

San José State University
Chemistry Department
Chem 236, Biophysical Methods, Spring 2021

Course and Contact Information

Instructor:	Dr. Daryl Eggers
Office Location:	DH 604
Telephone:	408-924-4960
Email:	daryl.eggers@sjsu.edu (<i>preferred means of contact</i>)
Office Hours:	T/R, 19:15-19:45 (<i>other times by appointment</i>)
Class Days/Time:	T/R, 18:00-19:15
Classroom:	online
Prerequisites:	CHEM 130A or CHEM 135 (or equivalent course with a grade of "C" or better; "C-" not accepted), or instructor consent.

eCampus Course Page

Online lectures and course materials including videos, pdf files, quizzes and exam assignments must be accessed through the [Canvas Learning Management System](http://sjsu.instructure.com) course login website at <http://sjsu.instructure.com>. The Powerpoint slides used in lecture will be posted prior to the corresponding class meeting as a pdf file such that students may print or view them while taking notes during the lecture. Other student resources related to online learning and technology may be found on the [Learn Anywhere](https://www.sjsu.edu/learnanywhere/) webpage: <https://www.sjsu.edu/learnanywhere/>.

Course Description

Advanced lectures on theory and methodology of biophysical measurements. Topics selected primarily from spectroscopic methods with a focus on applications related to coronavirus research.

Course Goals and Learning Objectives

Program Learning Outcomes (PLO)

PLO's for the MS or MA degree in Chemistry may be found at the following URL:
http://www.sjsu.edu/chemistry/Academic_Programs/Graduate_Programs/Graduate_Program_Learning_Objectives.html

Course Learning Outcomes (CLO)

(1) To become familiar with many of the biophysical techniques used in research and industry for analyzing the structure and function of macromolecules; (2) to appreciate the role of water structure in

biological interactions; (3) to read and critique multiple journal articles from the scientific literature; (4) to improve written and verbal communication skills as applied to topics in biophysical chemistry.

Textbook

None required; most readings will come from scientific articles and will be shared as pdf files in Canvas.

Library Liaison

Yen Tran <yen.tran@sjsu.edu>

General Requirements

Web Camera

A webcam is needed for oral presentations and weekly participation in online zoom meetings. Note that PC laptops and tablets may be checked out for the entire semester from [Information Technology services](#).

Time Commitment

Success in this course is based on the expectation that students 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, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Grading Information

Letter grades will follow a traditional curve, the top 3% earning a plus grade and the bottom 3% earning a minus grade within each decade: 93.0-100% (A), 90.0-92.9% (A-), 87.0-89.9% (B+), 83.0-86.9% (B), 80.0-82.9% (B-), etc. The instructor reserves the right to lower the grading curve at the end of the semester if he deems it to be appropriate.

Misc assignments	150 points
Online Participation	50
Midterm exam	75
Oral Paper	50
Term Paper	100
<u>Final Exam</u>	<u>75</u>
Total	500 points

Miscellaneous Assignments

Miscellaneous homework assignments include worksheet summaries for 9 of the 10 assigned journal articles, intermediate steps in term paper preparation, and peer evaluations of oral presentations. There will be a 20% deduction for any late assignment.

Online Participation

Students are expected to participate in the discussion of each of the assigned journal articles (typically a Tuesday evening class meeting). Five points will be awarded for joining the live zoom session, turning on your camera, and participating in the discussion of each journal article.

Term Paper

Term papers will review a specific biophysical technique, as selected by the student and approved by the instructor. Topics that differ from the material covered by the instructor are highly encouraged, but not required. Details for writing the term paper will be discussed in class. Writing expectations and grading criteria will be issued to each student in the form of a table near the beginning of the semester. See the course schedule for deadlines in preparation of the term paper.

Oral Presentation

The oral presentations will elaborate on the methods and results of a single journal article published within the last 5 years. The article should be referenced in the term paper and approved by the instructor. The length of the oral presentation should be 15-20 minutes with 5 minutes for questions and class discussion. Each presentation will be critiqued by one or more classmates in addition to the instructor. The final exam will include questions taken from material covered in the oral presentations, so all students should be active listeners.

Exams

The midterm and final exams will be taken online during the normal classroom time. THERE ARE NO MAKE-UP EXAMS. If you know in advance that you have an excusable time conflict, let the instructor know as soon as possible. If you are registered with the AEC office and have been approved for extra accommodations, let the instructor know at the start of the semester, long before the first midterm. If you miss a midterm exam due to illness or other unforeseen circumstance, please let the instructor know your situation when you are first able.

Statement Regarding Online Cheating

Any form of cheating is a serious violation of SJSU's Academic Integrity Policy. A student caught cheating on an exam will receive a zero score and may be subject to further administrative sanctions, including probation, suspension, or expulsion. Chegg and other "solution" websites are strictly prohibited during an exam.

University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant information 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 visit this page, review and be familiar with these university policies and resources.

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Tentative Course Schedule, Chem 236

(check Canvas for updates)

Week	Date	Topics, Readings, Assignments, Deadlines
1	Jan 28	Overview of Course; Intro to Biophysical Methods
2	Feb 02 Feb 04	Review of Macromolecular Structure; Intro to Coronavirus Water & Thermodynamics
3	Feb 09 Feb 11	Water & Thermodynamics II; journal article #1 Protein Folding & Stability
4	Feb 16 Feb 18	Protein Folding & Stability II; article #2 Absorption Spectroscopy
5	Feb 23 Feb 25	Absorption Spectroscopy II; article #3 Emission Spectroscopy
6	Mar 02 Mar 04	Emission Spectroscopy II; article #4 Molecular Crowding and Confinement <i>paper topic due</i>
7	Mar 09 Mar 11	Molecular Crowding and Confinement; article #5 Circular Dichroism
8	Mar 16 Mar 18	Circular Dichroism II; articles #6 Calorimetry Techniques
9	Mar 23 Mar 25	Calorimetry Techniques II; article #7 Midterm Exam
-	Mar 30 Apr 01	<i>Spring Break</i>
10	Apr 06 Apr 08	Computational Approaches <i>key references due</i> Computational Approaches II; article #8
11	Apr 13 Apr 15	Discuss Kurtzman talk, oral presentations <i>outline due</i> Microscale Thermophoresis
12	Apr 20 Apr 22	Microscale Thermophoresis II; article #9 Mass Spectroscopy - H/D Exchange
13	Apr 27 Apr 29	Mass Spectroscopy II; article #10 Science Advocacy Day <i>early paper bonus</i>
14	May 04 May 06	Oral presentations 1-3; peer reviews Oral presentations 4-6; peer reviews <i>term papers (4-12) due</i>
15	May 11 May 13	Oral presentations 7-9; peer reviews Oral presentations 10-12; peer reviews <i>term papers (1-3) due</i>
Final	May 16	Final Exam 6:00 – 7:15 pm