**LABORATORY SYLLABUS**

**CHEMISTRY 6854: Physical Chemistry**

**PROFESSOR:** Dr. Jerry Fong (Agriculture 237. Phone:#: 587-3692)

**REQUIRED LAB TEXT: On the Road in the Physical Chem Lab**, J. Fong **(2015)**

**LAB SCHEDULE** Wednesday 2-5 PM

**GRADING:** **Activity pts each total % of Laboratory Grade**

 **Labs 1-3,5-6,8-13 37 4071  81.5**

 **oral interview1 57 57 11.4**

 **Feedback2 3 36 7.2**

 **500**

 1 At the start of the course, each student will randomly draw from a hat one of the experiments above. This experiment

 will be the one the instructor will require a one-on-one conversation about with the student after he/she turns in the

 lab report 2 students will be asked to provide critiques and suggestions for each lab activity.

**LAB ATTENDANCE:** All students must attend the assigned lab period above. Because of the limited equipment, however, they can carry out the lab (with their partner) any time during the week.

Two unexcused lab absences = an F for the course

The laboratory will be made available on request to students any day and at any time of the day when staff are present . Students must obey the rules below:

1. You must inform the instructor.
2. If in the building after hours, you must have a lab partner or lab buddy to insure your safety.

3) At the conclusion of any lab work, you are to leave your work space clean and dry.

4) No eating or drinking is allowed in the lab work space.

Frivolous horseplay, chronic poor housekeeping and/or behavior deemed irresponsible by either the instructor or the instructional support staff will result in forfeiture of the lab and possibly expulsion from the class for the offenders.

**LAB NOTEBOOKS:** You are urged to keep a bound lab notebook . Bring the notebook to each lab and record all observations, theory, calculations and results in the notebook. It is a tradition in chemistry that the notebook serves as the sole repository for everything connected to the lab experiments you perform.

**LAB GRADING:** The lab grade will be determined primarily by the quality of the written report submitted for each assigned lab. A complete description of requirements and criteria is found on pp. 1-13 of the required manual. The lowest lab score will be dropped from your total. Part of the quality measure will of course be connected to the quality of your collected data and the attendant analysis of that data.

**HOUSEKEEPING** Lab spaces or equipment left in careless disarray after you have finished will result in significant

( > 25%) deductions for the relevant lab.

**DON’T ASK…(but tell):**

Undergraduate chemistry labs, in the name of guided instruction, have become progressively more tame and less germane to the `real’ thing faced by chemists out in the world. In that world you are often alone and must figure everything out by yourself. It’s what defines you as a professional. As copiously described in the lab manual’s preface, this laboratory course seeks to give you exactly that experience. I am going to try mightily not to answer any of your questions with anything more than more questions (hence **“Don’t ask**…”) and unless you are headed for a lethal end, I will let you make mistakes and learn from them.

I freely admit that I am not sure this will have the intended effect-which is to make you an able, or at least viable critical thinker in the laboratory. So make sure to include a separate page at the end of each experiment that contains a brief critique/reflection on what worked/didn’t work and what completely delighted/pissed you off as you worked through the particular lab. I prize honest feedback and use what students tell me to re-design all my courses.

**LABORATORY SYLLABUS: Physical Chemistry 6854 Spring 2016**

**Date Experiment # Topic of Lab (subject to change) Manual reference due**

27 January - Maple software download (Computer center) 27 January

 3 February - P. Chem Lab Writing Workshop 1-11 3 February

10 February 1 Photoelectric Effect and Planck’s Constant 12-24 17 February

17 February 2 Review of Classical Mechanical Methods: 25-41 24 February

 The Pendulum

24 February 3 Using Maple to Explore Physical Systems 42-48 2 March

 2 March 5 Cyanine Dyes: Example of a Particle-in-a-Box 62-72 9 March

System?

 9 March 6 Deconstructing the Infrared Spectrum of HCl 73-89 18 March

 And DCl (Friday post-break)

16 March 8 Measurement of Hydrogen’s Balmer Series 104-115 23 March

23 March 9 Morse Potentials and the Vibronic Spectra 116-136 30 March

 Of Gas Phase I2 and Br2

30 March 10 Quantum Calculations with Spartan Essentials 137-169 13 April

6 April

13 April 11 Using Calorimetry to Test a Simple Model for 170-178 20 April

 Solid State Vibrations

20 April 12 The Ideal Gas Law Re-Loaded 179-192 27 April

27 April 13 Water’s Heat of Vaporization and the 193-203 4 May

 Clausius-Clapeyron Equation