

San José State University
Chemistry Department
Chem 132, Introductory Biochemistry, Fall 2021

Course and Contact Information

Instructor:	Anh-Tuyet Tran, Ph.D.
Email:	anh-tuyet.tran@sjsu.edu
Office Hours:	MW 3:00 – 4:00 pm, and F noon – 1:00 pm
Class Days/Time:	Monday and Wednesday 7:30 – 9:10 am
Classroom:	Online
Prerequisites:	CHEM 30B or CHEM 8 (with grades of "C" or better; "C-" not accepted).

Course Web Page

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](http://sjsu.instructure.com) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system to learn of any updates.

Course Description

This is a survey course of biochemistry for majors outside the College of Science. Students learn the structure and function of the major macromolecules of the cell with special emphasis on proteins and human metabolism.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

CLO#1: Recognize all 20 common amino acids and understand the different levels of protein structure.

CLO#2: Utilize the equations governing enzyme kinetics, and recognize the structure of key enzymes, cofactors including several vitamins.

CLO#3: Know the order of metabolic intermediates and the corresponding enzyme names for the pathways of carbohydrate metabolism, the citric acid cycle, electron transport chain, lipid metabolism, and protein metabolism.

CLO#4: Calculate the number of ATP molecules generated for a given nutrient.

Textbook (Recommended)

Essential Biochemistry, 5th Ed., by Charlotte Pratt & Kathleen Cornely, Wiley & Sons, 2021, ISBN: 978-1-119-71917-5. (WileyPlus access is NOT required).

Digital tools

- This is an online course. All course activities will take place in our course Canvas site, using the following tools: Zoom, Inbox, Discussion Board, Calendar, and Announcements. Note: Please access Canvas using Chrome for optimal functionality. You will need a laptop or desktop computer with a camera and a reliable access to internet. While the Canvas app for phones can be used for course communication and some basic tasks, you must have access to a computer for completing most coursework. More details are in Resources section.
- You should get into the habit of shutting down and restarting your computer/device at least once a week, even once a day, to optimize performance.

Grading Information

Exams: Four exams, three midterms and a comprehensive final exam, each is weighted 20% of the overall grade. All these exams are timed, closed book, and cumulative. That means the materials covered on a previous exam may be needed for subsequent exams. The final exam score may replace the lowest midterm (or the quiz total if lower than all midterms). There will be NO make-up exams. For special circumstances, please consult with the instructor at least two weeks ahead of the exam date.

Exam I: Wednesday Sep. 22

Exam II: Wednesday Oct. 20

Exam III: Monday Nov.17

Final Exam: Tuesday Dec. 14. 7:15 – 9:30 am

Quizzes: A quiz will be given at the end of each lecture chapter, to motivate students to stay up to date with the class material. Typically, it will be posted on a Wednesday and must be completed by the following Sunday at midnight.

Homework (optional): Chapter homework is posted on Canvas course website and can be accessed within 10 days from its open date. Please note that there will be NO extension of due date for late submission.

Discussion forum (optional): You will earn one point for your participation in each discussion forum. Discussion board is for you to build a supportive learning community. I would like to be explicit about the requirements for the quality of the discussion posts. Our class will be democratic and participatory in its approach. In order for the discussion board to be constructive and productive, you are required to reference the readings and craft discussion responses that are thoughtful and authentic. The amount you write is less important than the quality of what you write. In other words, repeating what someone has already said as your reply to the prompt or in response to their post is NOT acceptable. It is, however, acceptable to repeat what someone has said and then to agree with it, disagree with it, challenge it, expand on it, etc. In any of these cases, each of your responses will require your own original thought. If you agree/disagree with/challenge/expand on a co-learner's response, PLEASE EXPLAIN WHY. Simply saying, 'I agree/disagree with/challenge/expand on what X or Y said,' without explaining why, is not acceptable and will not earn you any extra credit point.

Class activities: Each class session is accounted for one point that will be summed up with all other optional work and converted to a possible 3 points extra credit toward your exams.

Determination of Grades

Midterms	60%
Quizzes	20%
Final exam	20%
<u>Total</u>	<u>100%</u>

Letter grades for the full course are based on the following percentage range:

A+ = 100 - 97.0%	A = 96.9 - 93.0%	A- = 92.9 - 90.0%
B+ = 89.9 - 87.0%	B = 86.9 - 83.0%	B- = 82.9 - 80.0%
C+ = 79.9 - 77.0%	C = 76.9 - 73.0%	C- = 72.9 - 70.0%
D+ = 69.9 - 67.0%	D = 66.9 - 63.0%	D- = 62.9 - 60.0%
F = 59.9 - 0%		

Extra Credit: Please note that the instructor will NOT provide extra credit work at the end of the semester for students who are doing poorly. However, bonus points are given to all exams, homework, discussion board, and class activities.

Study notes: A large amount of cumulative material is covered in this course. It is imperative that you stay up to date, read ahead and review the sections of the text on which the class lectures are based. You should attempt the practice problems and exercises in homework sets as well as in extra credit assignments. They represent a minimum of what you should work on to master the material and to prepare for the exams. Keep in mind that it is not only about getting the right answer, but also about understanding the reasoning behind the solution AND learning to recognize where that reasoning is applicable. Please visit the instructor during office hours if you are having trouble with any of the concepts covered in lecture.

Classroom Protocol

- I expect you to check our course Canvas site, at least twice a week, Monday through Friday. I will communicate with the whole class using Announcements and with you individually using Inbox.
- I am limited or unavailable on weekends, unless for any urgent matters. If you have any questions or concerns about the course, feel free to email me. Please expect 24 hours turn-around time.
- You must obtain permission in advance to record and/or download any course materials. Such permission allows the recordings to be used for your private study purposes only. You will not be permitted to share any class materials with someone who isn't enrolled in the class or without permission. The recordings are protected by instructor's copyright.
- You should try your best to attend class during our regular class time (Fridays 9:00am – 11:50am) using the ZOOM meeting platform. You will get one extra credit point for your presence in each of the lecture meetings. You are expected to read and review the class materials BEFORE joining the class meeting.

- I understand that factors beyond your control can interfere with your ability to participate. Please let me know if any issues arise, so we can figure out a plan to make sure you succeed in the course.
- As this is a four-unit course, you should plan to spend 3-4 hours a week interfacing with me, and/or the LA and classmates in our class meetings. Other modes of interface time might be posting to and responding to others' posts on the discussion board and attending my office hours.
- You should plan to spend at least 10-12 hours a week reading the text, viewing the lectures, and reviewing the class materials. Success in this course is based on the expectation that you will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities.
- Online science courses require that you acquire important skills such as self-discipline, time management, computer knowledge, and excellent math and language skills. Assessments of math and writing skills are particularly important in science courses to determine if you can handle the course requirements. It is also important to assess online skills. One of the good tools to determine readiness for an online course is the Online Learning Questionnaire: <http://tutorials.istudy.psu.edu/learningonline/learningonline2.html>

Zoom Classroom Etiquette

- For each class session, you should do your best to open simultaneously Zoom and Canvas (split screen on your computer). We will use both online platforms during our class sessions as well as in exams.
- Try to log online to our class meeting from a quiet, distraction-free environment. We have little time together; let's try to maximize it!
- Keep your Audio on mute until you want to speak. We must work together to limit background noise.
- Enable Video so we can see each other as much like in a face-to-face classroom as possible. Especially in exam time, it is required that your computer camera be turned ON.
- Have a plan for taking notes (paper and pencil, digital notepad, Word/Pages doc). Please note that recordings of our Zoom class sessions may not be saved and posted. So, you should try to capture your thoughts and questions in the moment.

Statement on Safe and Respectful Community:

We hope that the classroom will serve as an environment that will promote learning and the development of new ideas, as well as be a safe and respectful community. Behavior that interferes with the normal academic function in a classroom or lab is unacceptable. Students exhibiting this behavior will be asked to leave the class. Examples of such behavior include

- a) Persistent interruptions or using disrespectful adjectives in response to the comments of others.
- b) The use of obscene or profane language.
- c) Yelling at classmates and/or faculty.

- d) Persistent and disruptive late arrival to or early departure from class without permission.
- e) Physical threats, harassing behavior, or personal insults (even when stated in a joking manner).
- f) Use of personal electronic devices such as pagers, cell phones, PDAs in class, unless it is part of the instructional activity.

The university has a brochure on student conduct that you can view at <http://www.sjsu.edu/studentconduct/docs/ENGLISH%20Brochure.pdf>

University Policies on Academic Integrity

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/> Make sure to review these policies and resources.

Resources for Help

- 1) The instructor. Please feel free to email me if you have any questions or concerns about the course.
- 2) *Learning Assistant programs* are not available for this course. Fortunately, Chemistry Department assigns Reena Dosanjh, a Biochemistry-major student, to serve as a peer educator.
- 3) *Peer Connections*: This organization provides small group, individual, and drop-in tutoring services. Consultation with mentors is also available on a drop-in or by appointment basis. Visit Peer Connections website at <http://peerconnections.sjsu.edu> for more information.
- 4) *COSAC* – The College of Science Advising Center is located in the second Floor of Duncan Hall, DH 213. They have peer advisors and tutors. Check their schedule at <https://www.sjsu.edu/cosac/tutoring/>
- 5) Student Computer Services Loans: If you need to check out a laptop computer for your studies, please visit this site: <https://library.sjsu.edu/student-computing-services/student-computing-services>
- 6) For technical support, please contact eCampus: <https://www.sjsu.edu/ecampus/>, (408) 924-2337
- 8) *ASPIRE* – Student Services Center – Services are limited to low income, first generation college students or students with disabilities. <https://www.sjsu.edu/aspire/>
- 9) *SJSU Writing Center* – The SJSU Writing Center is located in Clark Hall, Suite 126. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the Writing Center website at <http://www.sjsu.edu/writingcenter>.
- 10) *Student Health Center*: 408-924-6122 or <https://www.sjsu.edu/studenthealth/>
- 11) *Counseling Services* - Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit Counseling Services website at <http://www.sjsu.edu/counseling>.

12) *Career Center*: <http://www.sjsu.edu/careercenter/>

13) *Accessible Education Center*. If you feel that you are unable to keep up with the class even though you have all the prerequisites; if you are spending ample time studying yet you never have time to finish exams and quizzes and/or if this class, for some reason, is testing your abilities to learn, you might consider paying a visit to the Accessible Education Center, ADM 110. They might be able to test you to determine whether you have a learning disability. <https://www.sjsu.edu/aec/>

We hope you will find this course to be an intellectually stimulating and pleasant learning experience. Best wishes to your SUCCESS in Chemistry!

Chem 132, Introductory Biochemistry, Fall 2021 Course Schedule

Changes in class schedule will be announced in class at least one week ahead.

Week	Date	Topics, Readings, Assignments, Deadlines
1	Aug. 23	Ch.1 Chemical Basis of Life
1	Aug. 25	Ch.2 Aqueous Chemistry
2	Aug. 30	Ch.3 From Genes to Proteins
2	Sep. 01	Ch.3 From Genes to Proteins (con.) & Ch.4 Protein Structure
3	Sep. 06	Holiday – No class
3	Sep. 08	Ch.4 Protein Structure (con.)
4	Sep. 13	Ch.4 Protein Structure (con.) & Ch.5 Protein Function
4	Sep. 15	Ch.5 Protein Function (con.)
5	Sep. 20	Ch.6 Intro to Enzymes
5	Sep. 22	<u>MIDTERM I</u> (Ch.1 – Ch.5)
6	Sep. 27	Ch.7 Enzyme Kinetics and Inhibition
6	Sep. 29	Ch.8 Lipids and Membranes
7	Oct. 04	Ch.9 Membrane Transport
7	Oct. 06	Ch.11 Carbohydrates
8	Oct. 11	Ch.12 Overview of Metabolism and Free Energy
8	Oct. 13	Ch.13 Glucose Metabolism
9	Oct. 18	Ch.13 Glucose Metabolism (con.)
9	Oct. 20	<u>MIDTERM II</u> (Ch.6 – Ch.12)
10	Oct. 25	Ch.14 Citric Acid Cycle
10	Oct. 27	Ch.14 Citric Acid Cycle (con.)
11	Nov. 01	Ch.15 Oxidative Phosphorylation
11	Nov. 03	Ch.15 Oxidative Phosphorylation (con.)
12	Nov. 08	Ch.16 Photosynthesis
12	Nov. 10	Ch.16 Photosynthesis (con.) Ch.17 Lipid Metabolism
13	Nov. 15	Holiday – No class
13	Nov. 17	<u>MIDTERM III</u> (Ch.13 – Ch.16)
14	Nov. 22	Ch.17 Lipid Metabolism (con.)

Week	Date	Topics, Readings, Assignments, Deadlines
14	Nov. 24	Non-instructional day – No class meeting
15	Nov. 29	Ch.18 Nitrogen Metabolism
15	Dec. 01	Ch.18 Nitrogen Metabolism (con.)
16	Dec. 06	Review
16	Dec.08	End of semester – No class
Final Exam	Dec. 17	<u>FINAL EXAM: Tuesday Dec. 14, 7:15 – 9:30 am</u> (All chapters covered).