



COURSE OUTLINE

1. **Course:** PHYS 597, Senior Physics Laboratory - Fall 2022

Lecture 01 : W 12:00 - 12:50 in EEEL 151

Instructor	Email	Phone	Office	Hours
Dr Michael Wieser	mwieser@ucalgary.ca	403 220-3641	SB 131	Office Hours available on request

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

Laboratory sessions will be in-person.

In person lectures are planned. However, lectures will also be available via zoom:

Meeting ID: 932 8199 1013
Passcode: 43

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

Course Site:

D2L: PHYS 597 L01-(Fall 2021)-Senior Physics Laboratory

Note: Students must use their U of C account for all course correspondence.

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Physics and Astronomy EDI Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Associate Head EDI, Claudia Gomes da Rocha (claudia.gomesdarocho@ucalgary.ca)

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Physics 497.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Laboratory Notes	10%	Ongoing		
Oral Presentation	10%	Ongoing		
Reflections (x5)	15%	Ongoing		
Lab #1 - Introduction	5%	Sep 23 2022		
At Home Experiment - Introduction	5%	Oct 07 2022		
Lab #1 - Draft Report	5%	Oct 14 2022		
Lab #1 - Final Report	15%	Oct 21 2022		
Lab #2 - Introduction	5%	Oct 28 2022		
Lab #2 - Draft Report	5%	Nov 18 2022		
Lab #2 - Final Report	15%	Nov 25 2022		
At Home Experiment - Final Report	10%	Dec 02 2022		

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. **Examination Policy:**

There are no examinations in this course.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. **Human Studies Statement:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work [form](#) to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. **Other Important Information For Students:**

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see their [website](#) or call [403-210-9355](#).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
[Student Academic Misconduct Policy and Procedure](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Dr. David Feder by email phas.ahugrd@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). 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 [Legal Services](#) website.
- g. **Student Union Information:** [SU contact](#), Email SU Science Rep: sciencerep1@su.ucalgary.ca, [Student Ombudsman](#)
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

Students taking PHYS 597 are expected to have prior knowledge in:

- General physics and mathematics within the scope of standard college physics course.
- Basic methods and tools of experimental physics
- Data processing and presentation (basic statistical methods, error analysis, scientific graphics software.
- Scientific writing
- Making public presentations with slides

Lecture Schedule:

Week	Topic	Date	Speaker	Reflection Due
1	Introduction to the course	07-Sept	Mike Wieser	none
2	How to Communicate Ideas Effectively - Writing Reports/Talks	14-Sept	Mike Wieser	21-Sept
3	How to write a scientific paper - Reflection	21-Sept	TBA	28-Sept
4	How to Apply to Graduate School	28-Sept	Jo-Anne Brown - PHAS	none
5	Alumni - What to do with Physics Degree? - Reflection	05-Oct	PHAS Alumni	12-Oct
6	TBA	12-Oct	TBA	19-Oct
7	Measurement and Uncertainty	19-Oct	Johanna Irrgeher	none
8	Ethics in Science - Reflection	26-Oct	Keith Sharkey - UofC Medicine	02-Nov
9	EDI in Science - Reflection	02-Nov	Claudia Gomez de la Rocha	16-Nov
10	Remembrance Day	09-Nov	No Lecture	
11	Oral Presentations x5	16-Nov		
12	Oral Presentations x4	23-Nov		
13	Oral Presentations x4	30-Nov		
14	Oral Presentations x4	07-Dec		

Calendar of Activities and Due Dates

Task	Date
Lecture Start	September 7
Lab Selections due	September 14
Lab Assignments handed out	September 16
Experiment #1 Start	September 19
Experiment #1 Introduction Due	September 23
<i>No Lab</i>	<i>September 30</i>
At Home Experiment Proposal Due	October 7
<i>No Lab</i>	<i>October 10</i>
Experiment #1 Draft Due	October 14
Experiment #1 Final Report Due	October 21
Experiment #2 Start	October 24
Experiment #2 Introduction Due	October 28
<i>No Lab</i>	<i>November 7 to November 11</i>
Oral Presentations	November 16 - December 7
Experiment #2 Draft Due	November 18
Experiment #2 Final Report Due	November 25
At Home Experiment Report Due	December 2

Lectures:

There is one lecture per week on Wednesdays from 12:00 to 12:50. The lectures will be held in person. In many of the lectures, we will explore topics that are (hopefully) helpful for career development and also to create a forum for discussion on important topics for scientists. Experts on the subject matter will be invited to lead the discussions. You will submit a post-workshop reflection by 24:00 the following Wednesday. The reflection should be one to two pages in length and address questions that will be distributed prior to each workshop. There are no "right or wrong" answers and the self-reflection is meant to be a personal response to the topics we encounter. Your reflections will not be shared with other members of the class.

On Campus Experiments:

This semester, you can select two experiments to work on. The list of experiments is provided below. You will work with a laboratory partner and you and your partner should submit a list of at least three experiments that are of interest to me by September 14. I will provide you with your two assigned experiments by September 16. Documents, including operating manuals and background information for the experiments, will be available on-line via the course D2L website, which should be "live" by the end of the first week of September.

The first deliverable for each on-campus experiment is an introduction section that should describe the **goals** and **motivation** for the experiment along with some concise background information and references. The Introduction document should be two pages in length (single spaced) and include at least 3 carefully chosen peer-reviewed references. A draft report for the experiment is due next. This should be an almost complete report so I can provide feedback for your final report. Essentially, the report should include the clearly articulated goal and motivation for the paper, background literature review, description of the experiment, results, discussion, conclusion and references. The report should be 10 pages in length (single spaced) including text, figures and references.

At Home Experiment:

In addition to the two experiments conducted on campus, you will have the opportunity to work on an experiment that can be performed at home. You will use an Arduino (or other micro-controller) to sample data of any kind and then to perform some data reduction and analysis. This experiment is intentionally very open-ended and will allow you to explore practically any topic. The goal is to acquire data with an electronic device, digitize these data in some way and then analyze and interpret the results. We can loan you the hardware you need to complete the experiment. A short proposal (including goal, motivation, and timeline) is due on October 7 and the final report (including description of the experiment, data, and analysis) is due on December 2.

Oral Presentations:

Individual oral presentations are scheduled during class time from November 16 to December 7. These will be done in person. Each of you will do your own presentation. The topic of the oral presentation can be developed around the at-home experiment or one of the experiments performed on campus. The presentation should be eight minutes in length.

Lab Notebooks:

An electronic on-line laboratory notebook should be maintained by you to summarize the progress/data/insights for the measurement and on-campus experiments. At least two entries per week (or more depending on the work done) should be submitted. The notebook will record progress, notes on background material, observations and data from the experiment itself, and any data analysis that is performed for the experiment. Feedback will be provided on a weekly basis to help ensure that you are on track. The communication around the notebook will serve as a virtual check-in between you, the TAs, and myself throughout the semester.

Course Outcomes:

- Improve physics knowledge

- Learn the work of experimental physicists
- Improve technical skills
- Improve computer data processing skills and maintaining lab records
- “Metascience”
- Reading a research article
- Writing articles
- Reporting your findings at a conference, becoming an independent scientist
- Independent thinking
- Literature review
- Problem solving and problem finding

Electronically Approved - Sep 06 2022 13:52

Department Approval