

BIBC 100 Structural Biochemistry Spring 2018

Welcome!

Course description

The structure and function of biomolecules. Includes protein conformation, dynamics, and function; enzymatic catalysis, enzyme kinetics, and allosteric regulation; lipids and membranes; sugars and polysaccharides; and nucleic acids. Prerequisites: Chem 140A and Chem 140B.

Time and Place:

Tues/Thurs 3:30 – 4:50p, Peterson 108

Instructors:

Emily Grossman, PhD (Weeks 1 – 3, 7 – 10)
H&SS 1145C
egrossma@ucsd.edu

Swarna Mohan, PhD (Weeks 4 – 6)
H&SS 1145LB
swmohan@ucsd.edu

Office Hours

Tues 1 – 2p, Thur 12 – 1p
H&SS 1145L

M 11 – 12p, W 10 – 11a
H&SS 1145L

Learning Goals

At the end of this course, students will be able to:

- Summarize biochemical techniques, and explain applications of the methods to real life
- Explain how the structure of molecules allows them to complete specific functions
- Learn to find, read, and evaluate scientific literature
- Explain the chemical basis of biological processes
- Use online databases to examine protein structures

Instructional Assistants

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Ziwei Wang	ziw191@ucsd.edu

Discussion sections:

Sections will start Week 2. Problem sets will be discussed during sections, and the material covered in the sections is required and will be tested on exams.

Class Web Site:

The class web site is on TritonEd (<https://tritoned.ucsd.edu/>). All class notices, the syllabus, and other important information will be posted here. Please check the web site regularly for updates, since this will be the main form of distribution of information to the class. My lecture notes will be posted to the site.

Day/Time	Room
Monday 3 – 3:50p	HSS 2321
Monday 4 – 4:50p	HSS 2321
Monday 5 – 5:50p	HSS 2321
Monday 6 – 6:50p	HSS 2321
Monday 7 – 7:50p	HSS 2321
Monday 8 – 8:50p	HSS 2321
Wednesday 3 – 3:50p	HSS 2321
Wednesday 4 – 4:50p	HSS 2321
Wednesday 5 – 5:50p	HSS 2321
Wednesday 6 – 6:50p	HSS 2321
Wednesday 7 – 7:50p	HSS 2321
Wednesday 8 – 8:50p	HSS 2321
Friday 3 – 3:50p	HSS 2321

Resources

1. Support for student writers:

Writing + Critical Expression Hub (part of the Teaching + Learning Commons)

There are undergraduate writing mentors on staff who are in Biological Sciences degree programs, so they have training not only in working with student writers, but also familiarity with science reasoning and science writing. Please don't hesitate to meet with a writing mentor for help—every writer can benefit from these conversations. Students can make appointments via <https://ucsd.mywconline.com>

2. Tutoring

OASIS: Office of Academic Support and Instructional Services

From the OASIS website (<https://students.ucsd.edu/sponsor/oasis/>): We are the learning center at UC San Diego and provide most of the free tutoring on campus in a collaborative, supportive environment. All UC San Diego students are eligible to receive OASIS services. Each year, OASIS serves 3,000 students in language, math, science, study skills, and writing as well as peer counseling and peer mentoring.

They are located on the third floor of Center Hall, (858) 534-3760 (phone), oasis@ucsd.edu (email)

3. Optional reading resource:

Introduction to Protein Structure (Branden and Tooze)

Required Learning Materials:

Fundamentals of Biochemistry 5th ed, (Voet/Pratt) (Redshelf ebook, see below)
iClicker (available at bookstore)

Basis for Final Grade

25 points iClicker questions (5%)
25 points Discussion section participation (5%)
125 points Problem sets (25%)
150 points Midterm (30%)
175 points Final (35%)
500 points total

Grading scale

98.0 – 100%	A+	78.0 – 79.9%	C+
92.0 – 97.9%	A	72.0 – 77.9%	C
90.0 – 91.9%	A-	70.0 – 71.9%	C-
88.0 – 89.9%	B+	60.0 – 69.9%	D
82.0 – 87.9%	B	0.0 – 59.9%	F
80.0 – 81.9%	B-		

Clicker participation (not for correctness), 5%

If you answer at least 85% of the clicker questions during the lecture sessions, you will get full points. Because you only need 85% participation for full points, if you forget your clicker one day do not worry about it.

For participation below 85%, the breakdown is as follows:

75% – 84.9%: 20pts

65% - 74.9%: 17pts

50% - 64.9%: 13pts

25% - 49.9%: 5pts

Below 25%: 0pts

Accommodations: Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the Department of Biological Sciences in advance so that accommodations may be arranged.

Contact the OSD for further information:

858.534.4382 (phone) osd@ucsd.edu (email) <http://disabilities.ucsd.edu> (website)

Whenever possible, we will use universal designs that are inclusive. If you have feedback on how to make the class more accessible and inclusive, please let me know!

A Culture of Respect: The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. Students have the

right to an educational environment that is free from harassment and discrimination.

Students have options for reporting incidents of sexual violence and sexual harassment. Sexual violence includes sexual assault, dating violence, domestic violence, and stalking. Information about reporting options may be obtained at OPHD at (858) 534-8298, ophd@ucsd.edu, or <http://ophd.ucsd.edu>. Students may receive confidential assistance at the Sexual Assault Resource Center at (858) 534-5793, sarc@ucsd.edu, or <http://care.ucsd.edu>, or through Counseling and Psychological Services (CAPS) at (858) 534-3755 or <http://caps.ucsd.edu>

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a UCSD student affairs staff member, a department Chair, a faculty member or other University official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed.

If you find yourself in an uncomfortable situation, ask for help. UCSD is committed to upholding policies regarding nondiscrimination, sexual violence and sexual harassment.

Student Expectations

Attendance Policy

You must attend the discussion section you are enrolled in. Attendance at discussion sections is mandatory. However, I understand circumstances out of your control occasionally occur, so you can miss one discussion section and still earn full participation credit. Problem sets can be turned into your IA via email if you miss your scheduled section.

Exam policies:

Both the midterm and final will be scantron-based exams. Missing a scheduled exam will only be excused for medical reasons where documentation can be provided. A make up exam will be scheduled within one week of the original exam.

Problem sets:

Weekly problem sets will be due at the end of your discussion section each week. Although we encourage you to work together on problem sets, your answers must be written in your own words. If you do choose to work in groups on the problem sets, please list the names of your collaborators on your assignment. Each student must write her/his own answers, in his/her own words, after working with the group. Try not to make the mistake of simply accepting another student's answer and thinking you understand it. You will gain a better understanding by going through the problem-solving process.

Academic Integrity:

We hold the following values (adapted from the International Center for Academic Integrity) as important to academic integrity and for maintaining an inclusive classroom environment.

	As students, this means you will...	As the Instructional team, this means we will...
Honesty	<ul style="list-style-type: none"> ➤ Honestly demonstrate your knowledge and abilities ➤ Communicate openly without using deception, including citing sources appropriately 	<ul style="list-style-type: none"> ➤ Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams ➤ Communicate openly and honestly about the expectations and standards of the course through the syllabus and guidelines for course assignments
Responsibilities	<ul style="list-style-type: none"> ➤ Complete your assignments on time and be fully prepared for class ➤ Arrive to class on time and be active participants 	<ul style="list-style-type: none"> ➤ Give you timely feedback on your assessments ➤ Arrive to class on time and be active participants ➤ Create relevant assessments and class activities
Respect	<ul style="list-style-type: none"> ➤ Speak openly with others while honoring diverse viewpoints and perspectives ➤ Allow others to voice their opinions and perspectives 	<ul style="list-style-type: none"> ➤ Respect your perspective even while we challenge you to think more deeply and critically ➤ Help facilitate the respectful exchange of ideas in class
Fairness	<ul style="list-style-type: none"> ➤ Contribute fully and equally when working in teams ➤ Not seek unfair advantage over others 	<ul style="list-style-type: none"> ➤ Create fair assessments and grade in a fair and timely manner ➤ Treat students and teams equally
Trustworthy	<ul style="list-style-type: none"> ➤ Not engage in personal affairs while on class time ➤ Be open and transparent about what you are doing in class ➤ Not distribute course materials to others in an unauthorized fashion 	<ul style="list-style-type: none"> ➤ Be available when we say we will be ➤ Follow through on our promises ➤ Not modify the expectations or standards without communicating with everyone
Courage	<ul style="list-style-type: none"> ➤ Say or do something when you see actions that undermine any of the above values 	<ul style="list-style-type: none"> ➤ Say or do something when we see actions that undermine any of the above values

This class statement and table of values is adapted from Dr. Tricia Bertram Gallant.

Although we encourage students to work together on problem sets and during discussion sections, the following is not allowed.

- Copying another student's work on the problem sets or exams, or allowing another student to copy your work
- Plagiarizing (copying) the answers to your problem sets from another source (lecture slide, book, online, etc). They need to be written in your own words
- Altering graded exams or assignments and submitting them for a regrade
- Responding to clicker questions in class using another student's clicker

Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review. A breach of academic integrity may result in a zero on the assignment/test/participation item in question and/or a failed grade in the course. The impact of the breach on a grade will be determined by the instructor in consultation with the Academic Integrity Office.

If you observe anyone not acting in accordance with the above values we are trying to foster, please bring your concerns to my or the instructional team's attention, and we will do our best to determine appropriate actions to uphold and protect these values.

Tentative Course Schedule: (subject to change)

Week	Lecture	Date	Topic	Text Reference
1	1	Tues April 3rd	Water, pH, and amino acids	Chapter 2 & 4
	2	Thurs April 5th	Amino acids and protein properties	5.1, 5.2
2	3	Tues April 10th	Methods and protein structure	5.3, 6.1 - 6.3
	4	Thurs April 12th	Symmetry and methods	6.3, Box 6 - 4
3	5	Tues April 17th	Protein stability and folding	6.4, 6.5
	6	Thurs April 19th	Chaperones and misfolding diseases	6.5
4	7	Tues April 24th	Nucleic Acid biochemistry and structure	3.1-3.2, 24.1-24.2
	8	Thurs April 26th	Recognition: Protein - nucleic acids	24.4, 27.3, 27.4
5	9	Tues May 1st	Immune system proteins	7.3
	10	Thurs May 3rd	Motor proteins	7.2
6	-	Tues May 8th	Midterm	-
	11	Thurs May 10th	Myoglobin and hemoglobin	7.1
7	12	Tues May 15th	Enzymes	Chapter 11, 12.2, 12.3
	13	Thurs May 17th	Glycoproteins and carbohydrates	Chapter 8
8	14	Tues May 22nd	Membrane lipids and structure	9.1, 9.2
	15	Thurs May 24th	Membrane proteins and membrane skeleton	9.3, 9.4
9	16	Tues May 29th	Membrane proteins II	9.3, 9.4
	17	Thurs May 31st	Signaling and receptors I	13.1, 13.2
10	18	Tues June 5th	Signaling and receptors II	13.3, 13.4
	19	Thurs June 7th	Influenza/Review	9.4
Final	-	Mon June 11th	3:00 – 6:00p, Location TBA	-

*Dr. Grossman will be out on parental leave during Weeks 4 – 6, so these lectures will be taught by Dr. Mohan

Important Dates to Remember

Drop Deadline (without W):	Friday, April 27, 2018
Mid – Term Examination:	Tuesday, May 8, 2018
Withdrawal Deadline:	Friday, June 1, 2018
Final Examination:	Monday, June 11 th 2018

A note about your course materials:

- They are provided by the UC San Diego Bookstore in a digital format through TritonEd and are free for the first two weeks of classes.
- If you decide to opt out, you'll need to click the Redshelf link inside TritonEd, click View Course Materials, scroll to click the grey opt out button and follow the prompts. **You must opt out by 4/14/2018, or your student account will be charged.**

Potentially Useful Resources (listed alphabetically):

Black Resource Center: The Black Resource Center is a Campus Community Center that serves everyone at UC San Diego while emphasizing the Black experience. We promote scholarship, foster leadership, and cultivate community for students through the committed, collaborative effort and support of faculty, staff, and the broader UC San Diego community.

<http://brc.ucsd.edu/> (website)

Counseling And Psychological Services (CAPS): CAPS provides FREE, confidential, psychological counseling and crisis services for registered UCSD students. CAPS also provides a variety of groups, workshops, and drop-in forums.

<http://caps.ucsd.edu/> (website)

Cross-Cultural Center: The Cross-Cultural Center strives for meaningful dialogues and context across all cultures, particularly those of underrepresented or underprivileged backgrounds. We offer supportive and educational services through art, social and educational programs, workshops, and outreach. We welcome creative venues for enhancing social consciousness and equity.

<http://ccc.ucsd.edu/> (website)

LGBT Resource Center: The Lesbian Gay Bisexual Transgender Resource Center at UC San Diego provides a visible presence on campus and enhances a sense of connection and community among LGBT faculty, staff, students, alumni and the UC San Diego Community.

<http://lgbt.ucsd.edu/> (website)

Office for Students with Disabilities (OSD): The Office for Students with Disabilities (OSD) at UC San Diego works with undergraduate, graduate, and professional school students with documented disabilities, reviewing documentation and determining reasonable accommodations.

<https://disabilities.ucsd.edu/about/index.html> (website)

Raza Resource Centro: The Raza Resource Centro team is committed to our student's success and we work collectively to meet the needs of our students. The Centro is a lively space where students study, meet, write, get tutoring, and most importantly are in community. It is a space where Latina/o Chicana/o organizations hold meetings, events and where culture, arte, and academics interconnect.

<http://raza.ucsd.edu/> (website)

Student Veterans Resource Center: The Student Veterans Resource Center (SVRC) is committed to ensuring that military affiliated students successfully make the transition from the military environment to campus life, and are assisted in their progress toward completing their academic degree. The Center also provides opportunities for peer-to-peer support, mentoring and social networking.

<https://students.ucsd.edu/sponsor/veterans/> (website)

Women's Center: The Women's Center serves as a resource for the entire campus community while placing the experiences of diverse women at the center through the resources we provide, the programming and learning opportunities we facilitate, and the dynamic community space that we create.

<https://women.ucsd.edu/> (website)

There are many other resources available to you on campus, and if you wish to know more about where you can go for support – please let me know and we can find it together. If you would like me to include resources other than those I have listed above, let me know as well! I want to know what is important for everyone!