

UNIVERSITY OF CINCINNATI
MCMICKEN COLLEGE OF ARTS & SCIENCES
DEPARTMENT OF CHEMISTRY

Course number: CHEM3040

Course ID: 121078

Course name: INTRODUCTION TO BIOCHEMISTRY

Class Number: 10884

Lecture Room: **Distance Learning** through **WebEx**

No. of credits: 3

Faculty: Bala Addepalli, Kun Liu

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Class hours: Tuesday and Thursday 11:00 AM to 12:20 PM

Office hours: Wed 10:00 to 12:00 noon or by appointment

Course Description:

Biochemistry is an exciting, interdisciplinary science and research of growing importance for several career fields. This introductory course is designed to understand and evaluate the physico-chemical basis of the structure, function, and informational capacity of *bio-organic molecules* (or simply *biomolecules*) found in the living systems. The topics of discussion revolve around *understanding and analyzing* what these biomolecules are, *their properties, structure-function relationships*, how they *carry out biochemical functions* associated with life processes through various interactions, and how even small perturbations can affect their function.

The attendees are expected to possess basic background in *General Chemistry*, introductory *Organic Chemistry*, *chemical nomenclature*, and *cell ultra-structure*.

Course Learning Outcomes:

After successful completion of the course, you will be able to

1. Explain the characteristics of various *classes of biomolecules* present in living organisms in *physical and chemical* terms.
2. Demonstrate how *structure affects function*, and how key structural alterations can impact overall function of the cell.
3. Understand *bioanalytical and bioinformatics techniques* employed to characterize and *infer the evolution* of biomolecules.
4. Illustrate how *cells elicit response to external stimuli* such as hormones.

The entire curriculum in this semester would be taught through Distance Learning. So, every student needs a laptop with internet facility to attend the class sessions, and to take tests. Honorlock will be used for exam proctoring. Sapling learning is used for Homework assignments.

Table: Design of Class activities and materials

Communication	Email and Canvas announcements
Course Materials and Readings	Study materials and reading assignments posted on Canvas
Lectures and Course activities	WebEx sessions
In classwork	Post-class quizzes to be answered on same day
Homework assignments	Sapling Learning
Midterms and Final exam	Online tests using Honorlock Proctoring

Because I drop your three lowest scores for both pre-class and post-class quizzes, there will be no make-up tests available for missed quizzes (for either excused or unexcused absences).

Honorlock's Student Privacy Statement

"Honorlock does not scan your network, your computer, your phone or any other devices on your network. Honorlock has no access to anyone's network or devices, nor could we unless we were given access by the owner or user. Furthermore, Honorlock does not route traffic from your device through our servers in any way." More information can be found here. "https://ituc.service-now.com/kb?id=kb_search&query=honorlock"

Textbook

The **required textbook** for this class is online version of *Lehninger Principles of Biochemistry Ebook w/Sapling Homework. Authors: Nelson & Cox, 7th edition; Publisher: MPS (Macmillan Publishers)*. Any other textbook in combination with lecture notes (power points) and Sapling Learning subscription for homework (see below) could also work.

~~Negotiations are being undertaken to reduce the current price of \$99.99. So do not buy the subscription right away. If you want to access the textbook in the meantime i.e. before you hear from me, you could get trial access~~

~~<https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Grace-Period-Free-Trial>~~

~~I will post the outcome of negotiations on Canvas, hopefully, before the expiry of trial access.~~

The special pricing for textbook has been posted on Macmillan website. Here is the direct link where students can purchase access:

<https://store.macmillanlearning.com/us/search/?text=9781319420444>

The learning commons at UC is offering Peer Tutoring Services. The following message comes from them.

“· The Learning Commons is offering *free* academic assistance and success skills support virtually during our remote operations. Visit our website to learn how to join virtual drop-in tables at the [Math and Science Support \(MASS\) Center](#), or to make a virtual appointment with an Academic Coach or [Peer Tutor](#). For more information about all of our services, visit the Learning Commons website at uc.edu/learningcommons.

· The Learning Commons offers one-on-one Peer Tutoring for this course. Students may schedule individual tutoring appointments to improve their understanding of course materials and develop effective study strategies.

· The Learning Commons offers [Academic Coaching](#). Academic Coaches are UC upper-class students and graduate students who provide one-on-one support in order to encourage success-building practices and habits in students. **Coaching is not course or subject specific, but applicable to all students.**

· The [Academic Writing Center \(AWC\)](#), provides UC students with free writing assistance in nearly all academic disciplines. Students can schedule a virtual appointment with a submit a paper online for feedback from a tutor. **The AWC can help with both discipline-specific documents, as well as non-course-based writing (resumes, scholarship applications, etc.).**

· Perhaps you don't need assistance with subject-specific material, but you want to focus on the skills you need to be a successful student. Join a [Success Skills Workshop](#) to learn more about effective note-taking, study skills, motivation, and more. **Success Skills Workshops are open to all students, across all majors.**

· Appointments are available Mondays through Thursdays from 9 a.m.-8 p.m. and Fridays from 9 a.m.-5 p.m., although times may vary slightly for each program. Students can schedule appointments online at the [Learning Commons website](#) or by contacting the Learning Commons at (513) 556-3244.

Finally, we would be happy to briefly **present to your students** on these services or on a variety of study strategies via a virtual presentation. To see our current selection of topics or to request a presentation, please use [the request form on our Bearcats Landing page](#) to request a presentation at least 10 days ahead of your desired date. If you have any questions about presentations, please reach out to our Program Coordinator, Courtney Amicon at truesmcp@ucmail.uc.edu.”

Course format and Expectations:

I would like to keep the class as **interactive** as possible. At least one day before each class, I will post a set of learning outcomes and the associated reading materials on Canvas for the upcoming class. **You are expected to read the assigned material before the class and answer any sample questions (*counts toward the grade*) posted on Canvas (Preclass quiz), so that you can actively participate in the class discussion** by eliciting higher order thinking questions. You can identify the muddiest point or learning outcome that is difficult to realize on the discussion board, or through email which will allow me to give extra emphasis or rephrase the contents (to clarify it better) for that day just before the class. This approach is called Just-in-Time Teaching and is described here: <http://www.styluspub.com/resrcs/user/justintime.pdf>.

Grading:

1. Mid-term examinations (Uses Honorlock)	–	30%
• September 29, 2020		
• November 05, 2020		
2. Final (comprehensive, uses Honorlock)	–	25%
(09:45 am – 11:45 am, December 04, 2020)		
3. Homework Assignments (Sapling based)	–	25%
4. Quizzes* (Pre and Postclass)	–	10%
5. Group Project (Due by December 01, 2020)	–	10%

(*Three lowest scoring quizzes will be excluded from grading)

Homework assignment notices will be posted on Canvas. All the homework assignments will be done on Sapling Learning website. A subscription to Sapling Learning (<https://www.saplinglearning.com/ibiscms>) is part of the recommended online textbook. However, separate subscription is required if the above recommended textbook is not used. All course materials covered in the classroom and book readings (designated chapters) will be an open game for homework and other assessments.

Group Project Assignments:

Group criteria: Three to four students that belong to two or three different majors can form a group (by **September 17**) select a topic of their interest (by **October 22**) and submit a report by the end of semester (by **December 1**). At least one group member should be from a different major. Each group will submit one report with names of members and their contributions. More instructions will be posted on the Canvas.

Scale for letter grades:

A- = 90-92.9%; A = 93-100%; B = 80-84.9%; B+ = 85-89.9%; C = 70-74.9%; C+ = 75-79.9%; D = 60-65%, D+ = 65-69.9%; F = <60%

Class Attendance Policy:

Attendance will be considered indirectly based on participation in class discussions. If you do not attend class sessions, you will not do well.

Electronic Communication:

I will post course materials and communicate important information on the Canvas. Make sure that your correct email address is registered with Canvas and follow a good practice of checking the course website on Canvas on regular basis. For email communication, use "**CHEM3040_2020FS**" in subject line.

Other Policy:

The university rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Violations of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct. Academic dishonesty will not be tolerated in this course. Students should review the Student Code of Conduct (<http://www.uc.edu/conduct>) and ensure they understand expectations for behavior and academic performance.

"The Department of Chemistry and the University of Cincinnati are not responsible for the personal belongings of students. All items brought to the college campus are the student's responsibility. Students are strongly encouraged not to bring items to campus that are not required."

2020 FS CHEM3040 class WebEx sessions

Hosted by Bala Addepalli and Kun Liu

Occurs every Tuesday, Thursday effective 08/25/2020 until 12/01/2020
from 10:45 AM to 12:30 PM (actual class discussion during 11:00 am –
12:20 PM), (UTC-04:00) Eastern Time (US & Canada)

<https://ucincinnati.webex.com/ucincinnati/j.php?MTID=m485b5a1848317b24910b0c278d52e746>

Meeting number: 120 426 5122

Password: 2AKdfmRuv42

Join by video system

Dial 1204265122@ucincinnati.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

Join by phone

+1-415-655-0002 US Toll

Access code: 120 426 5122

Class Schedule (subject to change based on the pace)

<u>Date</u>	<u>#</u>	<u>Topic</u>	<u>Reading</u>
08/25	1	Introduction-The Foundations of Biochemistry	Chapter 1
08/27	2	Introduction-The Foundations of Biochemistry	Chapter 1
09/01	3	Chemistry of Aqueous Solutions	Chapter 2 HW1
09/03	4	Chemistry of Aqueous Solutions	Chapter 2
09/08	5	Amino acids	Chapter 3 HW2
09/10	6	Amino acids and protein structure	Chapter 3
09/15	7	Amino acids and protein structure	Chapter 3
09/17	8	Protein Structure and Function	Chapter 4 HW3
09/22	9	Protein Structure and Function	Chapter 5
09/24	10	Review and Enzyme based catalysis	Chapter 6
09/29		Midterm exam I (on Canvas)	
10/01	11	Enzyme based catalysis	Chapter 6
10/06	12	Enzyme kinetics	Chapter 6
10/08	13	Enzyme kinetics	Chapter 6 HW4
10/13	14	Enzyme Regulation	Chapter 6
10/15	15	Protein Purification & analytical methods	Chapter 3
10/20	16	Protein Purification & analytical methods	Chapter 4 HW5
10/22	17	Carbohydrates and glycoproteins	Chapter 7
10/27	18	Nucleic Acids, structure-Function	Chapter 8 HW6
10/29	19	Flow of genetic information	Chapter 9
11/03	20	Review and rDNA technology & bioinformatics	Chapter 9
11/05		Midterm exam II (on Canvas)	
11/10	21	Lipids	Chapter 10
11/12	22	Lipids	Chapter 10
11/17	23	Membranes and transport	Chapter 11
11/19	24	Membranes and transport	Chapter 11 HW7
11/24	25	Signal Transduction	Chapter 12
12/01	26	Review	
12/04		Final Exam (on Canvas) at 09:45 am	