

Introductory Biochemistry

Chem 160

Fall 2021

Instructor: Richard Schroeder

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Lectures: Tuesday and Thursday 1400-1515 PG 153

Office Hours: By Appointment or After Class. Office CLS 505

Textbook: Essential Biochemistry (5th ed., Pratt & Cornely) with WileyPLUS

Access will be through Immediate Access. The Bookstore has a FAQ to explain Immediate Access here: www.shopaztecs.com/t-immediateaccess-faq.aspx

Q: What is the Immediate Access Program?

A: The Immediate Access Program is designed to help students save money and have digital access to their materials by the first day of class. The Immediate Access Program is a team effort between the Bookstore, San Diego State University, the faculty, and the publishers to provide students with the best cost savings.

Q: How does Immediate Access work?

A: Your materials are provided on Blackboard or Canvas for free through the add/drop date. At that point, you will need to decide if you would like to maintain the access and later be billed for it, or you may opt-out and purchase your materials another way. The price you pay in Immediate Access is the lowest price available from the Bookstore.

Q: What are the benefits to the program?

A: Immediate Access provides all students with an equal opportunity to get ahead in class. By having early access to the materials, students can be better prepared for their course. The trial period before the add/drop date allows students to preview their materials without committing to purchase, and eliminates the stress of searching for the most affordable prices for those materials. The specially discounted prices in Immediate Access are exclusive to the program and are not available through any other party. Furthermore, because the Bookstore is a not-for-profit campus partner that returns its proceeds to the University, your participation in Immediate Access will benefit SDSU programs.

Q: How do I opt-in to the program?

A: All students are automatically enrolled in Immediate Access when they register for a course that is participating in the program. It is the student's responsibility to opt-out if they do not wish to participate.

Q: How do I opt-out of the program?

If you wish to opt-out of the program and purchase your materials another way, either through the Bookstore or elsewhere, simply go to www.shopaztecs.com/optout by the opt-out deadline (the add/drop date) and enter your RedID and RedID password or SDSUid and SDSUid Password. You will see a personalized list of your Immediate Access courses and you will be able to opt-out or back into a course. It is that simple.

Homework: Online WileyPLUS available via Canvas

Prerequisite: Chem 130 Organic Chemistry or equivalent

Course Objective: This course is intended primarily for majors in nutrition and related fields. Not applicable for admission to the School of Nursing. Biochemistry is an attempt to describe the complex traits of biological systems in terms of the molecules that make up living things. The goal of this course is to provide students with an interest in nutrition and the life sciences with a working vocabulary and a structural and functional understanding of the molecules and processes in living systems. In addition, students are provided with the tools to succeed in upper division courses that require an understanding of biomolecules. The topics will include thermodynamics; properties of biomolecules (carbohydrates, lipids, nucleic acids, and proteins); the biochemical composition of foods and cells; principles of enzyme and receptor chemistry; membrane transport; cell signaling; general metabolic concepts; and bioenergetics.

Course content: This is an introductory biochemistry class aimed at students interested in nutritional sciences and related fields. The major topics of the course are as follows:

1. Chemical composition and properties of cells and biomolecules: carbohydrates, lipids, nucleic acids, and proteins.
2. Origin and evolution of life.
3. Aqueous chemistry and buffers
4. The Central Dogma: genes to RNA to proteins
5. Protein structure and function
6. Basic principles of enzymes
7. Membrane transport and cell signaling
8. Introduction to metabolism and bioenergetics

Course Calendar: Tentative schedule. Topics may change at the discretion of the instructor.

Date	Day	Topic	Reading
Aug 24	Tuesday	Chemical Basis of Life	Chap 1
Aug 26	Thursday	Chemical Basis of Life	Chap 1
Aug 31	Tuesday	Aqueous Chemistry	Chap 2
Sep 2	Thursday	Aqueous Chemistry	Chap 2
Sep 7	Tuesday	Nucleic Acids	Chap 3
Sep 9	Thursday	Nucleic Acids	Chap 3
Sept 14	Tuesday	Protein Structure	Chap 4 & 5
Sept 16	Thursday	Protein Function	Chap 4 & 5
Sept 21	Tuesday		Midterm (1-4)
Sept 23	Thursday	Protein Function	Chap 5
Sept 28	Tuesday	Enzymes	Chap 6 & 7
Sept 30	Thursday	Kinetics and Inhibition	Chap 6 & 7
Oct 5	Tuesday	Lipids & Membranes	Chap 8 & 9
Oct 7	Thursday	Membrane Transport	Chap 8 & 9
Oct 12	Tuesday	Transport/Signaling	Chap 9 & 10
Oct 14	Thursday	Signaling	Chap 9 & 10

Oct 19	Tuesday	Signaling	Chap 10 & 11
Oct 21	Thursday	Carbohydrates	Chapter 10 & 11
Oct 26	Tuesday		Midterm (5-10)
Oct 28	Thursday	Carbohydrates	Chap 11
Nov 2	Tuesday	Metabolism/Bioenergetics	Chap 12
Nov 4	Thursday	Metabolism/Bioenergetics	Chap 12
Nov 9	Tuesday	Glucose Metabolism	Chap 13
Nov 11	Thursday		Holiday!
Nov 16	Tuesday	Glucose Metabolism	Chap 13
Nov 18	Thursday	Citric Acid Cycle	Chap 14
Nov 23	Tuesday	Oxidative Phosphorylation	Chap 15
Nov 25	Thursday		Holiday!
Nov 30	Tuesday	Regulation of Fuel Metab.	Chap 19
Dec 2	Thursday		Midterm 3 (11-15)
Dec 7	Tuesday	Regulation of Fuel Metab.	Chap 19
Dec 9	Thursday		QA

Final Exam: Tuesday, December 14, 1300-1500

Homework: Homework will be done online in WileyPLUS. It will be posted for each chapter after we have completed in-class instruction for the chapter. Prior to attempting the HW questions on WileyPLUS, make sure you know the material. The questions will be setup so that you have 2 attempts to get the right answer, after that the most you can get will be 50% of the full score. This is done to encourage looking up the answer rather than just relying on guessing. All homework assignments will be due one week after they are assigned.

Grading:

Homework assignments 80 points total

Three midterm exams, 80 points each for 240 points total

Final exam, 120 points

Grand Total: 440 points

Students with Disabilities If you are a student with a disability and believe you will need accommodations for this class, please let me know. It will be your responsibility to contact Student Ability Success Center's Test Accommodation Center. To avoid any delay in the receipt of your accommodations, you should contact SASC (tac.sasc@sdsu.edu) as soon as possible. Please note that accommodations are not retroactive, and I can't provide accommodations based upon disability until I have received an accommodation letter/form from SASC. Your cooperation is appreciated.

Test Accommodation Center

[Calpulli Center](#), Suite 1300 (first floor)

Hours: Monday - Friday, 8 am-4:30 pm (extended hours for test administration)

Phone: (619) 594-2643

Email: tac.sasc@sdsu.edu

Grading scale (If you earn the points indicated, you will be guaranteed the grade listed. The scale may be lowered depending on overall class performance.)

90 % and above 396 - 440 points A

86-89 % 378 - 395 points A-

83-85 % 365 - 377 points B+

80-82 % 352- 364 points B

76-79 % 334 - 351 points B-

73-75 % 321 – 333 points C+

70-72 % 308 – 320 points C

66-69 % 290 – 307 points C-

63-65 % 277 – 289 points D+

60-62 % 264 – 276 points D

56-59 % 246 – 263 points D-

< 55 % 245 points and below F

Slides will be posted on Canvas. However, remember that the slides do not contain a comprehensive overview of the material. You will need a calculator during some of the exams. Programmable calculators are not allowed. No cell phone use will be permitted during exams. Talking to your peers is prohibited during exams. I take academic integrity seriously and know that the vast majority of you do, too. Just so that we are all on the same page, I need to tell you of my policy regarding cheating. Cheating is unacceptable. Anyone suspected of looking at the exams of other students might be asked to move to a new seat during the final. Anyone who cheats on an exam will receive 0 points for the exam and might be reported to their academic major advisor. The final exam will be comprehensive.

If you have a religious holiday which conflicts with the date of an exam, let me know before September 2nd.

Note: At the discretion of the instructor, this syllabus may be modified or updated when necessary.