

**CHEM 443 Physical Chemistry Lab**  
Spring 2014

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**Lab TAs:** Sudeshna Chakraborty (sudeshna7@gmail.com) and Tsehay Eyassu (office hours in LaT 305, teyassu1@niu.edu).

**Text:** There is no textbook for this course, although you should have a copy of the CHEM 441 textbook available. A lab notebook is required. An optional book, Applied Mathematics for Physical Chemistry (2<sup>nd</sup> edition, J.R. Barrante), is also available in the bookstore.

**General Information**

The experiments in CHEM 443 draw on the same body of knowledge covered in the CHEM 441 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. It is sincerely hoped that the course will be both educational and fun.

1) The aims of this course are:

- C To equip you with practical skills used in experimental physical chemistry
- C To develop your scientific judgment and your ability to innovate and think critically
- C To encourage you to assess methods and procedures in a constructive and critical manner
- C 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 and equipment 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 a normal grade scale (93%=A, 90% =A-, 87%=B+, 83%=B, 80%=B-, 77%=C+, 70%=C, 60%=D). There are a total of eight lab reports due that are worth 100 points each. All lab reports will be due two weeks after the day of the experiment. The dates are given below with the schedule. All labs must also be turned in by the Friday before finals week to receive any credit. (There will be no final in the class.) 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.

#### 4) Schedule:

The course consists of eight experiments, divided into two sets. Each section will be divided into four groups (1-4 in table). The rotation for carrying out the experiments for each group is as follows. Note that the TA assignments are nominal, and there will be team teaching for some labs.

SET 1	2/10	2/17	2/24	3/3	TA
iodine clock	1	3	2	4	TE
dye-bleach kinetics	2	4	1	3	TE
Aggregation number of SDS	3	1	4	2	SC
CO <sub>2</sub> solubility	4	2	3	1	SC
SET 2	3/17	3/24	3/31	4/7	
FTIR spectra of HCl	1	3	2	4	SC
Charge – transfer spectroscopy	2	4	1	3	SC
Powder X-ray spectroscopy	3	1	4	2	TE
Quantum chemistry with Spartan	4	2	3	1	TE

In addition, the class will meet on February 3 for lab check-in and a lecture on the upcoming experiments. This should take two hours or less.

#### 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. 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 a lab is not considered plagiarism in this class; *copying* another's lab is.)

#### 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.