CHEM 442 Physical Chemistry Lab
Fall 2017

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Text: There is a lab manual available at the bookstore for this course, and you should have a copy of the CHEM 440 textbook available. Some of the labs use handouts that will be given out during class. A lab notebook is required. An optional book, Applied Mathematics for Physical Chemistry (2nd edition, J.R. Barrante), is also available in the bookstore.

General Information

The experiments in CHEM 442 draw on the same body of knowledge covered in the CHEM 440 lecture, although the experiments are not precisely synchronized with the lecture course. It cannot be stressed enough that you MUST carefully study the theory and experimental procedures before carrying out the experiment in the lab. Some of the experiments are not experiments in the strict sense of the word but are tutorial guides in areas that are important to a physical chemist, including programming techniques and electronics. It is sincerely hoped that the course will be both educational and fun.

1) The aims of this course are:

- To equip you with practical skills used in experimental physical chemistry
- To develop your scientific judgment and your ability to innovate and think critically
- To encourage you to assess methods and procedures in a constructive and critical manner
- To improve your skills of research and communication by teaching you how to fully document a scientific experiment and to present the information in a competent and professional laboratory report

2) A word about safety:

You have a legal obligation to work safely in the laboratory, to insure that you do not expose yourself or your co-workers to hazard. You will be instructed as to the safe handling of all chemicals used in the experiments and are encouraged to ask questions if you are unsure about procedures. Safety goggles are required at all times in the lab.

3) Grades:

The final grades will be calculated on the following grade scale (93%=A, 90%=A-, 87%=B+, 83%=B, 80%=B-, 77%=C+, 70%=C, 60%=D). The dates are given below with the schedule. There are a total of eight lab reports due that are worth 100 points each. Lab reports are due one week after the experiment has been carried out, unless otherwise noted. There will

be a penalty of 5 points per day (weekends and holidays do not count) for reports turned in after the due date. Copies of lab notebook pages for each lab should be turned in with each lab.

Academic Integrity:

Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else. Students are responsible for plagiarism, intentional or not, if they copy material from books, magazines, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Statements like "the laboratory procedure described in the lab handout was followed except for the following modifications" are appropriate in this class. Students responsible for, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university. Note that working *together* on the lab, including performing data analysis during the laboratory period, is not considered plagiarism in this class; *copying* another student's lab report is. In other words, you might have the same numbers in your lab report as another student, but you shouldn't have the same words.

Accommodations for Students with Disabilities:

A student who believes that reasonable accommodations with respect to course work or other academic requirements may be appropriate in consideration of a disability must (1) provide the required verification of the disability to the Disabilities Resource Center, (2) meet with the Disabilities Resource Center to determine appropriate accommodations, and (3) inform the faculty in charge of the academic activity of the need for accommodation. Students are encouraged to inform the faculty of their requests for accommodations as early as possible in the semester, but must make the requests in a timely enough manner for accommodations to be appropriately considered and reviewed by the university. If contacted by the faculty member, the staff of the Disabilities Resource Center will provide advice about accommodations that may be indicated in the particular case. Students who make requests for reasonable accommodations are expected to follow the policies and procedures of the Disabilities Resource Center in this process, including but not limited to the Student Handbook.

A wide range of services can be obtained by students with disabilities, including housing, transportation, adaptation of printed materials, and advocacy with faculty and staff. Students with disabilities who need such services or want more information should contact the Disabilities Resource Center at 815-753-1303.

4) Schedule:

The course consists of eight experiments, divided into two sets. Each section will be divided into four groups (A-D in table). The schedule may change because of instrument breakdowns, schedule conflicts, etc. The rotation for carrying out the experiments for each group is as follows:

SET 1	9/19-9/21	9/26-9/28	10/3-10/5	10/10-10/12	TA
Calorimetry	A	B	C	D	EP
Surface Tension	D	A	B	C	SC
LC-MS	C	D	A	B	EP
Partial Molar Volume	B	C	D	A	SC
SET 2	10/24-10/26	10/31-11/2	11/7-11/9	11/14-11/16	
Mystery Experiment	A	B	C	D	HX
Determination of pK_A by NMR	D	A	B	C	ES
Computational Chemistry with Spartan	C	D	A	B	ES
Vapor Pressure	B	C	D	A	HX

Section 1 meets Tuesday at 5:30-9:20.
Section 2 meets Wednesday 1-4:50.
Section 3 meets Thursday 1-4:50.
Section 4 meets Thursday 5:30-9:20.