

## PHYSICAL CHEMISTRY LABORATORY II (CHEM 337) SYLLABUS

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This course aims to teach you how to be an independent and capable researcher. Your role as a student will be to a) come to class prepared and ready to perform your experiment; b) perform the experiment with care and diligence; c) critically analyze your data; d) write a report about your experiment; and e) search the literature to compare your data to previously published data.

The duration of the lab each week is 3 hrs and 50 mins. On average you can expect most experiments will require a full lab session to complete with some requiring a little less and some requiring a little more time than this. A full semester's work is considered to be the completion of 8 laboratory experiments. This ensures that you have ample time to complete experiments. If time permits, you may also wish to extend an existing experiment for extra credit. Consult with your lab instructor regarding this.

Experimental reports are to be written up individually, regardless of whether the experiment was performed in a group. Reports are due at the beginning of the next laboratory class after the completion of an experiment. **Late lab reports will be penalized one grade level.** Lab reports more than **one week late** will not be accepted. When there is no class the following week, your lab instructor will inform you on when the report will be due.

You can expect to spend at least the same amount of time, and often more, working outside of laboratory hours on your report as you did in the laboratory making the measurements. This should include time spent on data analysis, background reading about the theory of the experiment, searching for literature values, and the time spent writing the report.

**Reports** are to follow a structured and consistent method that is typical of modern chemistry journals e.g. *Journal of Physical Chemistry*. It is recommended that you become familiar with this style by taking the time to read a few journal articles. Pay particular attention to the grammatical tense and person that is used. All the lab reports are formal.

**Plagiarism** is an honor code violation and will lead to a serious consequence on the final grade of the student. To avoid plagiarism, **refer, write by your own, and cite**

the reference. For more information on plagiarism please refer to the link:  
<http://oai.gmu.edu/the-mason-honor-code-2/plagiarism/>

For the purpose of checking plagiarism, you need to submit the **soft copy** in addition to the **hard copy** of your report. Please attach and send your soft copy to my Mason e-mail.

At the end of the semester you and your lab partner will be required to give an **oral presentation** on one experiment of your choice. The presentation should last about 15 mins, with 5 mins of questions from your classmates and instructor.

**Personal Protective Equipment (PPE):** Safety glasses, lab coat and gloves must be worn at all times in the laboratory. No food, drink, or smoking is allowed in the laboratory. Cell phones should be turned off as long as you remain in the lab.

A **bound laboratory notebook (Composition Notebook)** is required for recording all data and observations (**spiral bound is not acceptable!**). All data are to be recorded in ink. At the end of semester, your notebook will be collected and graded for clarity and completeness.

## LIST OF EXPERIMENTS

- Expt 1. Determination of the Mean Aggregate Number of Micellar System
- Expt 2. Fluorescence Quenching of Anthracene
- Expt 3. Infrared Spectrum of Sulfur Dioxide
- Expt 4. Rovibrational Spectroscopy
- Expt 5. Vibronic Spectrum of Iodine
- Expt 6. Absorption Spectrum of Conjugated Dyes: Particle in a Box
- Expt 7. Infrared Spectrum of Acetone
- Expt 8. Advanced Quantum Chemistry:  $C_4H_4$

## Assessment:

Laboratory reports:	72.7%
Notebook assessment:	9.1%
Final Exam:	9.1%
Oral presentation:	9.1%
<b>TOTAL:</b>	<b>100%</b>

**Table. Detail Assessment of the course**

<b>Item</b>	<b>Qty</b>	<b># points each</b>	<b>Total Points</b>	<b>% age</b>
Lab report	8	100	800	72.7
Oral Presentation	1	100	100	9.1
Final Exam	1	100	100	9.1
Recorded data (Notebook)	1	100	100	9.1
<b>Total</b>			<b>1100</b>	<b>100</b>

The final grade in this course will be based on a percentage of points earned relative to total possible points. The following is a tentative grade distribution but subjected to change: **A  $\geq$  90%; 80  $\leq$  B < 90; 70  $\leq$  C < 80; 60  $\leq$  D < 70; F < 60.**

**Text: "Experiments in Physical Chemistry", Garland, Nibler and Shoemaker, 7<sup>th</sup> or 8<sup>th</sup> edition.**