

P429A Course Outline

Course Web page (Brightspace): <https://bright.uvic.ca/d2l/home/361782>

Submit completed reports in PDF format via “Assignments” in Brightspace Shell

Course Instructors :

B.C Choi (bchoi@uvic.ca)
Mike Roney (mroney@uvic.ca)
Geoffrey Steeves (gsteeves@uvic.ca)
Andrew MacRae (macrae@uvic.ca)

Scheduled Lab Times:

Officially the lab is open Mondays 2:30 – 5:30 pm, however the lab will also be open periodically through the week. If you need to get into the lab, just ask Andrew or any lab instructor.

Course Description:

Introduction to research, with several research-oriented experiments and with instruction on experimental techniques and theory of measurement.

Course Prerequisites:

Normally open only to fourth year Honours students.

Timeline

September 9th, 2024	Introduction to Course. Choose First Experiment.
September 23rd, 2024	Experimental Uncertainty Lecture.
September 30th, 2024	No class - Meet Thursday Status Update Due for Exp 1
October 14th, 2024	No class - Meet Thursday
October 28th, 2024	1st report due. Second experiment started.
November 4th, 2024	Status Update Due for Exp 2
November 11th, 2024	Reading Week, no class
November 25th, 2024	Oral report session 1
December 4th, 2024	Experiment 2 Report Due
Dec 4 2024-Jan 5 2025	Winter Break
January 6th, 2025	Start experiment 3
January 13th, 2025	Status Update Due for Exp 3
February 19th, 2025	Experiment 3 Report Due , Start Experiment 4
February 17th-21st, 2025	Reading Week
March 3rd, 2025	Status Update Due for Exp 4
March 24th, 2025	Oral Report Session 2
March 31st, 2025	Experiment 4 Report Due

This is an experimental physics course. All labs/experiments are hands-on and there is no provision for strictly theoretical or computational projects. P429A is a full year course and it runs from September to April.

Students will be required to complete 4 experiments throughout the year. These can be chosen from a wide selection of subjects spanning across atomic, quantum and classical optical, solid-state, and nuclear physics, microscopy, fluid dynamics, and geophysics. The regular experiments are expected to take roughly 6 weeks, including the write up. After 1 or 2 weeks the student must submit a short progress update explaining their progress so far along with an in-lab demonstration to the instructor. Failure to do so will lead to a 10% deduction from the final grade of the experiment.

All labs have to be completed in order to pass the course and there will be a 10% penalty per week for late submissions. Because of the extended time allotted to complete the experiments, this rule will be strictly enforced, barring special circumstances.

Reports will follow the Physical Review style (4 pages) for experiments. It is recommended that students use *LaTeX* to typeset their experiments, as this is the current convention among all major journals. Upon completion of each lab, each student will participate in a one-on-one interview with one of the course instructors to go over the experiment and the report.

Experiments will be marked as follows: 75% for the report, 5% for an interim status report, and 20% for the oral defense. See course guidebook for details. Markers will be assigned when a student selects an experiment or project, and both student and marker will be notified.

Overall marking distribution is: 84% Lab work (4 reports, see above) and 16% Oral Presentations

The practical exercise requires completion during the first half of the course. Failure to complete the exercises will result in a deduction of 10% off of your final mark.

The oral presentation component will be worth 16% of the course grade. It will consist of two sessions, each worth 8%. The sessions will consist of a 12 minute presentation (10 minute talk + 2 minutes for questions). It is expected that all students attend all presentations and participate by posing questions to the speaker - a grade for participation is assigned.

If a submitted lab does not meet the standard for a 4th year honours course you may be asked to revise and resubmit it. Also, a report can be improved and the marker can invite the student to resubmit at the time of the oral defense.

If a student should come up with their own idea for an experiment, please see your instructors. Devising your own experiments is highly encouraged, provided that the level is appropriate for a 4th year honours lab.