

**FALL 2021 COURSE SYLLABUS**  
**BCH 4024: INTRODUCTION TO BIOCHEMISTRY AND MOLECULAR BIOLOGY**  
**COURSE COORDINATOR: Dr. Lauren G. Douma**

**Credit:** four (4) hours

**Course Objectives:** BCH 4024 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) or consent of course coordinator. CHM 2200 is not an acceptable prerequisite for BCH 4024.

**Recommended Text:** *Lehninger Principles of Biochemistry, 8th edition*, by David L. Nelson and Michael M. Cox. New York: Macmillan Learning, 2021. Textbooks may be bought at the Health Center Bookstore (Room MG-15) and online as e-books. Used copies of the 6<sup>th</sup> and 7<sup>th</sup> editions are widely available.

**Meeting Times and Places:** Lectures are Mondays, Tuesdays, Wednesdays, and Fridays (4th and 6th periods) in the second-floor Stetson MSB (Medical Sciences Building) Auditorium (Room N2-200).

**COVID-19 Related Practices:** UF Health guidelines state that ALL individuals, regardless of vaccination status, are **required** to wear a mask while inside any area of the academic health center (which includes MSB N2-200).

**Attendance:** We want to emphasize that attendance is central to success in this course. Students who regularly attend class and seek assistance or clarification score higher in BCH 4024 than those who do not. Office hours for lecturers will be announced in class and posted on Canvas.

**Web Page:** This syllabus, expanded policies, and other information about BCH4024 are available on Canvas. The syllabus is also available at: <http://biochem.med.ufl.edu/academics/undergraduate-courses>.

**Lecture Notes:** ALL faculty lecture notes for this course are available **ONLY** at the Canvas site under "Modules." All other course-related files are also there. There is NO approved course package.

**Lecture Recordings:** Live lectures will be recorded for review purposes. Videos are expected to be on the Modules page within 24 hours after the lecture is given in person, but could take longer depending on how long Zoom takes to process the video. We do not expect technical issues, but if something does occur (i.e., campus internet is down) and we are unable to record the lecture, students are still responsible for that information. Our auditorium is not outfitted with HyFlex technology.

**Supplemental Instruction:** The SI program is very popular and highly effective. We strongly encourage all students participate. During the first week of class, an announcement will be posted containing all details regarding SI sign-up. Individual SI leaders will make an announcement in their group's Canvas page before their first scheduled SI session. All SI sessions will be held online via Zoom.

**Tests and Grading:** All exams will be administered through Canvas/Honorlock. BCH4024 is designated an assembly exam course and the UF registrar has assigned us exam dates and times. Exams 1-2 are scheduled for Thursdays September 23<sup>rd</sup> and October 14<sup>th</sup>. Exam 3 is scheduled for Friday November 12<sup>th</sup>. Exam 4 will be on Thursday December 16<sup>th</sup>. Times are specified in the course outline below.

The four, ninety-minute examinations are each worth 100 points, with a course total of 400 points. There will be 50 multiple-choice questions on each exam. Students' final letter-grades will be determined solely based on performance on exams. Exams will cover the material discussed in the lectures and presented on PowerPoint slides. There is **NO EXTRA CREDIT**. For more detailed information on grading see the BCH4024 Testing and Grading Policies in Canvas. Information on the UF grading policy is available at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

By agreement of the faculty, BCH4024 will **NOT** allow students to review individual exam questions after an exam. Be assured that exams undergo a rigorous statistical review of every individual question. The faculty also consider student concerns voiced immediately after exams. Adjustments to the answer key may occur and extra points will be awarded based only on the results of the faculty assessment. Dr. Douma is willing to review exam results with individual students upon request. Please note that Dr. Douma will **NOT** discuss whether questions were "fair" and there is **NO** possibility of gaining any additional points.

**Honorlock:** All BCH4024 exams will be administered using the Honorlocks Chrome extension (<http://www.honorlock.com/extension/install>). Honorlock will provide a scientific calculator. For all exams you must use Chrome web browser, a computer that is connected to the internet, and a webcam (external or internal) which can be turned to give a 360° view of your testing room. You are expected to take the exam on a computer that is **HARD-WIRED** to the internet to avoid loss of internet connection during the exam. If your connection is dropped, the exam timer will not stop. Honorlock technical support can be reached at: <https://honorlock.com/support/>

**Technical Issues:** Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu). If you experience technical difficulties during an exam, contact Honorlock support immediately. Honorlock technical support can be reached at: <https://honorlock.com/support/>. Dr. Douma cannot help you with connection problems!

**Make Up Exams:** A make-up examination is available for students who miss **ONE** of the first three exams with the **PRIOR PERMISSION** of **DR. DOUMA**. The student is expected to provide some acceptable reason for his/her absence. Examples of reasons for missing an exam include illness, injury, or some unforeseeable scheduling conflict. Written documentation will be expected to support all makeup requests. All make-up exams are on Thursday, November 18<sup>th</sup>. Make-up exams are not cumulative and are designed for equal difficulty. Students failing to take an exam will receive zero points for that test. No make-up exam is available for Exam 4, so to complete BCH4024 students must take Exam 4 as scheduled.

**DRC Accommodations:** Students requesting special-needs accommodation for testing must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student. During the first two weeks of class, it is the student's responsibility to provide this documentation to [BIOCH-MAIL-BCH4024@mail.ufl.edu](mailto:BIOCH-MAIL-BCH4024@mail.ufl.edu).

**Course Communications:** Faculty announcements are made through Canvas and students are responsible for staying up-to-date with all announcements. Dr. Douma will communicate with individuals using email to your **ufl.edu** account. We cannot use gmail, yahoo, or any other email for official business. Questions about course organization, including exams and grades, should be directed to Dr. Douma via email (not telephone). Each lecturer is responsible for his/her own material. Lecturers will announce their office hour format when their section begins. Office hours will provide students the opportunity to ask questions directly to the professor regarding material presented in the lectures. Individual SI Groups will establish their own communication plans.

### **BCH4024 Faculty:**

Dr. Lauren G. Douma, (“LGD”) and Course Coordinator

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[ldouma@ufl.edu](mailto:ldouma@ufl.edu)

DRC Accommodation Letters and Inquiries: [BIOCH-MAIL-BCH4024@mail.ufl.edu](mailto:BIOCH-MAIL-BCH4024@mail.ufl.edu)

Dr. Robert McKenna (“RMK”)

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Dr. Daniel L. Purich (“DLP”)

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Dr. William L. Zeile (“WLZ”)

Office: R3-206A ARB

[wzeile@ufl.edu](mailto:wzeile@ufl.edu)

**Social Media:** Students sharing course materials or information through any large social media site, such as GroupMe, is strictly **PROHIBITED**. Establishing or participating in a site will be considered as 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).

**In-Class Recording:** Students are allowed to record video or audio of class lectures (A class lecture does NOT include assessments (quizzes, tests, exams), SI Sessions, private conversations between students in the class or between a student and the faculty or lecturer during a class session). However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational 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.** 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 lecture 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.

**Honor Code:** 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 Honor Code specifies behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct. If you have any questions or concerns, please consult Dr. Douma.

**Course Evaluation:** 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.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

**COURSE OUTLINE FOR  
 BCH 4024: INTRODUCTION TO BIOCHEMISTRY AND MOLECULAR BIOLOGY  
 Fall 2021**

<b><u>Lecture</u></b>	<b><u>Date</u></b>	<b><u>Lecturer</u></b>	<b><u>Lecture Topic</u></b>
1	M 8/23	RMK	Biological Organization
2	T 8/24	RMK	Water, Molecular Interactions, and Acid-Base Chemistry
3	W 8/25	RMK	Amino Acids
4	F 8/27	RMK	Peptides and Peptide Bonds
5	M 8/30	RMK	Three-Dimensional Structure of Proteins
6	T 8/31	RMK	Protein Dynamics and Protein Folding
7	W 9/1	RMK	Protein Separation and Purification
8	F 9/3	RMK	Protein Ligand Interactions
	<b>M 9/6</b>		<b>Labor Day (No Class)</b>
9	T 9/7	RMK	Enzyme Mechanism and Catalysis I
10	W 9/8	RMK	Enzyme Mechanism and Catalysis II
11	F 9/10	RMK	Enzyme Kinetics and Inhibition
12	M 9/13	RMK	Enzyme Regulation and Bioenergetics
13	T 9/14	RMK	Carbohydrates and Glycobiology
14	W 9/15	DLP	Introduction to Metabolism - Part 1: Pathways & Bioenergetics
15	F 9/17	DLP	Digestion and Amino Acid Absorption
16	M 9/20	DLP	Mobilization of Amino Acids
17	T 9/21	DLP	Ammonia Assimilation
18	W 9/22	DLP	Urea Cycle: Averting Ammonia Toxicity
<b>E1</b>	<b>Thursday, Sept. 23 at 8:20-10:10 PM</b>		<b>EXAM 1 [LECTURES 1 THRU 13]</b>
19	F 9/24	DLP	Biosynthesis of Nonessential & Specialized Amino Acids
20	M 9/27	DLP	Pyrimidine Nucleotide Biosynthesis
21	T 9/28	DLP	Purine Nucleotide Biosynthesis Salvage & Degradation

22	W 9/29	WLZ	Lipids
23	F 10/1	WLZ	Biological Membranes
24	M 10/4	WLZ	Membrane Proteins
25	T 10/5	WLZ	Membrane Protein Transporters
26	W 10/6	WLZ	Membrane Protein Signaling 1
	<b>F 10/8</b>		<b>Homecoming (No Class)</b>
27	M 10/11	WLZ	Membrane Protein Signaling 2
28	T 10/12	WLZ	Introduction to Metabolism Part 2
29	W 10/13	WLZ	Glycolysis
<b>E2</b>	<b>Thursday, Oct. 14 at 8:20-10:10 PM</b>	<b>EXAM 2</b>	<b>[LECTURES 14 THRU 27]</b>
30	F 10/15	WLZ	Gluconeogenesis
31	M 10/18	WLZ	Glycogen Metabolism
32	T 10/19	WLZ	Regulation of Carbohydrate Metabolism
33	W 10/20	WLZ	Cellular Respiration
34	F 10/22	WLZ	The Citric Acid Cycle
35	M 10/25	WLZ	Electron Transport
36	T 10/26	WLZ	Oxidative Phosphorylation
37	W 10/27	WLZ	Introduction to Lipid Metabolism
38	F 10/29	WLZ	Ketones and Fatty Acid Synthesis
39	M 11/1	WLZ	Regulation of Fatty Acid Metabolism
40	T 11/2	WLZ	Cholesterol Synthesis
41	W 11/3	WLZ	Plasma Lipoproteins
42	F 11/5	WLZ	Review
43	M 11/8	LGD	DNA Structure and Genome Organization
44	T 11/9	LGD	DNA Replication I

45 W 11/10 LGD DNA Replication II  
F 11/12 Exam 3 (No Class)

**E3 Friday, Nov. 12 at 8:20-10:10 PM EXAM 3 [LECTURES 28 THRU 42]**

46 M 11/15 LGD Prokaryotic Transcription and Gene Regulation  
47 T 11/16 LGD Eukaryotic Transcription and Gene Regulation I  
48 W 11/17 LGD Eukaryotic Transcription and Gene Regulation II

**MAKE-UP Thursday, Nov. 18 at 6:00-8:00 PM Exams 1-3 MU (written permission by Dr. Douma only)**

49 F 11/19 LGD Eukaryotic Transcription and Gene Regulation III  
50 M 11/22 LGD Post-transcriptional RNA Processing  
51 T 11/23 LGD Review/Catch up

**W-F 11/24-11/26 Thanksgiving Break (No Class)**

52 M 11/29 LGD Translation I  
53 T 11/30 LGD Translation II  
54 W 12/1 LGD DNA Damage & Repair  
55 F 12/3 LGD Signal Transduction and Cell Cycle Control  
56 M 12/6 LGD Cancer Biology I  
57 T 12/7 LGD Cancer Biology II  
58 W 12/8 LGD Review/Catch up

**E4 Thursday, Dec. 16 at 12:30-2:30 PM EXAM 4 [LECTURES 43 THRU 58]**