

Chemistry 365

Biochemistry, Cell & Molecular Biology I

Spring 2023

Course overview:

Chem 365 is an introductory biochemistry course designed to provide you with the tools to succeed in your future upper division biology courses. But the course does more than just that. It describes a framework for studying and understanding biological systems at their most fundamental level—the molecules that make them up. Ultimately, these molecules and their collective interactions are responsible for all the complex phenomena observed in the living world. Fostering an appreciation for these incredible molecules is the main goal of the course. Along the way, we will address several more specific learning goals, including those listed below.

Specific learning objectives:

- 1) Identify the structures and chemical properties of important biomolecules and biopolymers, including nucleotides and nucleic acids, amino acids and proteins, carbohydrates and polysaccharides, and lipids and membranes;
- 2) Connect the structures and chemical properties of these molecules to their modes of interaction and, ultimately, to their collective biological functions;
- 3) Acknowledge the work of scientists from historically underrepresented groups that helped shape our understanding of biomolecular structure and function;
- 4) Communicate the “central dogma” of molecular biology, including the molecules and processes involved, and situations where the central dogma is violated;
- 5) Predict whether a biochemical process will occur or not using thermodynamic principles, with special emphasis on the role of entropy;
- 6) Use mathematical equations to predict binding yields, buffering capacity, cooperativity, and enzyme kinetics and inhibition

Prerequisites: Chemistry 232 and 232L, Biology 203 and 203L

Instructor:

Rees Garmann

E-mail: garmann.chem365@gmail.com

Because our class is large and we don't have TAs, I won't be able to respond to emails as effectively as I'd like to. Rather than emailing me directly, questions about course material or homework should be posted on the “Discussions” page of the Chem 365 Canvas site, where other students can offer helpful comments and solutions. I'll be monitoring these Discussions and I'll address them in class and in office hours. If you need to email me, I'll do my best to reply within 48 hours.

Course meetings:

Tu and Th, 12:30–1:45 PM Pacific Time, NE-060 and on Zoom

Office hours:

Th 2:30–4:30 PM Pacific Time. On Zoom

Office hours will be held using Zoom. I'll post links to the meetings in the "Zoom" page of the Chem 365 Canvas site. Office hours are the best way to discuss questions about course material and homework. Some of the questions you'll have will be difficult to address on the Discussions page or by email. Luckily, such questions are usually much easier to talk about in person or, in our case, over Zoom. Office hours will not be recorded.

Textbook:

Our textbook is *Fundamentals of Biochemistry: Life at the Molecular Level*, 5th Edition, D. Voet, J. Voet & C.W. Pratt (John Wiley & Sons, Inc.)

A link to an eBook version of the text is posted in the "Modules" page of the Chem 365 Canvas site. Additionally, as the course progresses, other course materials including readings, videos, homework, and discussion questions will also be posted to the Canvas site. I'll make announcements about where to find these items during class.

The eBook is provided by Equitable Access for free through the add/drop date. After that, your SDSU student account will be charged for use of the eBook for the remainder of the semester, unless you opt-out by the add/drop date.

Additional info:

Exams: There will be 3 exams, including the final. All exams will be cumulative, because material from the beginning of the course forms the foundation for what comes next. That said, the primary focus of each exam will be on the most recently covered material.

Homework: There will be weekly homework assigned throughout the semester. The homework is graded based on completion, not correctness. If you submit the homework by the due date, and if you show that you've made a serious attempt to solve every problem, then you'll receive full points for that homework. However, if you don't try every problem or you miss the due date, then you'll receive zero points. There is no make-up homework. At the end of the semester, your lowest homework score will be dropped.

Participation: During class, we will work example problems together. Outside of class, you will be expected to contribute to the "Discussions" page of the Chem 365 Canvas site, by asking questions about course material and homework, and by providing helpful suggestions to questions posted by others. During group work, it is essential that we use good [netiquette](#) and treat each other with respect. Students who will fail to do so may be subject to disciplinary actions by the University.

Reading: There will be assigned reading to be completed before each class. Material that we cover in class will build on the reading, so it is important to do the reading before class.

Grading:

Exam 1: 100 points

Exam 2: 100 points

Final Exam: 100 points

Homework: 100 points

At the end of the semester, your final score will be computed by adding up your exam and homework points. If you receive above 90% of the total points, you will certainly get an A in the course; if you receive above 80%, you will get at least a B; above 70%, at least a C; and above 60%, at least a D. If you get less than 60% of the total points you are in danger of getting an F. However, this course is graded on a curve, so it is possible to get an A in the course even if you receive less than 90% of the points, or to get a B with less than 80%, and so on. We won't know what the curve looks like until the end of the semester, but I will keep you updated about the shape of the curve after each exam, so that you can have a good idea about how you are doing, and if you will need to bring up your score to get the grade you want.

Important dates:

Exam 1: February 16th, in class; covering chapters 1-3 of the text*

Exam 2: April 6th, in class; focusing mainly on chapters 4-7*

Final Exam: May 11th, 10:30-12:30 PST; focusing mainly on chapters 8-12*

*The chapters covered in each exam may vary depending on how fast we're able to move through the material.

Please confirm the final exam date here:

https://registrar.sdsu.edu/calendars/final_exam_schedule/spring-2023

Schedule conflicts: Emergencies happen. If you have an emergency that conflicts with one of our exams, please let me know as soon as you can. If you know in advance that you have a conflict with one of the exam dates, email me at least one week beforehand with your reason for why you can't make it. If you miss an exam for any reason other than a valid emergency, and if you did not communicate your conflict to me one week in advance, then you will not be able to make up that exam.

Accommodations: If you are a student with a disability and you need accommodations for this class, please contact Student Ability Success Center (sascinfo@sdsu.edu, sdsu.edu/sasc) to get an accommodation letter as soon as possible. Please allow 10-14 business days for this process. Accommodations are not retroactive, and I can't provide accommodations based upon disability until I've received an accommodation letter from Student Ability Success Center.

Additional resources: A complete list of all academic support services is available on the Student Affairs' [Academic Success](#) website. [Counseling and Psychological Services](#) at (619) 594-5220 offers confidential counseling services by licensed therapists; you can Live Chat with a counselor at http://go.sdsu.edu/student_affairs/cps/therapist-consultation.aspx between 4:00pm and 10:00pm, or you can call San Diego Access and Crisis 24-hour Hotline at (888) 724-7240.

Student Privacy and Intellectual Property: [The Family Educational Rights and Privacy Act](#) (FERPA) mandates the protection of student information, including contact information, grades, and graded assignments. I will use Canvas to communicate with you, and I will

not post grades or leave graded assignments in public places. Students will be notified at the time of an assignment if copies of student work will be retained beyond the end of the semester or used as examples for future students or the wider public. Students maintain intellectual property rights to work products they create as part of this course unless they are formally notified otherwise.

Religious observances: According to the University Policy File, students should notify their instructors of planned absences for religious observances by the end of the second week of classes.

Statement on Cheating and Plagiarism: The University adheres to a strict [policy](#) regarding cheating and plagiarism. The California State University system requires instructors to report all instances of academic misconduct to the Center for Student Rights and Responsibilities. Academic dishonesty will result in disciplinary review by the University and may lead to probation, suspension, or expulsion. Instructors may also, at their discretion, penalize student grades on any assignment or assessment discovered to have been produced in an academically dishonest manner. The [Student Conduct Code](#) prohibits conduct disruptive to instruction, including academic dishonesty and the unauthorized recording, dissemination, or publication (including on websites or social media) of lectures or other course materials.

SDSU Economic Crisis Response Team: If you or a friend are experiencing food or housing insecurity, or any unforeseen financial crisis, visit sdsu.edu/ecrt, email ecrt@sdsu.edu, or walk-in to Well-being & Health Promotion on the 3rd floor of Calpulli Center.

Statement on sexual violence: As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I am required to share information regarding sexual violence on SDSU's campus with the [Title IX](#) coordinator, Gail Mendez (619-594-6464), who will contact you to let you know about support services at SDSU and possibilities for holding accountable the person who harmed you. If you do not want the Title IX Officer notified, you can speak confidentially SDSU's Sexual Violence Victim Advocate (619-594-0210) or Counseling and Psychological Services (619-594-5220, psycserv@sdsu.edu).

Land acknowledgment: For millennia, the Kumeyaay people have been a part of this land. This land has nourished, healed, protected and embraced them for many generations in a relationship of balance and harmony. As members of the San Diego State University community, we acknowledge this legacy. We promote this balance and harmony. We find inspiration from this land, the land of the Kumeyaay.

Disclaimer: I have made every effort to make this Syllabus as complete and accurate as possible. But there will inevitably be changes during the semester. These will be posted on the Chem 365 Canvas site and announced in class. It is the responsibility of each student to pay attention and be aware of these changes.