

BCH 3025: Fundamentals of Biochemistry

BCH 3025

Section F2FB

Class #27461

4 Credit Hours

Spring 2025

Location and Time: Tuesday and Thursday, 11:45 am to 1:40 pm, AND0034

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 30 minutes after most class sessions (if you plan to leave and return, please let Dr. Taft know BEFORE you leave, office hours may be extended if many students have questions). Dr. Taft is also available for office hours by Zoom or in her office at other times, by request. 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

IMPORTANT NOTE: My past students felt it was critical I warn future students that while this is not a completely flipped classroom, I use lecture mainly to review the more difficult parts of the textbook and use a LOT of hands-on activities that require some understanding of the material. **READ YOUR TEXTBOOK PRIOR TO CLASS – IT IS CRITICAL TO YOUR SUCCESS!**

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%
In Class Quizzes	10%
Midterm exam (two exams given, lowest grade dropped)	25%
Final exam	30%
Final paper	25%

Homework: All homework assignments are due by 11:45 am (the start of class) 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. If you are stuck – show your work and your thought process. If you can explain why you are stuck, that counts as a good faith effort. However, short minimal answers that are incorrect without a clear thought process behind them may be judged as an incomplete if the pattern becomes pervasive, either across assignments or on a single assignment. 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.** 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. 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. Please know that students who turn in papers by the first deadline have consistently better final grades than those who wait for the second deadline. Students who use ChatGPT on the final paper frequently do worse than those who do not.

Midterm exams: Midterm exams will be in class and closed book. The lowest of the two midterm exam grades will be dropped – even if you don’t take the exam at all. Please know that it is to your benefit to take all exams, as that way you will become familiar with my testing style. If an exam must be missed for a University

allowable reason, students must notify Dr. Taft by email as soon as possible (so for a religious or planned event, at least 1 week before the event, and for illness as soon as you are reasonably capable of emailing). Students will have one week to make up the exam, and it is the student's responsibility to schedule the make-up time slot. Waiting to the last minute to schedule may mean Dr. Taft does not have the time to proctor the exam prior to the end of the one week make-up period.

Final exam: The final exam will be in person on May 1, 2025 in AND0034. Please do not plan to leave campus before you take the final, as failure to take the final without a university acceptable reason will result in the grade of 0 for the final.

Masking: I have no way of knowing if anyone in class is at high risk from COVID19, but I want every student to be able to access in person learning. I will wear an N95 mask every day – if any students need to lip read, please let me know ASAP so that I can use a mask with a clear plastic window. If COVID19 is a serious concern for you, please let me know as I am willing to bring masks for students, but please know that I cannot compel other students to wear a mask.

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.

Course grades: An A will be award to students receiving 94%-100%, A- 90%-93.99%, B+ 87%-89.99%, B 84%-86.99%, B- 80%-83.99%, C+ - 77%-79.99%, C 74%-76.99%, C- 70%-73.99%, D+ 67%-69.99%, D 64% - 66.99%, D- 60% - 63.99%. Grades below 60% will be considered failing.

Student Disability Accommodations: If you need an accommodation (e.g. separate room, longer time for exams, etc.) please let Dr. Taft know ASAP so she can make the necessary arrangements. Quizzes are anticipated to take students 3 minutes, but Dr. Taft will allow 6 minutes per quiz to accommodate the need for more time.

A note on classes: I do not take attendance. But I also do not state on the syllabus when in-class quizzes will be. There are no make-ups for missed quizzes, however, you may drop up to three quiz grades. If you document every absence with a university permitted reason, and absences remain less than 12 days total, Dr. Taft will work to arrange an alternative assignment for the quizzes if necessary. If you miss a class, it is your responsibility to learn the material covered. Dr. Taft is willing to meet in office hours to review past materials if absences are sporadic, however the class will not be retaught in office hours so chronic absenteeism will result in less helpful office hours.

WEEKLY SCHEDULE

Week 1 – January 13-24		
Tuesday	Class activity: what is a donut anyway? Review of course expectations and syllabus Lecture: Genetic information	Please read Chapter 1 [EXCEPTION: Reading is not expected to be completed before class] No homework

	structure and function	
Thursday – CLASS IN MARSTON LIBRARY	Searching the biochemical literature and citing research	HW #1 assigned
Week 2 – January 20 to August 24		
Tuesday	Lecture: Physical Biochemistry	Please read Chapter 2
Thursday	Class Activity: Modeling cell membranes	HW#1 Due HW#2 Assigned
Week 3 – January 27 to 31		
Tuesday	Lecture: Nucleic Acid Structure and Function	Please read Chapter 3
Thursday	Class Activity: Modelling PCR and Sanger Sequencing	HW#2 Due HW#3 Assigned
Week 4 – February 3 to 7		
Tuesday	Lecture: Amino Acids and Proteins	Please Read Chapter 4
Thursday	Class Activity: Fold It!	Homework #3 Due Homework #4 Assigned
Week 5 – February 10 to 14		
Tuesday	Class Activity: Fold It! Continued Lecture: Protein Function	Please Read Chapter 6.1 and 6.2 Suggested date to have found newspaper article and key paper
Thursday	Lecture: Enzymes	Please Read Chapter 7 Homework #4 Due Homework #5 Assigned Suggested: Finalize other scientific sources for paper
Week 6 – February 17 to 21		
Tuesday	Class Activity: Brick Breaking Midterm Review	
Thursday	Midterm Exam #1	Midterm covers all material discussed through 9/23 (Chapters 1 to 4, 6.1, 6.2, and 7)
Week 7 – February 24 to 28		
Tuesday	Lecture: Cell Signaling	Please read chapter 8.1, 8.2, and 8.5
Thursday	Lecture: Catch up, review midterm if necessary Class activity: Cell Signaling	Homework #5 Due Homework #6 Assigned Suggested: Have outline of paper complete
Week 8 – March 3 to 7		
Tuesday	Lecture: Glycolysis	Please read chapter 9
Thursday	Class Activity: Glycolysis	Homework #6 Due Homework #7 Assigned
Week 9 – March 10 to 14		
Tuesday	Lecture: The citrate cycle	Chapter 10
Thursday	Class Activity: Citrate Cycle	Chapter 10 Homework #7 Due Homework #8 Assigned

Week 10 – March 17 to 21 (Spring Break!)		
Tuesday	No Class!!!	Enjoy your break!
Thursday	No Class!!!	Enjoy your break!
Week 11 – March 24 to 28		
Tuesday	Lecture: Oxidative Phosphorylation	Please Read Chapter 11
Thursday	Class activity: Oxidative Phosphorylation	Homework #8 Due Homework #9 Assigned Final paper deadline #1
Week 12 – March 31 to April 4		
Tuesday	Lecture: Carbohydrates	Chapter 13.1 and 13.2
Thursday	Class activity: Carbohydrates	Homework #9 Due Homework #10 Assigned
Week 13 – April 7 to April 11		
Tuesday	Lecture: Lipids Midterm #2 Review	Please Read Chapter 15.1, 15.2, and 16
Thursday	Midterm #2	On chapters 7-11, 13 (only sections listed as required reading) HW# 10 Due
Week 14 – April 14 to 18		
Tuesday	Lecture: Lipids part 2	Chapter 17
Thursday	Lecture: Amino Acid Metabolism	Please Read Chapter 17 HW #11 Due HW #12 Assigned Final Paper Deadline #2
Week 15 – April 21 to 23		
Tuesday	Final Review	HW #12 Due
FINAL EXAM: May 1 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 as a student 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/>

In class recording: Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal education use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and deliver by an instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentation such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless, of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Academic Honesty: UF students are bound by The Honor Pledge which states “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. See the [UF Conduct Code website for more information](#). If you have any questions or concerns, please consult with Dr. Taft.