

San José State University
Chemistry Department
Chem 132, Introductory Biochemistry, Fall 2022

Course and Contact Information

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|-------------------------|---|
| 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: | SH-100 |
| Prerequisites: | CHEM 30B or CHEM 8 (with grades of "C" or better; "C-" not accepted). |

CoS COVID-19 and Monkeypox Safety Training

Students registered for a College of Science (CoS) class with an in-person component should view the [CoS COVID-19 and Monkeypox Training](#) slides for updated CoS, SJSU, county, state and federal information and guidelines, and more information can be found on the [SJSU Health Advisories](#) website. By working together to follow these safety practices, we can keep our college safer. Failure to follow safety practice(s) outlined in the training, the SJSU Health Advisories website, or instructions from instructors, TAs or CoS Safety Staff may result in dismissal from CoS buildings, facilities or field sites. Updates will be implemented as changes occur (and posted to the same links).

Course Web Page

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](#) 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).

Grading Information

Exams: Three midterms are 50% and a comprehensive final exam, 30% of the overall grade. The midterm with lowest score will be dropped. All these exams are timed, closed book, and cumulative. That means the materials covered on a previous exam may be needed for subsequent exams. 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. 21

Exam II: Wednesday Oct. 19

Exam III: Wednesday Nov.16

Final Exam: Friday Dec. 09. 7:15 – 9:30 am

Quizzes: 20%. A Canvas 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 entry. 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.

Extra Credit: Entries in Discussion Forum, homework, and other class activities will be summed up and converted to a possible 3 points extra credit toward your exams.

NOTE: 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.

Determination of Grades

Midterms

50%

| | |
|--------------|-------------|
| Quizzes | 20% |
| Final exam | 30% |
| <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% | | |

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

Attendance: Regular attendance to lecture is essential for your success in this course. Please remember that skipping lecture of one class to study for another class is not an acceptable excuse. As you sign up for your course load, you are responsible for fulfilling the obligations that come with that course load. **You are expected to read each chapter in the textbook and/or preview the lecture PowerPoint files posted on Canvas BEFORE the instructor begins the lecture on that topic.**

Please visit the instructor during office hours if you are having trouble with any of the concepts covered in lecture.

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

- Persistent interruptions or using disrespectful adjectives in response to the comments of others.
- The use of obscene or profane language.
- Yelling at classmates and/or faculty.
- Persistent and disruptive late arrival to or early departure from class without permission.
- Physical threats, harassing behavior, or personal insults (even when stated in a joking manner).
- 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.
- 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
- 7) *SJSU CARES* provides a wide range of services to students having food and housing insecurity. Check for more information at: <https://www.sjsu.edu/sjsucares/>
- 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 2022 Course Schedule

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

| Week | Date | Topics, Readings, Assignments, Deadlines |
|------|---------|---|
| 1 | Aug. 22 | Ch.1 Chemical Basis of Life |
| 1 | Aug. 24 | Ch.2 Aqueous Chemistry |
| 2 | Aug. 29 | Ch.3 From Genes to Proteins |
| 2 | Aug. 31 | Ch.3 From Genes to Proteins (con.) & Ch.4 Protein Structure |
| 3 | Sep. 05 | <i>Labor Day – No class</i> |
| 3 | Sep. 07 | Ch.4 Protein Structure (con.) |
| 4 | Sep. 12 | Ch.4 Protein Structure (con.) & Ch.5 Protein Function |
| 4 | Sep. 14 | Ch.5 Protein Function (con.) |
| 5 | Sep. 19 | Ch.6 Intro to Enzymes |
| 5 | Sep. 21 | <u>MIDTERM I</u> (Ch.1 – Ch.5) |
| 6 | Sep. 26 | Ch.7 Enzyme Kinetics and Inhibition |
| 6 | Sep. 28 | Ch.8 Lipids and Membranes |
| 7 | Oct. 03 | Ch.9 Membrane Transport |
| 7 | Oct. 05 | Ch.11 Carbohydrates |
| 8 | Oct. 10 | Ch.12 Overview of Metabolism and Free Energy |
| 8 | Oct. 12 | Ch.13 Glucose Metabolism |
| 9 | Oct. 17 | Ch.13 Glucose Metabolism (con.) |
| 9 | Oct. 19 | <u>MIDTERM II</u> (Ch.6 – Ch.12) |
| 10 | Oct. 24 | Ch.14 Citric Acid Cycle |
| 10 | Oct. 26 | Ch.14 Citric Acid Cycle (con.) |
| 11 | Oct. 31 | Ch.15 Oxidative Phosphorylation |
| 11 | Nov. 02 | Ch.15 Oxidative Phosphorylation (con.) |
| 12 | Nov. 07 | Ch.16 Photosynthesis |
| 12 | Nov. 09 | Ch.16 Photosynthesis (con.) |
| 13 | Nov. 14 | Ch.17 Lipid Metabolism |
| 13 | Nov. 16 | <u>MIDTERM III</u> (Ch.13 – Ch.16) |
| 14 | Nov. 21 | Ch.17 Lipid Metabolism (con.) |

| Week | Date | Topics, Readings, Assignments, Deadlines |
|------------|----------------|--|
| 14 | Nov. 23 | <i>Non-instructional day – No class</i> |
| 15 | Nov. 28 | Ch.18 Nitrogen Metabolism |
| 15 | Nov. 30 | Ch.18 Nitrogen Metabolism (con.) |
| 16 | Dec. 05 | Review |
| 16 | Dec.06 | <i>End of semester – No class</i> |
| Final Exam | Dec. 09 | <u>FINAL EXAM: Friday Dec. 09, 7:15 – 9:30 am</u> (All chapters covered). |