

Department of Chemistry
The University of Texas at El Paso
Physical Chemistry Laboratory

CHEM 3151 (CRN 21594 & 27244)

Spring Term, 2014

Instructor: Dino Villagrán, Ph. D.

CCS 2.0402

Ext. 8750

Teaching assistant:

Karen Ventura (Office CCSB 2.0418; Lab CCSB 2.0518)

T.A. Phone Number at Lab (915-747-7377)

Prelab meetings will be held on Wednesdays 1:30 – 2:20 pm in PSCI 403. For questions about the laboratory experiments and report guidelines talk to the T.A. Karen Ventura her office hours will be Tuesdays from 3:00 – 4:00 pm.

Course Description

The objective of this course is to present and perform complementary experimental work to the Physical Chemistry course CHEM 3352 that focuses mainly in Quantum Theory, kinetics, spectroscopy, and magnetism from a chemical standpoint.

Textbook:

No textbook will be required. Appropriate handouts will be provided for every experiment. All of these handouts will be uploaded to Blackboard which can be accessed through <http://my.utep.edu>.

Grading:

The grade for this course will consist on (1) the cumulative points obtained by group experiment reports averaged by the number of experiments in the course plus (2) the result of quizzes administered previous to the laboratory practice, as well as the upkeep of a laboratory notebook and lab performance.

The grade distribution will be:

- 60% Lab Reports
- 20% Pre-lab quizzes
- 10% Laboratory Notebook
- 10% Performance in laboratory practice

“Laboratory performance” includes attendance, successful execution of the experiment, and proper safety behavior.

Laboratory notebooks will be required and will be quickly graded before the practice. In these notebooks, the students shall write a summary of the experiment to be performed. The students will need to state the purpose of the laboratory practice (it can be in the form of a hypothesis). Students shall also list the required materials they will need throughout the practice and the proper procedure to be followed. The laboratory notebook shall be shown to the TA or instructor at the beginning of every laboratory practice and a grade of 0, 1 or 2 will be given (0 for unacceptable procedures, 1 for acceptable but limited discussions, and 2 for satisfactory work). Students who are not well prepared will not be allowed to perform the experiment that week, and will have their grades affected.

Reports are due one week after the completion of the laboratory practice.

Reports must be submitted in hard copy (no electronic versions) and **stapled** at the beginning of laboratory section.

Late reports may be accepted with a penalty of 20% per late day. If the report is not submitted at the beginning of the lab the report will be considered late. Late reports should be hand delivered to the T.A. or the instructor at their appropriate offices. It is your responsibility to make sure that the report was received.

Laboratory report format

The format of the experimental reports must follow the ACS style that can be found in any journal of the American Chemical Society. The format of JACS, Physical Chemistry A or Physical Chemistry B is recommended. Each individual report will be graded on the basis of the quality of the following sections:

- 1) Abstract: An abstract is a **brief and concise** summary of the experiment described in the report. It should include the general idea of the experiment, results obtained, and the conclusions drawn from those results.
- 2) Introduction: This section includes the background to the experiment. It must include the necessary theoretical framework required to understand the experimental work, and it must end with a clear statement of what will be investigated during the experimental practice.
- 3) Experimental Information. This section can be separated in two parts. a) A clear description of the experimental apparatuses, chemicals, or specialized computational programs utilized, and b) The exact experimental procedure followed during the practice. This section should be written in the "past tense", since this is a report of what was observed.
- 4) Results and discussion. A clear description of the results and any observations recorded during the experiment. Discussion of these results and how do they fit into the whole theoretical background discussed in the Introduction part.
- 5) Conclusion. This includes conclusions drawn from the experiment.
- 6) References. These should conform to the ACS style. Please refer to any JACS, Physical Chemistry A or Physical Chemistry B journals for further information. These journals can be accessed through any UTEP connection (including VPN connections from home) at <http://pubs.acs.org>.

Syllabus.

The following are the expected experiments we will perform this semester. Each experiment will have a timeframe of at least two weeks.

1. Photochemical oxidation of water.
2. Redox Chemistry: Electron Transfer.
3. Electron paramagnetic resonance spectroscopy.
4. Magnetic susceptibility (NMR Evan's method and Gouy Balance)
5. Reversible hydrolysis reaction
6. Spectroscopy: Absorption spectra of I₂. NMR. (1 week)

We will have to accommodate the dates for every experiment due to the limited number of instruments available. We will try to schedule two or more different experiments per week. This means that the TA and instructor will be focusing on several things at the same time. Therefore, you must come well prepared to the laboratory practice to avoid wasting time. Students who are not well prepared will not be allowed to perform the experiment that week, and will have their grades affected.

Disability If you believe you may qualify for special accommodations due to disability contact the Disabled Student Services Office: <http://sa.utep.edu/dsso>; 915-747-5148.

Safety A separate safety instruction sheet will be provided. Students will be required to follow these laboratory rules at all times. Use of appropriate eyewear protection compliant to university rules is mandatory at all times during laboratory practice.

Other considerations: Please turn your cell phones off and keep them away during lectures and practices.

Tentative Schedule

Month	Week	Wednesday					Friday	
		Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
February	2 – 8	Safety, Introduction						
	9 – 15	4	3	4	3	4	4	4
	16 – 22	4	3	4	3	4	4	4
	23 – 1	3	5	3	5	3	3	3
March	2 – 8	3	5	3	5	3	3	3
	9 – 15	Spring Break						
	16 – 22	5	4	5	4	5	5	5
	23 – 29	5	4	5	4	5	5	5
April	30 – 5	1	6	1	6	6	1	6
	6 – 12	1	1	1	1	1	1	1
	13 – 19	6	1	6	1	1	6	1
	20 – 26	2	2	2	2	2	2	2
	27 – 3	2	2	2	2	2	2	2