San José State University
Science/Chemistry
Chemistry 270, Advanced Chemistry, Section 02, Fall 2022

Course and Contact Information

Instructor: Dr. Gilles Muller
Office Location: DH 412A
Telephone: (408) 924-2632
Email: Via Canvas and/or gilles.muller@sjsu.edu (preferred means of contact)

Office Hours: W, 3:00 pm - 4:00 pm (other times by appointment)
Class Days/Time: W, 5:00 pm - 6:40 pm
Classroom: DH 243
Prerequisites: Satisfactory background in upper division chemistry (including Chem 145, Chem 160 or Chem 161A/B, Math 30, Math 31 or equivalent courses with a grade of “C” or better, “C-“ not accepted) and instructor content

Fall 2022 Paragraph for Syllabi on COVID-19 and Monkeypox

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).

eCampus Course Page

Course materials such as pdf articles, handouts, and updates to this syllabus may be obtained by logging into Canvas from the MySJSU homepage at http://my.sjsu.edu/. You are responsible for regularly checking with the messaging system in Canvas to learn any updates or changes in the schedule.

Course Description

Lectures, discussions and reading assignments in special fields of chemistry. Topics selected primarily from molecular symmetry and group theory with significant discussion on the principles and applications.
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: https://www.sjsu.edu/chemistry/academic-programs/graduate-programs/graduate-plo.php

Course Learning Outcomes (CLO)

(1) To become familiar with the molecular symmetry and group theory as applied to chemical problems; (2) to demonstrate the centrality of symmetry and group theory to a complete understanding of the theory of structure and bonding; (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 molecular symmetry and group theory.

Texts/Readings

Textbook
No textbook is required for this course.

Supplementary Text(s) (not required, these may provide further clarification of various topics)


Other Materials

- Class Notes: Handouts provided by Dr. Muller, including detailed assignment sheets.

Primary literature will be essential for the topic in this course. You should have a student library account with the King Library that allows you access the library electronic databases (https://libguides.sjsu.edu/az.php) such as SciFinder (https://scifinder.cas.org/). There is also a special CHEM 100W Library Research Help guide (https://libguides.sjsu.edu/chem100W) that is of interest. 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.

Library Liaison

The Chemistry Library Liaison is Anne Marie Engelsen (annemarie.engelsen@sjsu.edu)

There will be a mandatory workshop meeting with Chemistry Library Liaison Anne Marie Engelsen @ 5:00 pm in MLK Rm 213 on Wednesday, Aug 31, 2022.
Course Requirements

General

“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 S16-9 at http://www.sjsu.edu/senate/docs/S16-9.pdf.

NOTE that University Policy S16-9 at http://www.sjsu.edu/senate/docs/S16-9.pdf states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Miscellaneous Assignments

Miscellaneous homework assignments include a 10-point quiz on plagiarism, intermediate steps in term paper preparation, and three peer evaluations of oral presentations.

Term Paper

Term papers will review a specific topic from molecular symmetry and group theory, as selected by the student and approved by the instructor. Topics that differ from the class material 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 (or a series of journal articles) published within the last 5 years. The article(s) 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.

Exam

This course is focused on developing the capacity to read and critically evaluate the literature and, in general to hone your critical thinking as a scientist. As such, there will be no exams. The term paper will represent the culminating activity for this course.

Grading Policy and Criteria

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.
Miscellaneous Assignments  70 points (28% of total course grade)
Oral Presentation  70 points (28% of total course grade)
Term Paper  110 points (44% of total course grade)
Total  250 points

Plagiarism of any sort will not be tolerated. Students who do not submit their own work will receive a zero, and continuing to do so will result in a failing grade in the course.

**Classroom Protocol**

You should plan each week to devote your time for the entire 100-minute class period (once per week) to enhance your understanding of the concepts discussed. As college students, you are adult learners, so it is your responsibility to make sure that you are contributing to your success and, when it comes to providing constructive feedback, the success of your classmates. Any assignment not completed or turned in will result in a zero grade. If the student misses lecture class it is their responsibility to obtain notes, handouts and other materials or communications provided in class. A tentative course outline is found at the end of this syllabus. All class participants are expected to interact in a professional manner in all matters pertaining to this course.

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 lecture class is unacceptable. Students exhibiting this behavior will be asked to leave the lecture class and will not be given the opportunity to make up the time. The university has a [brochure on student conduct](https://www.sjsu.edu/studentconduct/docs/SJSU-SCED-Brochure-English.pdf) that you can view at [https://www.sjsu.edu/studentconduct/docs/SJSU-SCED-Brochure-English.pdf](https://www.sjsu.edu/studentconduct/docs/SJSU-SCED-Brochure-English.pdf). 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) Persistent and disruptive late arrival to or early departure from virtual class without permission.

d) Physical threats, harassing behavior, or personal insults (even when stated in a joking manner).

e) Other inappropriate behavior e.g. yelling directed at classmates and/or faculty.

f) Use of personal electronic devices such as pagers, cell phones, PDAs in virtual class, unless it is part of the instructional activity.

*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.*

**Attendance Policy**

Beyond the initial day of class, roll will not be taken. However, attendance of the lectures is mandatory. If you miss a lecture, you are still responsible for all the material discussed in lecture (some of which may not be in the text). Note we will cover a significant amount of material
during each class meeting. If you miss class meetings, it will be difficult to catch up due to the volume. A tentative course outline is found at the end of this syllabus.

Be on time to class period and stay the entire time from 5:00 pm to 6:40 pm as a courtesy to the instructor and your colleagues. Cell phones and other devices should be turned off for class, unless they are being used to take notes. Please engage with the instructor and your colleagues as this way you will gain the most from it.

**Email Policy**

I receive a lot of emails, so to be sure that I see your email, all Chem 270 emails should have [Chem 270] 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, especially during high volume times (around exams). Office hours are the best way to get timely answers to more complicated questions.

**University Policies (Required)**

Per University Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/.
# Tentative Course Schedule, Chem 270, Section 02
*(check Canvas for updates and pdf files)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
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| 1    | Aug 24 | Overview of course; Writing Center resources; plagiarism discussion  
|      |        | *prerequisite course documentation due before or by 11:59 pm on Aug 30* |
| 2    | Aug 31 | Library Resources – Anne Marie Engelsen (meet in MLK Rm 213)  
|      |        | *plagiarism tutorial completion due before or by 11:59 pm on Sept 6* |
| 3    | Sept 7 | An introduction to molecular symmetry |
| 4    | Sept 14| An introduction to molecular symmetry (continued) |
| 5    | Sept 21| Molecular symmetry and group theory |
| 6    | Sept 28| Representation of groups  
|      |        | *Term paper topic due before or by 11:59 pm on Oct 4* |
| 7    | Oct 5  | Techniques and Relationships for Chemical Applications  
|      |        | *Key references for term paper due before or by 11:59 pm on Oct 11* |
| 8    | Oct 12 | Techniques and Relationships for Chemical Applications (continued)  
|      |        | *Outline of term paper due before or by 11:59 pm on Oct 18* |
| 9    | Oct 19 | Symmetry and chemical bonding  
|      |        | *Oral presentation outline and abstract due before or by 11:59 pm on Oct 25* |
| 10   | Oct 26 | Vibrational spectroscopy  
|      |        | *Oral presentation PowerPoint document due before or by 11:59 pm on Nov 1* |
| 11   | Nov 2  | Oral presentations 1-4; peer reviews  
|      |        | *Oral presentation peer assignment – day 1*  
|      |        | *Oral presentation peer assignment due before or by 11:59 pm on Nov 22* |
| 12   | Nov 9  | Oral presentations 5-8; peer reviews  
|      |        | *Oral presentation peer assignment – day 2*  
|      |        | *Oral presentation peer assignment due before or by 11:59 pm on Nov 22* |
| 13   | Nov 16 | Oral presentations 9-12; peer reviews  
|      |        | *Oral presentation peer assignment – day 3*  
|      |        | *Oral presentation peer assignment due before or by 11:59 pm on Nov 22* |
| 14   | Nov 23 | Non-instructional day (no class held) |
| 15   | Nov 30 | Vibrational spectroscopy (continued) |
| Final| Dec 14 | **Term paper** in lieu of Final Exam due on Dec 14 by 2:45 pm* |

* Assignment files are always due before or by the given time on the date stated (loaded on Canvas)