San José State University
Department of Chemistry
Foundations of Macromolecular Chemistry, Chem 170A, Spring, 2022

Instructor:	Prof. Madalyn Radlauer (*she/her/hers*)
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Office Hours:	Wednesdays 2:00 pm – 4:00 pm or by appointment
Class Days/Time:	Wed 4:30 – 6:10 pm (*until March 16th*)
Classroom:	DH 351
Prerequisite:	CHEM 112B (with grades of "C" or better; "C-" not accepted) or with instructor consent

Course Website

Course materials such as the syllabus, notes, assignment instructions, etc. can be found on Canvas (https://sjsu.instructure.com/). Even though our class periods will be in person, videos, notes, and assignments will all be posted on Canvas, so you will likely be using it several times per week.

Course Description

(*From catalog*) Introduction to macromolecular, supramolecular, mesoscale, and nanoscale systems and the principles that govern them including preparation, characterization and physical properties.
(*Some extra detail*) Though synthetic polymers, supramolecular aggregates, mesoscale, and nanoscale materials are all vibrant areas of chemistry in their own right, they are differentiated from small molecule chemistry due to generally inhomogeneous nature of these species. The course will also examine how findings in these areas are reported to different audiences (i.e. science communication to the general public, scientists, and specialists).

Course Goals and Learning Objectives

The first goal of this course is to introduce macro-, supra-, and nanomolecular chemistry (MSN), specifically regarding preparation, characterization, and physical properties of these often inhomogeneous materials. The second goal is to consider and evaluate how research and developments in MSN are communicated.

Course Learning Outcomes (CLO)

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

CLO 1: Define and explain characteristics that differentiate macromolecules, supramolecular assemblies, and nanomaterials from small molecules especially inhomogeneity and emergent properties and how these characteristics are measured.

CLO 2: Recognize and evaluate various applications for macromolecules, supramolecular assemblies, and nanomaterials in everyday life.

CLO 3: Examine and reflect on different modes of communication about MSN.

Texts/Readings

Textbook

There is no required textbook for this course.

Library

You should have a student library account with the King Library that allows you access the library electronic databases. If you plan to access the library services from off-campus, you may need to obtain a password and/or proxy to do so. Check the Library website for information. The reference Librarian for Chemistry is **Anne Marie Engelsen** and her email is annemarie.engelsen@sjsu.edu.

Course Requirements and Assignments

Graded work will include participation, reflections, and a final project, which will all contribute to the course learning outcomes.

Assignments	Points
In-class (Zoom) and Canvas discussions	30
Reflections	40
"MacroLit" Project	30
Total	**100**

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 for instruction or preparation/studying or course related activities. This course has been condensed into half a semester so that we will have ample time for in-class discussions. It will be more work for the first 8 weeks of the semester, but then you only have revisions to your final project (optional) and a course feedback survey (optional, extra credit) to work on for the remainder of the semester.

Participation

In-Class Discussions

Participation during in-class discussions about the course material and assigned readings and videos will account for 15 points (15%) of your grade.

Canvas Discussions

Participation in Canvas discussions about the course material and assigned readings and videos will account for 15 points (15%) of your grade.

Reflections

There will be 4 short writing assignments each worth 10 points (40 points total, 40%) of your grade. They will cover different topics from the course. They will be completed outside of class, but discussed during class time.

MacroLit Project (in place of a final exam)

Instead of a final exam, you will be participating in a group project, though all of you will be graded primarily on your own work (25/30 pts will be individually assigned). For this project you will choose a topic directly related to this course that you are interested in learning more about; you and your group mates will all be working on the same topic. You will each choose a different recent (from the last 5 years) peer-reviewed publication (topic and

paper choice: 5 pts, individual). After reading the paper, you will write a report on it (10 pts, individual). Then you will read the papers and reports of your group mates and write a response to each (10 pts, individual). Finally, you and your group will write a brief introduction to your topic, compile the reports and responses as the body of the project, and finish with a conclusion section. The full project will be due on the last day of class, 3/16/22 (5 pts, group). You will get comments and initial grades back from me for each section of the project and you will have the opportunity to make revisions on any portion of the project for additional credit. Revisions will be due by 5 pm on 5/23/22.

Grading Information

Determination of Grades

The course grade will be assigned according to the following ranges:

Percentage of Total Points	Final Course Grade
96 and above	A plus
92 to 95.9	A
88 to 91.9	A minus
84 to 87.9	B plus
80 to 83.9	B
76 to 79.9	B minus
72 to 75.9	C plus
68 to 71.9	C
64 to 67.9	C minus
60 to 63.9	D plus
56 to 59.9	D
52 to 55.9	D minus
less than 52	F

Assignment Deadlines

The COVID-19 pandemic and tumultuous happenings causing havoc in our world are still forcing us to work and learn under very strange circumstances. This may make it more difficult for you to maintain a steady course schedule and you may need to miss class or an assignment at some point in the semester. If this is the case, please contact me *ahead* of time and with as much of a heads up as possible and we can discuss the situation. Generally, all assignments are required to be submitted on or before the assigned deadline, but I will do my best to be accommodating for unforeseen circumstances if I receive appropriate communication.

Classroom Protocols

As a show of respect to your fellow classmates and me, please be on time to class; we will start at 4:30 pm.

If we end up having to move to online classes, please find a place where you will be able to use your microphone and webcam. Unless an alternative plan is determined with me before the second class period, I expect everyone to be able to do "face-to-face" discussions so that you can participate during the class period. Virtual backgrounds are acceptable as long as they are appropriate and respectful.

Please do not come to class if you do not feel well. Email me and we can set up one of two options for you.

1. If you would like to attend class virtually, we can set up a Zoom meeting *as long as you email me at least 10 minutes before class starts*.
2. We can arrange for you to make up the work.

Safe and Respectful Community

I 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. If anything in the classroom makes you feel uncomfortable or disrespected, especially if it is something that I say or do, please bring it to my attention. You all are students, but you are people first and foremost, and the classroom should be a place you feel welcomed and respected.

Email Policy

I receive a lot of emails, so to be sure that I see your email, all Chem 170A emails should have Chem 170A in the subject line. I will do my best to respond to class-related emails within 1 business day of receiving them, however, keep in mind that this may not always be possible. You can also message me via Canvas and I will target a similar turnaround time.

COVID-19 Related Policies

Masks are REQUIRED in the classroom and they must cover both your nose and mouth. I have a toddler who cannot be vaccinated yet, so even if SJSU lifts its mask mandate, I will continue to require masks in the classroom for the entire semester. Anyone not wearing a mask will not be allowed to attend class.

For the time being, SJSU is not requiring social distancing, so that we can do our discussions in person. If this changes, we may have to go at least partly online in order to have class discussions without having to yell across the room.

All students coming to campus for College of Science classes must go through the College of Science COVID training. This primarily includes watching a video prepared by the Safety Team and reading the SJSU Adapt Plan.

Everyone at SJSU is required to be fully vaccinated and boosted against COVID-19.

If you have COVID symptoms, a positive COVID test, or are exposed to someone who tests positive for COVID, DO NOT COME TO CAMPUS. Email me and I will send you a follow up email with the appropriate protocols to follow.

University Policies

Per University Policy S16-9, relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on Syllabus Information web page (https://www.sjsu.edu/curriculum/courses/syllabus-info.php). Make sure to visit this page to review and be aware of these university policies and resources.

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The tentative course calendar below includes weekly course content and assignment deadlines.

Tentative Course Schedule

Class/ Week	Date	Topics
1	01/26/22	What are macromolecules, supramolecular assemblies, and nanomaterials and what do they have in common? What do we mean by inhomogeneity and emergent properties?
2	02/02/22	Molar mass and dispersity: How we think about (and measure) macromolecular size? Introduction to polymers: Synthesis, characterization, and applications
3	02/09/22	Introduction to supramolecular assemblies: Synthesis, characterization, and applications
4	02/16/22	Introduction to nanomaterials: Synthesis, characterization, and applications
5	02/23/22	Polymers: Our consumer-based economy/why there is a plastic island in the ocean Plastic recycling and sustainable materials
6	03/02/22	Supramolecular materials: Molecular machines and drug delivery
7	03/09/22	Nanomaterial applications: Distinguishing from the bulk
8	03/16/22	Given what we have learned, where can we go from here?

Assignment schedule

Class/ Week	Date	Deadlines
2	02/02/22	Reflection #1, MacroLit topic ideas list
3	02/09/22	Reflection #2, MacroLit topic rankings
4	02/16/22	MacroLit paper choice
6	03/02/22	Reflection #3, MacroLit individual report draft
7	03/09/22	Reflection #4, MacroLit responses draft
8	03/16/22	MacroLit Project
*	05/23/22	*Assigned Final Exam time (2:45 to 5:00 pm)* MacroLit project revisions (optional) and course survey (extra credit)