

UNIVERSITY OF CALGARY  
DEPARTMENT OF PHYSICS and ASTRONOMY  
COURSE OUTLINE

1. **Physics 397, Applied Physics Laboratory I**

L01: MWF 15:00 15:50, SS 006

Dr. M. Wieser  
Office: SB 131  
Telephone: 403-220-3641  
Office Hours: TBA  
Email: mwieser@ucalgary.ca  
Main Physics and Astronomy Office: SB 605, 403- 220-5385

Blackboard course name: Phys 397 L01 – (Fall 2010) – Applied Physics Laboratory 1

2. **PREREQUISITES:** Physics 223 or 255 or 259 or 355

3. **GRADING:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

- 40 % Laboratory Reports
- 5 % Laboratory Notebook
- 25 % Assignments
- 15 % Final laboratory exam (To be held in last scheduled Laboratory session)
- 15 % Final Exam (To be scheduled by the Registrar )

A passing grade on the final examination is required in order to pass the course.

Percentage grades will be given for all elements of term work and examinations in Physics 369. A weighted course percentage will be calculated for each student after the final exam is written. A table of conversion from final course percentage to final course letter grade will be published on the Phys 397 Blackboard site later in the term.

4. **Missed Components of Term Work.** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in section 3.6: <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html>. It is the student's responsibility to familiarize himself/herself with these regulations. See also <http://www.ucalgary.ca/pubs/calendar/current/e-3.html>.

6. **TEXTBOOK:** There is no required textbook for this course.

7. **EXAMINATION POLICY:** [Statement regarding aids allowed on tests and examinations (e.g., calculator, open book, etc.).] Students are encouraged to read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.

9. In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports. See **also** <http://www.ucalgary.ca/pubs/calendar/current/e-2.html>.

Department Approval \_\_\_\_\_

Date Sept 10 / 10

Associate Dean's Approval for  
out of regular class-time activity: \_\_\_\_\_

Date: \_\_\_\_\_

**11. OTHER IMPORTANT INFORMATION FOR STUDENTS:**

- (a) **ACADEMIC MISCONDUCT** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under K. Student Misconduct (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) to inform yourself of definitions, processes and penalties
- (b) **ASSEMBLY POINTS** in case of emergency during class time. Be sure to **FAMILIARIZE YOURSELF** with the information at <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links:  
Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>  
Disability Resource Centre: <http://www.ucalgary.ca/drc/>
- (d) **SAFEWALK:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **FREEDOM OF INFORMATION AND PRIVACY:** This course will be conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page.** For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **STUDENT UNION INFORMATION:** VP Academic Phone: 220-3911 Email: [suypaca@ucalgary.ca](mailto:suypaca@ucalgary.ca).  
SU Faculty Rep. Phone: 220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca) Website <http://www.su.ucalgary.ca/home/contact.html>.  
Student Ombudsman: <http://www.su.ucalgary.ca/services/student-services/student-rights.html>
- (i) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

## Course Syllabus

Basic laboratory electronics, vacuum systems, and optical devices. Introduction to experimental control, data collection, and analysis. Fundamentals of error analysis and error propagation.

### Laboratory and Tutorial Schedule for Fall 2010

| <i>Laboratory Exercise</i> |   | <i>Tutorial Exercise</i> |   |
|----------------------------|---|--------------------------|---|
| 13/09                      | • No Laboratory Exercise                  | 17/09                    | • Using a DVM to measure R, V, I<br>• Connecting circuits     |
| 23/09                      | • Voltage Dividers and Voltage Sources    | 24/09                    | • Using an oscilloscope<br>• AC Voltage measurements          |
| 30/09                      | • AC Measurements and Sources             | 01/10                    | • Data analysis using spreadsheets                            |
| 07/10                      | • Travelling Waves                        | 08/10                    | • RC filters  |
| 14/10                      | • RLC Resonant Circuits                   | 15/10                    | • Transducers   |
| 21/10                      | • The Hall Effect and Magnetic Hysteresis | 22/10                    | • Reflection and Refraction                                   |
| 28/10                      | • Laser Beams                             | 29/10                    | • Interferometers   |
| 04/11                      | • The Michelson Interferometer            | 05/11                    | • Accessing the literature using the UofC Library's resources |
| 11/11                      | • No Laboratory Exercise                  | 12/11                    | • No Tutorial Exercise  |
| 18/11                      | • Spectroscopy                            | 19/11                    | • Nuclear Measurement Technology                              |
| 25/11                      | • Radiation Absorption and Exposure       | 26/11                    | • Vacuum  |
| 02/12                      | • Vacuum and Leak Rates                   | 03/12                    | • Laboratory Exam Review                                      |
| 09/12                      | • Laboratory Exam                         | 10/12                    | • Research Laboratory Tours                                   |

