: Mitochondria part 1	Please read Chapter 11.1, 11.2, 11.3
Wednesday	TA Lecture: Mitochondria part 2	Please read Chapter 11.4, 11.5
Friday	Class activity: Mitochondria	Homework #7 Due Homework #8 Assigned Suggested date to have paper

		outline complete
Week 10 – October 24 to October 28		
Monday	Lecture: Carbohydrate structure and function	Chapter 13.1 and 13.2
Wednesday	Lecture: Carbohydrate metabolism	Chapter 14
Friday	Class activity: Carbohydrates	Homework #8 Due Homework #9 Assigned
Week 11 – October 31 to November 4		
Monday	Lecture: Lipids structure and function	Chapter 15.1, 15.2, 15.3 Suggested date to have completed first draft of paper
Wednesday	Lecture: Lipid metabolism	Chapter 16
Friday	Class activity: lipids	Homework #9 Due Homework #10 Assigned
Week 12 – November 7 to November 11		
Monday	Lecture: Amino Acid Metabolism	Chapter 17
Wednesday	Class activity: amino acids	Homework #10 Due Homework #11 Assigned (DUE AFTER MIDTERM) Final Paper Deadline #1
Friday	No Class – Happy Veteran’s Day	
Week 13 – November 14 to November 18		
Monday	Lecture: Nucleotide metabolism (Not on exam 2)	Chapter 18
Wednesday	Midterm Exam Review Session	
Friday	Midterm Exam #2	On chapters 8-11, 13-16 (only sections listed as required reading)
Week 14 – November 21 to November 25		
Monday	Lecture: Nucleotide metabolism, continued	Chapter 18
Wednesday	No Class – Happy Thanksgiving!	
Friday	No Class – Happy Thanksgiving!	
Week 15 – November 28 to December 3		
Monday	Lecture: DNA replication, repair, and recombination	Chapter 20.1 and 20.2
Wednesday	Lecture: DNA replication, repair, and recombination	Chapter 20.2 and 20.3
Friday	Class Activity: How does PCR work?	Homework #11 Due Homework #12 Assigned Final Paper Deadline #2
Week 16 – December 5 to December 7		
Monday	Class Activity: Cracking the genetic code	Chapter 21.1, 22.1, and 22.2
Wednesday	Review for Final	Homework #12 Due
FINAL EXAM: DECEMBER 13 AT 10 AM		

Additional Resources:

The tutoring center if you need more help (or come to office hours, I'd love to see you!):

<https://academicresources.clas.ufl.edu/tutoring/>

The writing studio (will help you learn to be a more effective writer – I encourage you to contact them early about your paper): <https://writing.ufl.edu/writing-studio/>

Life in a pandemic is tough, but the UF counseling and wellness center can help: <https://counseling.ufl.edu/>

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluer.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>

Field Code Changed