

UNIVERSITY OF CALGARY  
DEPARTMENT OF PHYSICS and ASTRONOMY  
COURSE OUTLINE

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

Lecture Sections:

L01: MoWe, 15:00-15:50, MS 211 Dr. M. Wieser, SB605, 403 220 3641, [mwieser@ucalgary.ca](mailto:mwieser@ucalgary.ca),

Office Hours: TBA

T01: Fr, 15:00-15:50, ST029

T02: Fr 11:00-11:50, ST029

B01: Tu 09:00-11:50, ST029

B02: Tu 14:00-16:50, ST029

Desire 2 Learn (D2L): Phys 397 L01 – (Fall 2014) – Applied Physics Laboratory I

Departmental Office: SB605, 403-220-5385, [phasugrd@ucalgary.ca](mailto:phasugrd@ucalgary.ca)

**2. Prerequisites:** Prior completion of or concurrent registration in **Physics 223** or **255** or **259** or 355 is highly recommended.

**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:

Assignments (6)	30 %
Laboratory experiments (9)	40 %
Final Laboratory Exam	15 % (Dec. 2 in your scheduled Lab section)
Final Examination	15 % (To be scheduled by the Registrar)

Percentage grades will be given for all elements of term work and examinations in Physics 397. A weighted course percentage will be calculated for each student after the final exam is written. Conversion from final course percentage to final course letter grade is as follows:

A+	>= 95.0 %
A	>= 85.0 %
A-	>= 80.0 %
B+	>= 75.0 %
B	>= 70.0 %
B-	>= 65.0 %
C+	>= 60.0 %
C	>= 55.0 %
C-	>= 50.0 %
D+	>= 45.0 %
D	>= 40.0 %
F	< 40.0 %

**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](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar

**5. Course Materials:** *"An Introduction to Uncertainty in Measurement", by L. Kirkup and R.B. Frenkel, Cambridge University Press, 2006"*

**Online Course Components:** Lecture notes, assignments, and supporting lecture material will be posted on the course D2L website.

**6. Examination Policy:** Laboratory exam is open book. Registrar scheduled final examination is closed book. Laptops and Calculators may be used for the laboratory exam. Only Calculators may be used for the final examination. Students should also read the Calendar, [Section G](#), on Examinations.

## 7. 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 [Section K, Student Misconduct](#) 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 on [assembly points](#).
- (c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: [Calendar entry on students with disabilities](#) and [Student Accessibility Services](#).
- (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 is 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: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep. Phone: 220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca)  
[Student Ombudsman](#)
- (i) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. 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.

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

## 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 2014

<i><b>Laboratory Exercise</b></i>		<i><b>Tutorial Exercise</b></i>	
Sep 9	• No Laboratory Exercise	Sep 12	• Wiring and using a DVM
Sep 16	• No Laboratory Exercise	Sep 19	• DVM Measurement Uncertainty
Sep 23	• Voltage Sources and Voltage Dividers	Sep 26	• Using an Oscilloscope
Sep 30	• AC Measurements and Sources	Oct 3	• Uncertainty propagation and graphing data (ST026)
Oct 7	• Travelling Waves	Oct 10	• Library Orientation (TFDL)
Oct 14	• Hall Effect and Magnetic Hysteresis	Oct 17	• RC Filters
Oct 21	• RLC Resonant Circuits	Oct 24	• Interferometers
Oct 28	• Spectroscopy	Oct 31	• Measurement Tutorial #1
Nov 4	• Fourier Series	Nov 7	• Measurement Tutorial #2
Nov 11	• No Laboratory Exercise	Nov 14	• Nuclear Measurements
Nov 18	• X-Ray Diffraction	Nov 21	• Vacuum components and systems
Nov 25	• Vacuum Technology	Nov 28	• Laboratory Exam Review
Dec 2	• Laboratory Exam	Dec 5	• Open Tutorial – Last day of lectures