Chemistry 564 – Physical Chemistry Laboratory (1 cr)
Spring 2020

Online Course Website

The specific course website for each section can be accessed through the general canvas dashboard located at https://canvas.wisc.edu

Course Designations

Breadth - Physical Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Meeting Times

All sections meet from 1:20-5:30p in room B200. 564-1 meets on Mondays, 564-3 meets on Tuesdays, 564-4 meets on Wednesdays, and 564-6 meets on Thursdays.

Instructional Mode

The course is instructed with all sessions being face-to-face.

Credit Hour Completion

The course follows the “45 hours per credit” definition where one credit is at least 45 hours of work throughout the semester. The total in-class time throughout the semester is 38 hours and the out-of-class participation is expected to be at least 7 hours, but likely to be approximately 20 hours.

Instructors and Teaching Assistants

Prof. Martin Zanni (zanni@chem.wisc.edu) – Instructor for 564-1, 564-3

Dr. Mark Wendt (mark.wendt@wisc.edu) – Instructor for 564-4, 564-6

Madison Fellows (mdfellows@wisc.edu) – Teaching assistant for Chem 564-1, 564-3, 564-4

Brandon Mehlenbacher (bmehlenbache@wisc.edu) – Teaching assistant for Chem 564-1, 564-4, 564-6

Houston Smith (hhsmith2@wisc.edu) – Teaching assistant for Chem 564-1, 564-3

Enran Xing (exing2@wisc.edu) – Teaching assistant for Chem 564-3, 564-4, 564-6

Hanming Yang (hyang366@wisc.edu) – Teaching assistant for Chem 564-1, 564-3, 564-6

Office hours are 12:15-1:15p Monday through Thursday in room B221.

Course Description

Principles of experimental physical chemistry applied to the acquisition and interpretation of basic data on molecular structure and dynamics, and properties of macromolecules; principles and use of spectroscopic and other electronic instrumentation.

Requisites

CHEM 562 and CHEM 563

Course Learning Outcomes

Understand the fundamentals of spectroscopic techniques.

Understand the basics of instrumentation in relation to making an experimental measurement.

Communicate scientific content in oral conversation.

Make connections between quantum mechanics and qualitative physical descriptions.

Textbook

There is no textbook required for the course. Required reading material is provided by hard copies of handouts, and also provided electronically on the course website. Suggested readings are provided electronically on the course website.

Safety

Eye protection (goggles, or safety glasses that include side protection) and closed-toe shoes are always required in the laboratory whenever any experiments are in progress. Goggles are available in the lab for student use, but you are encouraged to use your own. Other clothing choices are up to you but be aware that there are always dangers of stains, corrosive chemical spills, splashes, and broken glass when working in a chemistry laboratory.

Graded Materials

- *Online quizzes*: There are six prelab quizzes worth 5 points each. These quizzes are due before the laboratory period on the assigned day. Your final score for each quiz is the highest score out of a maximum of three attempts.

- *Written quizzes*: There are six in-lab written quizzes worth 5 points each. These quizzes are based on the written activities from the previous period.

- *Written activities*: There are eight sets of written activities worth 5 points each. You must work these activities on the whiteboards and check each solution with a staff member. If you are able to complete the activities during the laboratory period then no handwritten materials are required for submission. Otherwise, unfinished activities are due in writing at the start of the next laboratory period.

- *Oral exams*: There are two oral exams worth 100 points each. You should be prepared to discuss the theory behind the experiment as well as specifics of your data and methods. Specific topics, details of the format, and the schedule will be discussed before the exam.

Point Breakdown

Online quizzes (6)	= 30 pts
Written quizzes (6)	= 30 pts
Written activities (8)	= 40 pts
Oral exams (2)	= 200 pts
Total	*= 300 pts*

Letter grades for the oral exams and for the course are assigned based on the following scales:

Oral Exams	
A	90-100
AB	80-89
B	70-79
BC	60-69
C	50-59
D	40-49
F	<40

Final Grades	
A	279-300 (93%)
AB	258-278 (86%)
B	237-257 (79%)
BC	216-236 (72%)
C	195-215 (65%)
D	174-194 (58%)
F	<174

Schedule

Note that a complete list of activities to do before the start of each laboratory period is given in the *Preparation* subsection of each daily checklist in the handout for the experiment.

Week	Schedule A	Schedule B
1/27	NMR Day 1	Microwave Day 1
2/3	NMR Day 2	Microwave Day 2
2/10	NMR Day 3	Microwave Day 3
2/17	NMR Day 4	Discussion
2/24	NMR Day 5	***Microwave Oral Exam***
3/2	Discussion	NMR Day 1
3/9	***NMR Oral Exam***	NMR Day 2
3/23	Microwave Day 1	NMR Day 3
3/30	Microwave Day 2	NMR Day 4
4/6	Microwave Day 3	NMR Day 5
4/13	Discussion / DUCK Exam	Discussion / DUCK Exam
4/20	***Microwave Oral Exam***	***NMR Oral Exam***