



Course CHEM 4473-001
Physical Measurements Laboratory
Professor Lynn A. Melton
Term Spring 2007
Lecture M-W 1:30-2:30 BE3.103
Meetings Laboratory M-W 2:30-5:15 BE3.314

Professor's Contact Information

Office Phone 972-883-2193
Other Phone None
Office Location BE3.332
Email Address melton@utdallas.edu
Office Hours Monday 11:00-12:00, by appointment, or just come by
BlackBoard will be used routinely for announcements, posting of course materials, etc.

Other Information

Use of standard computational programs, such as EXCEL, will be required. Contact the instructor early in the course if assistance is needed.

General Course Information

Pre-requisites, Co-requisites, & other restrictions Prerequisite: CHEM 3472 Instrumental Analysis and CHEM 3321 Physical Chemistry A

CHEM 4473 Physical Measurements Laboratory (4 semester hours) Thermodynamics, spectroscopy, electrochemistry, and physical properties of matter, kinetics, basic operations in electronics, literature skills, statistics, and basic computer-instrument interfaces. Prerequisites: CHEM 3472 and CHEM 3321, or consent of instructor. (1-7) Y

Outcomes:

Given access to classroom lectures, to written descriptions of laboratory modules, to laboratory equipment, materials, and supplies, and to assistance from the instructor and teaching assistants, students will

Learning Outcomes

1. Carry out experimental/computational studies of kinetics, thermodynamics, spectroscopy, and computational quantum mechanics;

Assessment: by successful performance on graded lab reports/lab books

2. Be able to demonstrate skilled laboratory work and methods development with physical chemistry equipment;

Assessment: (1) by instructor's evaluation of readiness and performance during laboratory periods, and (2) by successful performance on graded lab reports/lab books

3. Prepare a draft scientific paper, including necessary revisions, based on one of the lab reports submitted during the semester.

Assessment: by successful performance in the preparation of a draft scientific paper, including revisions

The lab modules will be described in handouts and reference materials. There is no required text.

Required Texts & Materials

Lab Book: "Roaring Springs Composition Book", Quad. Rules 5 to 1", Bar Code 70972 77255, available in UTD Bookstore (**required**).

Other course materials may be recommended or required.

Suggested Texts, Readings, & Materials

None at this time

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

See Appendix A (at end)

Course Policies

Grading (credit)	See Appendix B (at end)
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Criteria	
Make-up Exams	None; points are rolled forward to next exam
Extra Credit	None
Late Work	Accepted at the sole discretion of the instructor
Special Assignments	None; syllabus is complete
Class Attendance	Used in determination of whether mercy is justified
Classroom Citizenship	Highest level is expected
Field Trip Policies	No off campus trips
Student Conduct and Discipline	<p>The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, <i>A to Z Guide</i>, which is provided to all registered students each academic year.</p> <p>The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the <i>Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3</i>, and in Title V, Rules on Student Services and Activities of the university's <i>Handbook of Operating Procedures</i>. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).</p> <p>A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.</p>
Academic Integrity	<p>The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.</p> <p>Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.</p> <p>Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.</p>
Email Use	The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the

	<p>same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.</p>
Withdrawal from Class	<p>The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.</p>
Student Grievance Procedures	<p>Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's <i>Handbook of Operating Procedures</i>.</p> <p>In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.</p> <p>Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.</p>
Incomplete Grades	<p>As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.</p>
Disability Services	<p>The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.</p> <p>The contact information for the Office of Disability Services is: The University of Texas at Dallas, SU 22 PO Box 830688</p>

	<p>Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY)</p> <p>Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.</p> <p>It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.</p>
<p>Religious Holy Days</p>	<p>The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.</p> <p>The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.</p> <p>If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.</p>
<p>Off-Campus Instruction and Course Activities</p>	<p>Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean.</p>

These descriptions and timelines are subject to change at the discretion of the Professor.

Appendix A

LECTURE and LABORATORY SCHEDULE

(The dates, order of presentation and topical coverage are subject to change.)

There are no dates for make up labs.

LECTURE SCHEDULE

The key material for the course in is the lab modules. In most cases, the lectures will be used to provide fundamental material, which may be review or new, in order to assist student progress in the modules.

<u>Date</u>	<u>Lecture Topic</u>
M 01/08/07	Class Organization Review: kinetics
W 01/10/07	Review: thermodynamics
M 01/15/07	University Holiday
W 01/17/07	Review: quantum mechanics
M 01/22/07	Fluorescence I
W 01/24/07	Fluorescence II
M 01/29/07	Fluorescence III
W 01/31/07	TBA
M 02/05/07	TBA
W 02/07/07	TBA
M 02/12/07	TBA
W 02/14/07	TBA
M 02/19/07	TBA
W 02/21/07	TBA
M 02/26/07	TBA

W	02/28/07	TBA
M	03/05/07	Spring Break
W	03/07/07	Spring Break
M	03/12/07	TBA
W	03/14/07	TBA
M	03/19/07	TBA
W	03/21/07	TBA
M	03/26/07	TBA
W	03/28/07	TBA
M	04/02/07	TBA
W	04/04/07	TBA
M	04/09/07	TBA
W	04/11/07	TBA
M	04/16/07	TBA
W	04/18/07	TBA
M	04/23/06	Last day of class; departmental review

Lab Modules and Procedures

Students will work in pairs. Each student must complete

- (1) Kinetics module;
- (2) Bomb Calorimetry module
- (3) HCl/DCI module, and
- (4) SPARTAN module (unless, in the judgment of the instructor, student has adequate prior experience with SPARTAN)
- (5) 3 other modules (4 if not doing SPARTAN module). These modules must be approved by the instructor.
- (6) Scientific Paper module.

Four lab periods have been scheduled for each module (except for the first module); however, with the consent of the instructor, a student may spend up to an additional four lab periods on a particular module. Some of the modules have well-developed handouts (Bomb Calorimetry, HCl/DCI, Kinetics-Analysis of Reaction Data); others will require more thought and development on the part of the student. Some of the choice modules may allow/require the student to contribute his/her own ideas and skills.

Laboratory Modules

L1	Kinetics
L2	Bomb Calorimetry
L3	HCl/DCI
L4	SPARTAN
L5	Choice
L6	Choice
L7	Choice
SP	Scientific paper

LAB SCHEDULE

There are no dates for make up labs.

Date	Activity
01/08/07	Kinetics Module
01/10/07	Kinetics Module
01/15/07	University Holiday
01/17/07	Kinetics Module
01/22/07	Module#2
01/24/07	Module#2
01/29/07	Module#2
01/31/07	Module#2
02/05/07	Module#3
02/07/07	Module#3
02/12/07	Module#3

02/14/07	Module#3
02/19/07	Module#4
02/21/07	Module#4
02/26/07	Module#4
02/28/07	Module#4
03/05/07	Spring Break
03/07/07	Spring Break
03/12/07	Module#5
03/14/07	Module#5
03/19/07	Module#5
03/21/07	Module#5
03/26/07	Module#6
03/28/07	Module#6
04/02/07	Module#6
04/04/07	Module#6
04/09/07	Module#7
04/11/07	Module#7
04/16/07	Module#7
04/18/07	Module#7

Appendix B

GRADING

The course grade will be based on student performance on seven two-week long modules, each of which is worth 100 points. There will not be midterm exams or a final exam. One of the lab reports must be rewritten as a scientific paper, for an additional 100 points. The instructor's evaluation will count for 100 points.

Total points = 900.

In grading each module, the instructor will take into account the amount and quality of the lab work the student has performed, the quality of the lab book material, the difficulty of the project attempted, the quality of the written lab report, adherence to schedule and deadlines, and other relevant factors. Each student should strive to make each lab period as productive as possible; the instructor will observe attendance and productivity for each meeting of the class.