Course Information
PHYS4373, Physical Measurements Laboratory, Spring 2013, MF 2:30-5:15, Room FN 2.214

Professor Contact Information
Jason Slinker, Assistant Professor of Physics
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Office hours: By arrangement, will be available during class sessions

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Course Description
Physical measurement forms the basis for every field of experimental science. Observation drives our theoretical understanding of the natural world while at the same time testing the falsifiable predictions of theory. Introducing you to basic measurements of various physical properties of nature, this course will prepare your further advancement in becoming scientists, engineers, or other professionals. The techniques covered in the course include spectroscopy, interferometry, microscopy, atomic and sub-atomic particle and radiation detection, laser properties and vacuum science. Furthermore, it is our additional goal to train you in effectively communicating the results and concepts in your written reports and projects/presentations.

The labs require preparation work by all team members, usually a team of two or three. It is highly advisable to review experiments before coming to class so that your time is used efficiently. The TA or the instructor will quiz you during class to check your level of knowledge.

You will be receiving training on the use of potentially hazardous items such as power supplies, vacuum pumps, radioactive materials, and so on. Listen to and adopt the recommended operating practices. You will be able to focus safely on scholastic excellence! I strongly encourage you to go beyond the confines of each experiment.

We strongly emphasize safety within this course. All students will complete extensive safety training with the UTD safety office, and safety is to remain a priority throughout the semester. If something seems out of place, please bring it to the attention of the TA or instructor.

Student Learning Objectives/Outcomes
Upon completing this course, students will:
1. Be able to use a wide variety of instruments to make measurements of various physical properties.
2. Determine specific characteristics of materials that are radioactive, optically emissive, or absorptive.
3. Understand the impact of quantum mechanical interactions in diffraction and interference.
4. Properly convey scientific results in writing and public presentation
5. Engage the public to foster interest and participation in science

Required Textbooks and Materials
Laboratory notebook—not loose leaf

Assignments & Academic Calendar
Many experiments can be performed in a single class period, while some may take longer. In general, we allow 3 class sessions for each lab, because we want you to have the time to do a thorough job on your report. Each team is required to complete a minimum of 8 different experiments during the semester. A

signup sheet will be available to reserve the apparatus for each experiment. A personal project (see below) is required in addition to the regular set of experiments.

Self-directed project
Students are required to complete a project among possibilities provided by the instructor. This semester, this will likely involve one of two sources—investigating measurements from optics equipment donated from L3, utilizing our atomic force microscope (or other idle class equipment), or modifying existing departmental demonstrations. Successful completion will involve—direct demonstration of the equipment/measurement, a written report, and cleanup. No later than March 15, students should prepare a proposal outlining the physical property to be measured, the apparatus used/needed and the expected outcome. ***Experiments must be approved by the instructor before work starts on the project, which may commence as soon as the requisite experiments have been performed and the write-ups submitted for grading.***

Teaming
The majority of the work will be done in teams composed of either two or three students.
Team membership will be rotated during the course if appropriate.

Grading Policy
Your grade is based on the quality and quantity of work done in support of your laboratory experiments and oral quizzes. This includes:

8 Regular Post-Experiment reports (80%)
Each team must submit a summary report on the experiments done in class. One report is required per team and *must be signed* by all team members. Signature of a report is equivalent to the statement that that student participated with the team in all aspects of the experiment. References must be provided for any material acquired outside of the class and used to support the experiment or its analysis. (e.g. internet or library information). Due dates for reports will be discussed in class. A single grade is given to the team for each experiment. The grade will be available one week after the report is handed in. Each student in each team receives the same grade for that report. All experiments carry an equal weight.

Personal Project (20%)
Similar to regular reports above, with additional scoring for the project proposal and physical demonstration.

Student Conduct & Discipline

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 printed publication, *A to Z Guide*, which is provided to all registered students each academic year.

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 *Rules and Regulations, Series 50000, Board of Regents, The University of Texas System,* and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. 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) and online at http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html

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.

Academic Integrity

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.

Scholastic Dishonesty, any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

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.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm

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 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.

Withdrawal from Class

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.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

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 deal 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.

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.

Incomplete Grade Policy

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**.

Student AccessAbility

The goal of Student AccessAbility is to provide students with disabilities equal educational opportunities. Student AccessAbility provides students with a documented letter to present to the faculty members to verify that the student has a disability and needs accommodations. This letter should be presented to the instructor in each course at the beginning of the semester and accommodations needed should be discussed at that time. It is the student's responsibility to notify his or her professors of the need for

accommodation. If accommodations are granted for testing accommodations, the student should remind the instructor five days before the exam of any testing accommodations that will be needed. Student AccessAbility is located in the Student Services Building, room 3.200. Phone: 972-883-2098. Fax: 972-883-6561; disabilityservice@utdallas.edu. Office hours are Monday – Thursday, 8:30 a.m. to 6:30 p.m., and Friday 8:30 a.m. to 5:00 p.m.Guidelines for documentation are located on the Student AccessAbility http://www.utdallas.edu/studentaccess/documentation/

Religious Holy Days

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.

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.

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.

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