

BIBC 100 – Structural Biochemistry

Summer Session I 2020 syllabus

Few important comments before we start:

1. **All educational sessions** (classes, sections, etc.) **will be recorded and made available asynchronously**
2. **Since remote teaching is still a new situation, this syllabus is subjected to changes as a result of unforeseen problems. Any schedule changes will be posted on the course website, this is your responsibility to check it daily(!) to keep updated.**
3. **Check out this link on how to learn remotely:** <https://digitallearning.ucsd.edu/learners/learning-remote.html>

Course location & days/Time: Recorded lectures will be posted in the course website

Live zoom Q&A: M/T/W/Th 9:30 - 10:50 (participation is Optional) **will be recorded & posted**

Live Zoom discussion Sections (Optional but highly recommended): **will be recorded & posted**

Section	Day/Time	IA / TA	email	Office hours
A01	MW 11:00am-11:50am	Bernice Hei Yiu Leung	hyl009@ucsd.edu	Mon 1pm-2pm
A02	MW 12:00pm-12:50pm	Bernice Hei Yiu Leung	hyl009@ucsd.edu	
A03	TTh 11:00am-11:50am	Chelsea Truong	cht095@ucsd.edu	Tue 2pm-3pm
A04	TTh 12:00pm-12:50pm	Pranavi Chamarthi	pchamart@ucsd.edu	Wed 1pm-2pm

You can only participate in the section you are enrolled to

Instructor: Orna Cook **Email –** ocook@ucsd.edu

Office hours: Mon, Tue 11-12 via Zoom

Course Website: <https://canvas.ucsd.edu/courses> select BIBC100

To email TA/IAs and instructor please use your UCSD email only

Learning Goals

This course focuses on the structure of major biomolecules: proteins, carbohydrates, nucleic acids and lipids, and how their structures underlie the basis of their particular functions.

At the end of this course student should be able to:

- Describe the basic structure of simple biomolecules such as: amino acids, monosaccharides, nucleotides and fatty acids.
- Explain how simple biomolecules are assembled into macromolecules such as: proteins, carbohydrates, nucleic acids and lipids.
- Describe the role of biomolecules in composing structural features of cells and tissues.
- Explain the chemical basis that underlies biological processes such as oxygen transport, immunorecognition, enzymatic reactions, regulation of gene expression, transport across membranes, signal transduction and others.

Course schedule (subject to minor changes)

Lecture	Date	Topic	Reference	Discussion (PS due)
1	6/29 Mon	Introduction, Water, Weak Molecular Interactions	2.1, 2.2	<i>No discussion</i>
2	6/30 Tue	Amino Acids, Peptides and Proteins; Protein Analysis Techniques	L. 3, 27.2	<i>No discussion</i>
3	7/1 Wed	Proteins Three Dimensional Structure	4.1-4.3	PS1 (lec.1,2)
4	7/2 Thu	Protein Folding and Denaturation	4.4	PS1 (lec.1,2)
5	7/6 Mon	Assisted Folding and Mediated Degradation of Proteins	4.4 ,27.3	PS2 (Lec.3,4)
6	7/7 Tue	Oxygen Binding Proteins	5.1	PS2 (Lec.3,4)
7	7/8 Wed	Immune System and Immunorecognition	5.2	PS3 (Lec.5,6)
8	7/9 Thu	Enzymes	6.1, 6.2, 6.4	PS3 (Lec.5,6)
	7/13 Mon	Midterm1 – lectures 1-8 9:30am-10:50am synchronously!!		PS4 (Lec.7,8)
9	7/14 Tue	Carbohydrates	7.1, 7.2	PS4 (Lec.7,8)
10	7/15 Wed	Nucleic Acids	8.1, 8.2	PS5 (Lec9)
11	7/16 Thu	Protein-DNA Interactions	24, 28	PS5 (Lec9)
12	7/20 Mon	Lipids and Membranes	10.1-10.3	PS6 (Lec.10,11)
13	7/21 Tue	Membrane Proteins	11	PS6 (Lec.10,11)
14	7/22 Wed	Transport and Signaling	12	PS7 (Lec.12,13)
15	7/23 Thu	Receptors and Signaling	12	PS7 (Lec.12,13)
	7/27 Mon	Midterm2 – lectures 9-15 9:30am-10:50am synchronously!!		PS8 (Lec.14,15)
16	7/28 Tue	Protein Design	9.2	PS8 (Lec.14,15)
17	7/29 Wed	CRISPR/CAS9 Gene Drive - Guest lecture		Review by TA
18	7/30 Thu	Review - <i>synchronously</i>		Review by IA
	7/31/2020	Final exam – cumulative 8am-11am synchronously!!		

Course textbook: *Lehninger Principles of Biochemistry* Seventh edition (Nelson and Cox)

Other recommended textbook: *Biochemistry* Ninth edition (Berg, Tymoczko, Gatto, **Stryer**)

Book about proteins structure and folding: **Introduction to Protein Structure** 2nd edition (Branden and Tooze)

Textbook (Lehninger **OR** Stryer) is optional but highly recommended.

References listed are the relevant chapters in Lehninger, but you can find most of it in Stryer as well.

Midterm and final exams will be based on lectures and problem sets material.

Midterm exams will be **50 min within the time windows as above**. If you start the exam at 9:30am your 50 min will end at 10:20am, if you start at 9:40am your 50min will end at 10:30am and so on. If you start at any time **after 10am** you will have **less than 50 min** since exam will be **closed to everyone at 10:50**.

Final exam will be **1 hour within the time window as above**. Same policy as for the midterm so keep in mind that if you start your final exam after 10:00am you will have less than 1 hour to complete it.

** Instead of having one midterm and one final I added another midterm this year and reduced the number of questions in the final accordingly. That's the reason that the final exam is much shorter in time than the usual 3hrs.*

Grading

Assignment type	% of total grade
Lecture quiz (referred in slides as Clicker Questions)	5
Problem Sets (best 7 will be taken for grade)	35
Midterm exam 1	20
Midterm exam 2	20
Final exam	20
Total	100

Grading scale:

≥ 97% A+	82-85.9% B	69-71.9% C-
92-96.9% A	79-81.9% B-	66-68.9% D+
89-91.9% A-	76-78.9% C+	59-65.9% D
86-88.9% B+	72-75.9% C	0-58.9% F

Lecture quiz (a replacement for iClicker questions; 5%):

Each lecture, **except** of the guest lecture and the review lecture, has a quiz that you should take while watching the recorded lectures.

Deadline for taking the lecture quizzes of each week - **Friday 11:59pm the week of the lecture** (e.g. quizzes for lectures 1-4 should be completed by Friday July 3rd at 11:59pm).

For each correct answer you will earn 1 point. By answering the lecture quizzes, you can earn up to **5%** of the total grade.

A general explanation how to take the video quiz:

https://knowledge.kaltura.com/help/kaltura-video-quizzes---how-to-take-a-quiz#taking_a_quiz

** some of the information in this link is NOT relevant to our quizzes*

*** There are still technical difficulties to connect the video quizzes to Canvas gradebook. If these problems are not resolved I will publish the same quizzes separately and will notify you. **When you answer the video-quiz keep notes of your answers, in case you have to re-do it as a regular quiz (to avoid watching the video again).***

Problem Sets (350 pts, 35%):

There are 8 Problem Sets, each worth 50 pts and the highest 7 will be taken for your grade. Problem sets will be posted on Canvas every week.

TA/IAs will go over the questions in discussion sections and you will be able to correct your answers during the discussion.

Problem sets are due **up to 15 minutes after the end** of the relevant discussion section, as specified in the course schedule.

In order to get the maximum points for your problem sets you need to **submit them on time**.

Problem sets that are submitted **late**, will automatically be grades starting at **40 Pts**. Late submission is NOT ALLOWED more than two days after the related discussion section (e.g. if your discussion is on Mon 11:00-11:50am you can submit a late PS until Wed. 11:50am).

Midterm exams (200 pts, 20% each):

Midterm exams 1 and 2 will cover the material from lectures 1-8 and 9-15 respectively.

It will take place synchronously during class time, on Mon 7/13/2020 and Mon 7/27 9:30am-10:50am. Please see more details on page 2.

Exam questions will cover material from the lectures, problem sets and the discussion sections.

Final exam (200pts, 20%):

Final is a **cumulative exam**.

It will take place synchronously on – Friday 7/31/2020, 8:00am-11:00am.

Please see more details on page 2.

Exam questions will cover material from the lectures, problem sets and the discussion sections.

Course Policies

Required learning material:

Computer and a reliable internet connection.

Exams:

- Exams will include multiple-choice questions, and open response questions. You need to use YOUR knowledge and write the answers in **your own words**. It is OK to use your lecture notes if you need, but you will have to answer many questions within a short time! If you don't study and know the material, you will not be able to get a good grade!
- There are no make-up exams for Midterms or Final unless you provide documents for medical or family emergency, with contact information. In this case you have to contact the instructor **before the exam** and discuss the situation in order to find a solution. A make up exam will be schedule within one week after the original exam date.
- You may submit your exam for re-grading **within 2 days** from the date when grades were available.
- Students that need special accommodation for exams must present a letter issued by the Office of Students with Disabilities (OSD) to Dr. Cook at the first week of the quarter, as soon as the letter is available. Please note that instructors are unable to provide accommodations unless they are first authorized by OSD. For more information, contact the OSD at (858) 534-4382 (voice), osd@ucsd.edu, or visit osd.ucsd.edu.

Administrative issues:

UCSD continuing students use the Virtual Advising Center vac.ucsd.edu

Summer Session (non UCSD students) may email biosis@ucsd.edu

Academic integrity: *Exams and PS may be checked by **Turnitin** or other plagiarism checker tools*

We encourage students to work together on problem sets and to study together for the exams. **HOWEVER**, each student has to complete their work independently, using their own words.

Students are **NOT allowed** to:

Copy another student's work (problem sets or exam answers)

Allow another student to copy your work

Take an exam for another student or let another person take your exam

Use any "helpful" websites during the exams time

A detailed resource regarding UCSD academic integrity can be found at:

<https://students.ucsd.edu/academics/academic-integrity/index.html>

All students, instructors and IAs are committed for academic integrity policy. **Any suspected incident of violation of academic integrity will be reported to the Academic Integrity Office for review.**

Consequences of breaching academic integrity may be from a zero grade for an assignment up to failing the course.