

Physical Chemistry I Laboratory Syllabus (course outline) CHEM 3710L Fall 2010 Rybolt

Course Name: Physical Chemistry I Laboratory
Dept, Number, Section: CHEM 3710L 0
CRN: 40724
Semester and Year: Fall 2010
Time, days, location: Tues (T) 01:40 pm-04:30 pm Grote 315
Credit Hours: 0
Faculty Name: Thomas R. Rybolt (Dr. Tom Rybolt)
Email: tom-rybolt@utc.edu
Office Location: Grote 318A (will be in CANX 105 at beginning of semester)
Office Hours: Tues 9:30 – 11:30, Thurs 9:30-11:30, Fri 9:30-11:30
Office Phone: 425-4499

ADA Statement: If you are a student with a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and think that you might need special assistance or a special accommodation in this class or any other class, call the Office for Students with Disabilities at 425-4006, come by the office-102 Frist Hall-or see <http://www.utc.edu/OSD/>

If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the Counseling and Career Planning Center at 425-4438 or <http://www.utc.edu/Administration/CounselingAndCareerPlanning/>

Catalog Statement: Laboratory experience to support and enhance topics covered in CHEM 3710. Laboratory 3 hours. Corequisite: CHEM 3710. Prerequisites: CHEM 3210, CHEM 3010/3010L; MATH 1920/1921. Pre- or Corequisite: PHYS 1040/1040L or PHYS 2310/2310L. Laboratory/studio course fee will be assessed.

Lab Course information: Go to website <http://www.utc.edu/Faculty/Tom-Rybolt/>
You need to print off all course information and place in notebook in order so you can keep materials organized for semester. You are responsible for having all needed pages for work on a given day.

Attendance:

You are expected to attend all sessions of the laboratory. You must make up any missed work. One time will be available at end of the semester for a make-up lab. If you miss lab, discuss with me as soon as possible. If you miss the day that labs are due then the next time I see you, the labs must be ready to hand to me.

Breakage:

Most equipment breakage is the result of carelessness. Students who break an item may have their lab grade for that experiment reduced. The damage of a major piece of equipment or an instrument may result in a 0 for that experiment.

Grades:

The lab grade comprises 25% of your course grade. Your grade is based on the average of 10 lab reports and the successful completion of computational and molecular modeling assignments at the beginning of the semester. Although your laboratory grade will be based on your written lab reports, improper conduct in lab or lack of preparation for lab could affect your grade. You need to keep up during the semester and strive to understand what you are doing. You need to prepare before lab.

Honesty: One of the distinguishing features of Science as a human endeavor is its emphasis on absolute honesty and truthfulness. You should cultivate this habit in all your undergraduate work. In this lab as in all others whether your data is "good" or "bad" it is real and thus what you have to work with, analyze, and try to understand. You are expected to write your own report. Although you may discuss the experiment with other students and your lab partner, you may not copy, paraphrase, or rewrite portions of another person's report. You are not allowed to permit other persons to use your reports for unethical purposes. Discussions for the purpose of understanding are fine; whereas, copying for the purpose of generating a lab report without understanding is not an acceptable practice and will result in a 0 on the lab and possibly an F in the course.

Notebook, Calculator and Goggles: A bound laboratory notebook is required. All recorded information is to be written directly in this notebook. You must use ink. You are not allowed to record information temporarily on scraps of paper or tear pages out of the notebook. You should include enough information so that it is clear what type of data and units are being recorded. You should date each data page. Some data is collected directly by computer, but it never hurts to write key numbers in a lab notebook. Sometimes, I'll look at your lab notebooks during lab. You will need to have calculator and goggles for all lab days.

Textbook and Lab Information: Refer to your lecture textbook for needed background information and read sections that go along with your lab work each week.

Safety information and detailed lab instructions are provided in the *Laboratory Manual for Computational and Experimental Physical Chemistry* written by Rybolt and Kutz that you will access at online website: <http://www.utc.edu/Faculty/Tom-Rybolt/>

Additional information specific to Rybolt section is also available online at site indicated above.

EXPERIMENTS

AS	Adsorption from Solution
EX	Exothermic Reaction
FP	Freezing Point Depression
HV	Heat of Vaporization
IS	Reaction Rate of Sucrose Inversion
LV	Liquid Vapor Equilibrium
ME	Molecular Energy of Isomers
MM	Molecular Modeling of Organic Reaction
RO	Determination of Reaction Order
SM	Spectra of Conjugated Molecules

General PChem Subject

equilibrium, surfaces
thermodynamics, heat
thermodynamics, solutions
thermodynamics, phases, heat
kinetics
thermo, phase diagrams
modeling, structures
equilibrium, modeling
kinetics
quantum, spectroscopy

In this laboratory course you will have an opportunity to study some of the physical properties of matter that are associated with various chemical substances. The Physical Chemistry Laboratory is designed to demonstrate the application of principles covered in the lecture portion of the course. **You should strive to integrate your knowledge of theory and experiment and understand how these two aspects of Physical Chemistry are interrelated. Each week, you should read the textbook pages that deal with the specific experiment you are doing that week. Lecture can help you understand lab, but lab can also help you understand lecture.**

The laboratory experiments and computational chemistry experiments to be conducted during this semester are listed above. The online lab manual gives background theory as well as specialized instructions for your experimental work, data analysis, and lab reports. If some corrections or updates are needed during the semester, they will be placed in note in drawer in the lab room or on board in lab room.