CHEM 166 – Physical Chemistry Lab
Spring 2019 Syllabus

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Office Hours: Wednesday and Thursday 11a-12p, or by appointment.

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Course Information
Class: Monday 5:05-9:05
Location: Discovery W407

Course Description and Goals
In this course you will apply fundamental physical chemistry concepts to predict, characterize, and understand the underlying atomic-level phenomena that drive experimental observable properties. This course will explore the relevant areas of physical chemistry that you will have learned (or are currently learning) in CHEM165 and CHEM260. The goal of this course is two-fold: you will develop practical skills in performing instrumental and computational experiments that are commonly employed by a modern physical chemist, and you will demonstrate the ability to think critically about the experiments you perform and the data you acquire. Thus, there will be significant emphasis on your integration of the fundamental physical chemistry knowledge with how you analyze and present you results and conclusions. For each lab, you will be expected to summarize your results and justify your conclusions in a **brief** lab report format, where you will develop the tools to succinctly and clearly convey your motivation, experiments, and conclusions. You will also be expected to write a **major** lab report on the lab of your choice, which will be due on the last day of classes (May 3rd, 2019).

Grading
70% - Brief Reports
30% - Major Report

Class Policies
- *Laboratory Preparation:* Materials will be posted to Blackboard well in advance of your scheduled lab periods. You are expected to review the experimental details and underlying theory prior to the start of each lab.
- *Group Work:* This lab will entail working in groups, which will be randomly assigned and modified throughout the semester.
- *Brief Lab Reports*: Lab reports are due one week after the experiment was performed (prior to beginning the next experiment). In the case of no scheduled class the following week, lab reports are due by the beginning of the next experiment.
- *Personal Computers:* Students should bring their personal computers to each lab meeting, unless otherwise directed.

Tentative Course Schedule (*subject to change*)

Week Number	Starting Date	Topics	Experiment
1	1/14	Introduction, course expectations, lab safety policies, review of lab format, writing samples.	
2	1/28	Introduction into computational methods, review of required software	
3-4	2/4	Quantum and statistical mechanics, rovibrational spectroscopy	FTIR of HCl and DCl
5-6	2/25	Quantum mechanics and molecular orbital theory, vibronic and vibrational spectroscopy	UV-Vis and FTIR of anthracene
7-8	3/18	Classical and statistical thermodynamics	Bomb calorimetry
9-10	4/1	Classical and statistical thermodynamics, kinetics, molecular dynamics	Differential scanning calorimetry (DSC)
11-12	4/15	Kinetics, statistical mechanics	NMR
13	4/29	Writing workshop – Major lab reports due at end of week (May 3rd)	

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