Chem 2605: Physical Chemistry Lab, 1.0 credit

Spring 2024 Lab
W, 1:10 PM – 5:10 PM, Discovery W407

Instructor
Prof. Matt Liptak
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Instructor Office Hours
T 1-2 PM, R 9-10 AM Innovation E336

Teaching Assistant
Bruce Lickey
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Prerequisites
Chem 2600

General Education Requirements
This course does ***not*** satisfy any general education requirements

Course Description
Chem 2605 is the laboratory course for physical chemistry, covering selected topics in quantum chemistry and thermodynamics.

Statement on Diversity and Inclusion
I strive to create a classroom environment that supports students from a diverse set of backgrounds. Our society is composed of individual from diverse ethnic, socioeconomic, and educational backgrounds. Half of our society are women. I strongly believe that our best path forward to a stronger and more equitable society is to promote inclusiveness.

It is my expectation that every member of this class will also support diversity and inclusion. As a community, we should strive to uphold the ideals of Our Common Ground: https://www.uvm.edu/president/our-common-ground

I welcome any suggestions as to how I can promote a diverse and inclusive classroom.

Course Learning Objectives
Upon completion of Chem 2605, it is anticipated that you will:
1. Demonstrate practical skills in experimental and computational physical chemistry.
2. Apply your knowledge of physical chemistry to evaluate laboratory data.
3. Produce comprehensive laboratory reports containing critical data analysis.

Attendance Policy

Attendance of Chem 2605 is mandatory. You are only permitted to miss one laboratory with a university- or medically-sanctioned absence. Additional absences will result in a failing grade.

Grading

Your grade will be based upon six laboratory reports.

Laboratory Reports: 100 points each

Each laboratory report should contain the following sections:

1. Introduction (200-300 words, **20 points**). What was the goal of the experiments performed? Why were the methods employed appropriate?
2. Methods (200-300 words, **20 points**): Complete and concise summary of experimental and theoretical techniques employed. The reader should be able to repeat your experiments based upon this section.
3. Results (400-600 words, **40 points**): Present and analyze your data and figure. Provide a justification for the results and explain inconsistencies in the data.
4. Discussion (200-300 words, **20 points**): Discuss the implications of your data with regards to the original goal of your experiments. Summarize your conclusions.

Each section will be graded based upon: content (80%), formatting (10%), and language (10%).

General Considerations

Laboratory reports are due at 1:10 PM on the dates noted below.

I will reduce a third letter grade (e.g. A → A-) for each day your report is late.

I will drop your lowest laboratory report grade from the final grade calculation.

Course Evaluations

All students are expected to complete online course evaluations. The evaluations will be anonymous and confidential. The information gained from these evaluations will be used to iteratively improve Chem 2605 for future *UVM* students.

Office Hours

This is your time to ask me any questions you have on course material, or additional scientific writing questions that go beyond the course material. For the most part this is an opportunity to discuss your presentation one on one with me, but I'm also happy to meet with small groups. I will make a concerted effort to divide up this time equitably between all students in the class, so your time may be a bit shorter on days when a large number of students visit office hours.

There is no need to make an appointment for office hours. I will be available in my office for the entirety of the time blocks noted above regardless of attendance.

E-mail

I will respond to all e-mails within one working day.

Course Schedule

Jan. 17: Course Introduction
Jan. 24: No Class
Jan. 31: Infrared Spectroscopy of HCl and DCl
Feb. 7: Infrared Spectroscopy of HCl and DCl
Feb. 14: Electronic Spectroscopy of Anthracene, **Lab Report #1 Due**
Feb. 21: Electronic Spectroscopy of Anthracene
Feb. 28: Bomb Calorimetry of Camphor, **Lab Report #2 Due**
Mar. 6: Bomb Calorimetry of Camphor
Mar. 13: No Class
Mar. 20: Differential Scanning Calorimetry of Polymers, **Lab Report #3 Due**
Mar. 27: Differential Scanning Calorimetry of Polymers
Apr. 3: NMR Spectroscopy of NNDMA, **Lab Report #4 Due**
Apr. 10: NMR Spectroscopy of NNDMA
Apr. 17: EPR Spectroscopy of Aged Beer, **Lab Report #5 Due**
Apr. 24: EPR Spectroscopy of Aged Beer
May 1: Course Evaluations, **Lab Report #6 Due**

Intellectual Property Statement/Prohibition on Sharing Academic Materials:
Students are prohibited from publicly sharing or selling academic materials that they did not author (for example: class syllabus, outlines or class presentations authored by the professor, practice questions, text from the textbook or other copyrighted class materials, etc.); and students are prohibited from sharing assessments(for example homework or a take-home examination). Violations will be handled under UVM's Intellectual Property policy and Code of Academic Integrity.

University-wide Policies and Procedures

Student Learning Accommodations
In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Disability Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student's accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan.

Contact SAS:
A170 Living/Learning Center;
802-656-7753;
access@uvm.edu
www.uvm.edu/access

Religious Holidays
Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. https://www.uvm.edu/registrar/religious-holidays

Academic Integrity
The policy addresses plagiarism, fabrication, collusion, and cheating.
https://www.uvm.edu/policies/student/acadintegrity.pdf

Grade Appeals
If you would like to contest a grade, please follow the procedures outlined in this policy:
https://www.uvm.edu/policies/student/gradeappeals.pdf

Grading
For information on grading and GPA calculation, go to https://www.uvm.edu/registrar/grades

Code of Student Conduct
http://www.uvm.edu/policies/student/studentcode.pdf

FERPA Rights Disclosure

The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974.
http://catalogue.uvm.edu/undergraduate/academicinfo/ferparightsdisclosure/

Promoting Health & Safety

The University of Vermont's number one priority is to support a healthy and safe community:

Center for Health and Wellbeing

https://www.uvm.edu/health

Counseling & Psychiatry Services (CAPS)

Phone: (802) 656-3340

C.A.R.E.

If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at https://www.uvm.edu/studentaffairs

Final Exam Policy

The University final exam policy outlines expectations during final exams and explains timing and process of examination period. https://www.uvm.edu/registrar/final-exams

Statement on Alcohol and Cannabis in the Academic Environment

As a faculty member, I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. It is important to note that alcohol and cannabis have no place in an academic environment. They can seriously impair your ability to learn and retain information not only in the moment you may be using, but up to 48 hours or more afterwards. In addition, alcohol and cannabis can:

Cause issues with attention, memory and concentration
Negatively impact the quality of how information is processed and ultimately stored
Affect sleep patterns, which interferes with long-term memory formation