BCH4024: INTRODUCTION TO BIOCHEMISTRY & MOLECULAR BIOLOGY

SPRING 2026 – 4 CREDIT HOURS

IN-PERSON LECTURES AT MEDICAL SCIENCES BUILDING AUDITORIUM ROOM N2-200

M/T/W/F 4TH PERIOD (SECTION: 10701) OR 6TH PERIOD (SECTION: 10704)

COURSE COORDINATOR:
Lauren Douma, Ph.D.
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ARB R3-254
352-294-8683 (use email)
Will respond within 48 hours Mon-Fri

DRC ACCOMMODATIONS:
BIOCH-MAIL-BCH4024@mail.ufl.edu
Do NOT send your letter to Dr. Douma
Letters must be sent at least 3 business days prior to exam
Health-related absence accommodations MUST be discussed with the coordinator at the beginning of the semester.

COURSE INSTRUCTORS:
Antonette D. Bennett ("ADB"), Ph.D.
MBI LG-179
dendena@ufl.edu

Mireille J. Aleman ("MJA"), Ph.D.
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Mireille.aleman@ufl.edu

Lauren G. Douma ("LGD"), Ph.D.
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Lauren.Douma@medicine.ufl.edu

DISCUSSION HOURS:
AKA office hours. In the lecture auditorium on Mondays, Tuesdays, and Fridays from 2-3 PM, unless otherwise stated by the lecturing professor.

MEET WITH DR. DOUMA:
Dr. Douma is available to meet one-on-one with students to discuss study habits, accommodations, grade inquiries, and other course management-related matters. Click the "Meet w/ Dr. D" link on the Canvas homepage to schedule a meeting.

COURSE WEBSITE:
http://elearning.ufl.edu

COMMUNICATION: Students are responsible for keeping up with announcements on Canvas and in class. Professors will communicate with individual students using Canvas or UFL email. Note that the UFL email spam filter may filter out emails from gmail, yahoo, or any other non-UFL email addresses.

RECOMMENDED TEXTBOOK: *Lehninger Principles of Biochemistry, 8th edition, by David L. Nelson and Michael M. Cox. New York: Macmillan Learning, 2021.* The book can be purchased through UF All Access. Used copies of the 7th edition are widely available. **The textbook and Achieve are NOT required**. All Access course ID: kuczsa

UF All Access instructions: https://drive.google.com/file/d/1tpBN9jhOz-m103cnZYE1qtBQrFIQiwxM/view

COURSE DESCRIPTION: BCH4024 provides a survey of the structure, function, and metabolism of amino acids, proteins, carbohydrates, lipids, and nucleic acids. It introduces concepts in molecular biology, including replication, gene regulation, transcription, translation, and control of cell growth.

PREREQUISITES: Organic Chemistry (CHM 2210 and 2211, CHM 2215 and 2216, or their equivalents at other universities). CHM 2200 is not acceptable.

COURSE GOALS: By the end of this course, students should be able to:

- Explain the fundamental principles of biochemistry and molecular biology.
- Apply the foundational concepts to the analysis and interpretation of biochemical observations.
- Describe the purpose and interpret the results of common biochemical and molecular techniques.
- Recognize the connection between the basic processes of cells and their impact on overall human health.

SUPPLEMENTARY INSTRUCTION (SI) PROGRAM:

The Supplementary Instruction (SI) Program is a free tutoring program for all BCH4024 students. The program is run by SI Leaders, who are trained peers and previously excelled in BCH4024. The program offers multiple ways for students to get help in BCH4024:

- **Weekly Group Sessions:** Facilitator-led group study in which a trained peer leads weekly tutoring sessions to review challenging course material through active learning techniques (i.e., practice problems, discussion, Google Jamboards, etc.)
    - An announcement containing all details regarding SI sign-up will be posted on Canvas.
    - Sessions will begin the second week of class.
    - Attendance is required to stay in the program. You are permitted a total of 3 absences **FOR THE ENTIRE SEMESTER, regardless of documentation**.

- **Biweekly Zoom "Deeper Dives" on Difficult Subjects:** Informal live review and Q&A sessions with trained peers who have been SI Leaders for at least 2 semesters. They can review information with you, go over practice problems, and provide advice on how to tackle the course.
    - No sign-up is required! Just hop on Zoom at the designated times posted on Canvas under Zoom Conferences.

- **Anonymous Q&A on Campuswire:** Informal asynchronous (not-live) Q&A with trained peers who have been SI Leaders for at least 2 semesters. You can post your questions anonymously to the page, and you are guaranteed a response within 72 hours (but usually sooner).
    - https://campuswire.com/p/G7881FBE7
    - You will need to create Campuswire account using UFL email address (check spam folder for email after registering).
    - Once you have created an account, add the course using course code **7563**.
    - Download Campuswire App for Android or iPhone: https://campuswire.com/download

- **SI YouTube Page:** Short videos will focus on high-yield topics and/or topics that students tend to have difficulty understanding.
    - https://www.youtube.com/@BCHSIProgram/videos

All questions about the SI Program should be directed to the SI Coordinators at BCH4024.SI@gmail.com

COURSE POLICIES:

PARTICIPATION REQUIRED: Students will use free access to iClicker Cloud to submit responses to feedback questions during the lecture listed on their class registration.

- You are **required** to be physically present in the lecture hall to answer questions via GPS location detection.
    - Students caught trying to answer any iClicker question without being physically present in the classroom directly violate the honor code and will be reported.
- You must participate in **ALL** questions during a lecture to receive all participation points for that day (all or nothing).
    - Points will be awarded based on participation, not accuracy, but students must put an appropriate answer (i.e., if the professor asks for a number answer and a student puts a letter or word, they will not receive credit).
- Participation in 80% of the lecture days will result in a student earning 100% for participation.
    - The 20% buffer days (approximately 10 classes) are for unexpected emergencies, illness, hurricane days, technical issues, no internet connection, missed iClicker questions, academic travel, etc. You do not need to send documentation.
    - Students should only miss class for emergencies.
    - Students who use up their 20% buffer and miss additional lectures will begin losing points on their participation grade.
- iClicker grades will be synced with Canvas every week.
    - If you do not see iClicker participation scores in Canvas grades, then you have not completed registration successfully, and it is your responsibility to contact iClicker support and have it fixed *before the last day of class.*
- iClicker Login Instructions: click here
- iClicker Support: https://mhe.my.site.com/iclicker/s/contactsupport

LECTURE RECORDINGS: Lectures will be recorded and available on Canvas under recordings within "Zoom Conferences" within 24 hours of the lecture. If technical issues arise and there is an issue with the lecture recording, students are still responsible for knowing all the information in that lecture for exams.

THERE IS NO ZOOM OPTION, AND STUDENTS CANNOT JOIN REMOTELY.

SOCIAL MEDIA: Students sharing course materials or information through any large social media site, such as GroupMe or Chegg, is strictly **PROHIBITED**. Establishing or participating in a site will be considered a violation of the UF Honor Code. The Honor Code states, Section 3 Violations of the Student Honor Code Item 2, "Using any materials or resources, through any medium, which the Faculty has not given express permission to use and that may confer an academic benefit to the Student." (page 13). **SI Leaders are the only individuals permitted to make GroupMe boards for BCH4024.**

CLASS DEMEANOR: All members of the class are expected to follow rules of common courtesy in all lectures, SI sessions, email messages, discussion hours, and any other course-related events. This includes:

- Silence phones before class begins.
- If you want to record the lecture, put your recording device on the stage before class begins.
- **Do not talk during lecture.** Sound travels very easily in the lecture hall, and everyone can hear conversations, even if you are in the back of the lecture hall. If you need to have a conversation, go outside.
- If you arrive late or leave early, sit towards the back of the auditorium so you do not disturb your classmates. Also, do not let the auditorium doors slam shut.
- Do not pack up your things until class is over.
- **All students, SI Leaders, and professors should be treated with respect.**

COURSE EVALUATION: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways:

1. The email they receive from GatorEvals,
2. Their Canvas course menu under GatorEvals, or
3. The central portal at https://my-ufl.bluera.com

Guidance on how to provide constructive feedback is available at https://gatorevals.aa.ufl.edu/students/.

UF POLICIES & RESOURCES: For information about UF academic policies and resources, please visit: https://go.ufl.edu/syllabuspolicies

EXAMS WITH HONORLOCK:

ASSEMBLY EXAM DATES: All exams will be administered through Canvas using Honorlock. BCH4024 is designated as an assembly exam course. Exams will open at the following times:

1. Exam 1 (100 pts): Thursday, February 12 at 8 PM
2. Exam 2 (100 pts): Wednesday, March 4 at 8 PM
3. Exam 3 (100 pts): Monday, April 6 at 8 PM
4. Exam 4 (100 pts): Monday, April 27 at 10:00 AM *NOTE TIME

Exams will open at the time listed above, and you will have 30 minutes to begin. For example, Exam 1, you MUST begin between 8-8:30 PM. If you begin late, your exam will be invalid.

MAKE-UP EXAM POLICY: Make-up exams will be provided in case of an approved academic conflict or emergency.

- **No student will be allowed to take more than one makeup exam**.
- No makeup exam is available for Exam 4.
- Valid reasons for missing an exam include illness, injury, or some unforeseeable academic conflict. **Vacations ARE NOT a valid excuse**.
- Those with academic conflicts or religious observations must notify the coordinator of the conflict at least ***1 week before*** the exam. You do not need to follow the instructions below.

To submit a makeup exam request:

1. *Submit a DSO Instructor Notification request (DO NOT send documentation directly to Dr. Douma): https://care.dso.ufl.edu/instructor-notifications/*

2. *After submitting the DSO request, email Dr. Douma with the DSO confirmation number and confirm that you have read the makeup exam policy.* ***This must be completed within 24 hours of the exam.***

Makeup exams will take place exactly **one week** after the originally scheduled exams. Makeup exams are not cumulative and are designed for equal difficulty. ***There is no make-up for a make-up exam.***

EXAM FORMAT:

All exams will be comprised of 50 multiple-choice questions worth 2 points per question (100 points total). There are no cumulative exams.

Students will have 90 minutes to complete the exam + additional 20 minutes for possible technical issues (110 minutes total).

HONORLOCK POLICIES:

Honorlock proctoring will be used for exams, which allows you to take the exams in the comfort of your own home while ensuring academic integrity. **ALL students are required to know their testing computer/webcam/room no later than one week before Exam 1.**

For every exam, you must use:

- Chrome web browser: *https://www.google.com/chrome/*
- Honorlock: *http://www.honorlock.com/extension/install*
- Webcam with a camera view that matches 1 of the following images:

Option 1: Internal camera setup to show scratch paper up to head. If you cannot get this view with your internal camera, you MUST use an external camera (option 2).	**Option 2**: Place an external camera off to your side so we can see your scratch paper up to your head. We must see what you are looking at.

- Your eyes must remain on your scratch paper or computer screen.
- You must be the only person present in your testing room.
- A pen/pencil and two (2) blank pieces of scratch paper are permitted.
- ***No other items are permitted while taking the exams.***
- Honorlock will provide a scientific calculator for all exams.

- Apple Handoff must be turned off on Macs.
- Honorlock will perform a room scan before you enter the actual exam. You must do a full 360 scan of your room. Partial scans may invalidate your exam.
    - *https://honorlock.kb.help/completing-a-room-scan-using-honorlock/*
- It is highly recommended to take exams on a computer that is HARD-WIRED to the internet. WiFi may provide an unstable connection.
- ALL students must take the practice Honorlock Practice quiz on Canvas ***before EVERY exam***. Failure to take the quiz before an exam means you accept responsibility for any technical issues that occur.

Failure to follow these policies, or cheating of any kind will NOT be tolerated and will be reported to the UF Honor Court. A grade of 0% will be assigned if a student is found guilty of cheating or not following exam policies.

RESERVING ROOM/WEBCAM: If you need a room/stable internet/webcam, see the links below. These are all first-come, first-served, so make reservations well in advance of the exam.

You can rent webcams from UF libraries here: https://uflib.ufl.edu/find/tech-tools/

Dr. Douma has a small number of webcams for EMERGENCIES only. If you need one because your camera broke, email Dr. Douma directly.

You can reserve a testing/study room here (please note some rooms have computers/webcams, some don't): https://libcal.uflib.ufl.edu/r/search

TECHNICAL ISSUES: Each exam has 20 additional minutes built in for possible technical issues. Most technical issues fall within this timeframe. **IF YOU RUN INTO A SIGNIFICANT TECHNICAL ISSUE, proceed at a normal pace. As long as you started on time and took the Honorlock practice quiz, Dr. Douma will work with you to give you a fair chance at the questions YOU DID**

NOT SEE. If you speed through the exam and see all the questions, there will be nothing we can do.

Any requests for make-up exams due to technical issues MUST be accompanied by the Honorlock chat transcript and/or ticket number received from the UF Help Desk when the problem was reported to them. You MUST e-mail the course coordinator immediately if you wish to request a make-up.

The course instructors are unable to assist with technical issues during an exam. If you experience a technical issue during the exam, you must immediately contact Honorlock IT support via:

- https://honorlock.com/support/
- The chat icon is in the bottom-right corner of the exam screen.

If a student experiences issues with their computer or accessing Canvas, contact the UF Computer Help Desk via:

- http://helpdesk.ufl.edu
- (352) 392-HELP - select option 2

EXAM REVIEWS:

Exams will not be released to the entire class for review. Be assured that exams undergo a rigorous statistical review of every individual question. The faculty also considers student concerns voiced *immediately* after exams end. Adjustments to the answer key may occur, and points will be awarded based on the results of the faculty assessment.

If students want to review their exam, they must email the course coordinator **within one week** after grades are released. There is NO possibility of additional points once grades are released. Exam reviews are purely for educational purposes and ARE NOT an appropriate means of gaining a letter of recommendation.

STUDYING HABITS FOR SUCCESS:

The following habits are critical for success in BCH4024:

- **Attend class in person.** Students who regularly attend class tend to perform significantly better than those that do not attend. Exam material includes slides and what is verbally stated in lecture.
- **Read lecture slides before class.** You will get an idea of what will be covered in class. Also, you will not be overwhelmed by reading the slides for the first time while trying to listen to the lecturer.
- **Review lecture slides & class notes the same day.** On the SAME day as a class, review the lecture slides once again and review the notes you took during class. There is a lot of information in this course, so you want to review a little bit every single day.
- **Complete practice questions EVERY week.** Testing yourself is the only way to know if you understand the information. You should be able to explain why every right answer is correct AND why every wrong answer is incorrect. Write down these explanations next to each answer choice. Do not wait until the week of the exam to do practice questions.
- **Go to the professor's discussion hours.** Let us help you! The professors in this course are happy to help clarify concepts during their discussion hours. Additionally, questions asked may help you think about the course information differently. Seek out help early in the semester!
- **Participate in the SI Program.** The SI Program is the most valuable resource for BCH4024. To make the most of your SI session, be sure to attend lecture and review the material BEFORE attending your session. Use Campuswire and Zoom reviews to get questions answered outside of your SI session (or if you are not in a SI group).
- **Teach the material.** Teaching, or verbally explaining concepts, is one of the best ways to learn. Passive studying will not help you understand the material. In this course, you need to know the information AND understand the information so you can apply it to various situations.

GRADING POLICIES:

LETTER GRADE CALCULATION:

- Students' final letter grades will be determined based on performance on the Course Orientation quiz, class participation measured by GPS-enabled iClicker, and four (4) multiple-choice exams. Exams will cover the material discussed verbally in the lecture and presented on slides. None of the exams are cumulative. ***There is NO EXTRA CREDIT or option to drop an exam***.

- For more information see the BCH4024 Testing and Grading Policies in Canvas. The UF grading policy is available at https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Assignment	% of Grade
Course Orientation Quiz (Due 1/23 at 11:59 PM – no extensions)	2%
iClicker Participation (Lowest 20% scores will be dropped)	6%
Exam 1 (50 multiple-choice questions; 100 points total)	23%
Exam 2 (50 multiple-choice questions; 100 points total)	23%
Exam 3 (50 multiple-choice questions; 100 points total)	23%
Exam 4 (50 multiple-choice questions; 100 points total)	23%

GRADING SCALE: *Letter grades will be assigned using the following grading scale. Grade cutoffs will never be raised higher than what is listed below, but the course coordinator may lower the grade cutoffs at their discretion. Any changes will be communicated with students after exams on Canvas.* ***Students should assume that there will be no adjustments to the grade scale.***

Letter grade	Percent %
A	100 - 92
A-	91.9 - 90
B+	89.9 - 87
B	86.9 - 83
B-	82.9 - 80
C+	79.9 - 77
C	76.9 - 70
C-	69.9 - 67
D+	66.9 - 63
D	62.9 - 60
D-	59.9 - 57
E	< 57

LECTURE AND EXAM SCHEDULE:

*** = DATES WILL BE USED AS BACKUP LECTURE DAYS IF NEEDED (I.E., HURRICANE DAYS).**

Day	Date	Lecturer	Topic
Monday	01/12	LGD/ADB	Course Introduction/Biological Organization
Tuesday	01/13	ADB	Water, Molecular Interactions, and Acid-Base Chemistry
Wednesday	01/14	ADB	Amino Acids
Friday	01/16	ADB	Peptides and Peptide Bonds
Friday	**01/16**		**Drop/Add Ends at 11:59 PM**
Monday	**01/19**		**No Class (Martin Luther King Jr. Day)**
Tuesday	01/20	ADB	Three-Dimensional Structure of Proteins
Wednesday	01/21	ADB	Protein Dynamics and Protein Folding
Friday	01/23	ADB	Protein Separation and Purification
Friday	**01/23**		**Course Orientation Quiz Closes at 11:59 PM - NO EXTENSIONS**
Monday	01/26	ADB	Protein-Ligand Interactions
Tuesday	01/27	ADB	Enzyme Mechanism and Catalysis I
Wednesday	01/28	ADB	Enzyme Mechanism and Catalysis II
Friday	01/30	ADB	Enzyme Kinetics and Inhibition

Monday	02/2	ADB	Enzyme Regulation and Bioenergetics
Tuesday	02/3	ADB	Carbohydrates Structure and Function
Wednesday	02/4	ADB	Lipids Structure and Function
Friday	02/6	MJA	Membranes
Monday	02/9	MJA	Membrane Proteins
Tuesday	02/10	MJA	Membrane Protein Transporters
Wednesday	02/11	MJA	GPCRs
Thursday	**02/12**	**EXAM 1**	**Must begin exam between 8-8:30 PM: Lectures from 1/12 to 2/4**
Friday	02/13	MJA	Other Signaling Pathways
Monday	02/16	MJA	Glycolysis
Tuesday	02/17	MJA	Gluconeogenesis
Wednesday	02/18	MJA	Regulation of Opposing Pathways/Pentose Phosphate Pathway
Friday	02/20	MJA	Glycogen Metabolism
Monday	02/23	MJA	The Pyruvate Dehydrogenase Complex & The TCA
Tuesday	02/24	MJA	The Pyruvate Dehydrogenase Complex & The TCA
Wednesday	02/25	MJA	Electron Transport Chain

Friday	02/27	MJA	Oxidative Phosphorylation
Monday	03/2	MJA	Introduction to Lipid Catabolism: β-oxidation and Ketone Bodies
Tuesday	03/3	MJA	Fatty Acid Synthesis
Wednesday	03/4	MJA	Cholesterol Synthesis and Plasma Lipoproteins
Wednesday	**03/4**	**EXAM 2**	**Must begin exam between 8-8:30 PM: Lectures from 2/6 to 2/27**
Friday	03/06	MJA	Introduction to Nitrogen Metabolism
Monday	03/9	**No Class (Aleman & Douma at ASBMB)***	
Tuesday	03/10	MJA	The Urea Cycle **RECORDED LECTURE**
Wednesday	03/11	MJA	Transamination and Deamination Reactions
Friday	03/13	MJA	Ammonia Toxicity
Mon – Fri	**03/16 – 03/20**		**No Class (Spring Break)**
Monday	03/23	MJA	Biosynthesis of Some Amino Acids and Specialized Molecules
Tuesday	03/24	MJA	Pyrimidine Synthesis and Regulation
Wednesday	03/25	MJA	Purine Synthesis
Friday	03/27	MJA	Nitrogen Metabolism Applications to Health and Disease
Monday	03/30	LGD	DNA Structure & Genome Organization

Tuesday	03/31	LGD	DNA Replication
Wednesday	04/1	LGD	DNA Replication
Friday	04/3	LGD	Prokaryotic Transcription and Gene Regulation
Monday	**04/6**	**Exam 3**	**NO CLASS* Must begin exam between 8-8:30 PM: Lectures from 3/2 to 3/27**
Tuesday	04/7	LGD	Prokaryotic Transcription and Gene Regulation
Wednesday	04/8	LGD	Eukaryotic Transcription and Gene Regulation
Friday	04/10	LGD	Eukaryotic Transcription and Gene Regulation
Friday	**04/10**		**Drop/Withdraw Deadline at 11:59 PM**
Monday	04/13	LGD	Post-Transcriptional RNA Processing
Tuesday	04/14	LGD	Translation
Wednesday	04/15	LGD	DNA Damage & Repair
Friday	04/17	LGD	DNA Damage & Repair
Monday	04/20	LGD	Cell Cycle
Tuesday	04/21	LGD	Cancer Biology
Wednesday	04/22	LGD	Cancer Biology
Monday	**04/27**	**EXAM 4**	**Must begin between 10-10:30 AM: Lectures from 3/30 to 4/22**

LETTERS OF RECOMMENDATION:

Our teaching team receives dozens of letters of recommendation (LOR) requests every semester. While we review each request and assess them on a case-by-case basis, we nonetheless try to adhere to some general principles to ensure fairness and consistency. Below are a few tips and suggestions to help students enrolled in BCH4024 navigate the process.

- **Class performance:** In general, students who performed very well will be considered. Obtaining a high grade in the course (A or A-) is paramount. While from time to time we may consider students who did not perform as well (see personal connection below), we must prioritize students based on their performance in the course

- **Single Request:** While the course is team-taught, we strongly recommend students only ask 1 instructor in the course for a letter – asking several instructors in the same course would decrease the strength of your application and is discouraged.

- **Personal connection:** Most of the time, our instructors will agree to write a letter for students with whom they have interacted often and regularly – this means that students should make every effort to be known by the instructor. This is particularly important for students who may encounter extenuating circumstances that could affect their performance in the course. While we typically consider requests from students with high GPAs, we prioritize the personal connection above all else. Hence, in addition to attending lectures, you should try to:
    - Introduce yourself
    - Actively participate in class
    - Attend office hours regularly
    - Meet with the professor one-on-one

- **Timeline:** While we wait until after the semester has concluded and final grades are posted to commit to writing a letter, we strongly encourage you to make your intentions known early during the semester in which you are taking the course. Let the instructor know that you may be requesting a LOR. Preparing documents such as unofficial transcripts, a resume, and a rough draft of your personal statement early is encouraged, as they can help instructors draft a strong letter on your behalf. Please note that:
    - If you wait a full year or more after completing the course to ask for a letter, it could be difficult for any of us to remember who you were.
    - If you ask for a letter just weeks prior to the application deadline, it will be nearly impossible for anyone to agree to write a letter.

- If you have had no communication with the instructor from whom you ask for a recommendation, you may not be able to get one.

- **Communication:** We are all very busy and have commitments that extend outside of BCH4024. We strongly encourage students to reach out via email and to be patient. Additionally, having a record of communication is extremely helpful for revisiting previous discussions when it comes time to write a letter. While it can be helpful to meet in person, we encourage you to reach out via email first. Stopping by without an appointment is discouraged. If you do make an appointment, please be clear and transparent about the reason for which you would like to meet with the instructor.
    - **DO NOT contact the BMB Department office for letter of recommendations.**

Disclaimer: The professors in the course reserve the right to change the syllabus at any time. This version of the syllabus represents our current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected. Students are responsible for keeping up with all Canvas and in-person class announcements.