

Course Syllabus

PHYSICS 199: EXPERIMENTAL PHYSICS I (3 credits)

Instructor: Varuni Seneviratne

Office: Innovation E203A

E-mail: vsenevir@uvm.

Instructor office hours: By appointment in Innovation E203A

Meeting times: MF, 3:30 - 4:45 pm in Discovery W403.

Teaching Assistant: ColetteAbadie

Textbook: “An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements” (2nd Edition), by John R. Taylor, University Science Books, 1997.

Prerequisites: Phys 152 or 125

Course objectives: This course covers basic experimental skills including measurement techniques, data reduction and interpretation, error analysis, and report writing. The course also builds judgement and critical thinking skills needed for advanced laboratory courses and research projects.

Course description:

Experimental topics

- Uncertainties and error analysis
- Propagation of errors
- Statistical distributions (Binomial, Poisson)
- Curve fitting
- Geiger-Muller counter
- Radioactive sources
- Torsion balance
- Measurement of vertical displacement by cathetometer

Laboratory Experiments

- Poisson statistics
- Cavendish balance
- Kater pendulum
- This course requires laboratory work of at least 6 hours per week outside of regular class hours. You will be assigned a lab partner or partners in groups of 2 or 3.
- In-class presentations will be individual presentations assigned by students choosing from a list of topics. They will be assigned at least one week in advance of the date of the presentation and will require approximately 3 hours to prepare.

Homework/Exams/Grades:

Homework	7%
Presentations (3% each)	9%
3 Lab reports (28% each)	84%
Total	100%

There are no exams, mid-term or final.

Academic Honesty: The principal objective of the Policy of Academic Honesty is to promote an intellectual climate and support the academic integrity of the University of Vermont. Academic dishonesty or an offense against academic honesty includes acts that may subvert or compromise the integrity of the educational process. Such acts are serious offenses that insult the integrity of the entire academic community.

Classroom Code of Conduct: Faculty and students will at all times conduct themselves in a manner that serves to maintain, promote, and enhance the high-quality academic environment befitting the University of Vermont. To this end, it is expected that all members of the learning community will adhere to the following guidelines: 1. Faculty and students will attend all regularly scheduled classes, except for those occasions warranting an excused absence under the University Attendance Policy (e.g., religious, athletic and medical). 2. Students and faculty will arrive prepared for class and on time, and they will remain in class until the class is dismissed. 3. Faculty and students will treat all members of the learning community with respect. Toward this end, they will promote academic discourse and the free exchange of ideas by listening with civil attention to comments made by all individuals. 4. Students and faculty will maintain an appropriate academic climate by refraining from all actions that disrupt the learning environment (e.g., making noise, ostentatiously not paying attention, and leaving and reentering the classroom inappropriately).

Athletic-Academic Conflicts: Students participating in inter-collegiate athletics should plan their schedules with special care, recognizing the primary importance of all of their University academic responsibilities. Each semester, members of UVM varsity and junior varsity teams are responsible for documenting in writing any conflicts between their planned athletic schedule and the class schedule to their instructors by the end of the second full week of classes. Students and instructors should then discuss potential conflicts between course requirements and intercollegiate competitions. When an unavoidable conflict exists, the student and instructor should seek a resolution which permits the student to address the course requirement and participate in the athletic competition. The instructor has final authority on this matter.

Religious Holidays: Each semester students should submit in writing to their instructors by the end of the second full week of classes their documented religious holiday schedule for the semester. Faculty must permit students who miss work for the purpose of religious observance to make up this work. Each student is expected to know the UVM policies regarding Student Rights and Responsibilities. Information on all University policies may be found at <http://www.uvm.edu/policies/>.

Legend
Instructor-led discussion
Due dates and presentations
Holidays

	Monday	Tue	Wed	Thur	Friday
August	29	30	31	1	2
	First class meeting				Read Chapter 1 of Taylor Taylor Ch. 2
September	5	6	7	8	9
	Labor Day Holiday				HW #1 Due
	12	13	14	15	16
	Poisson statistics Taylor Ch 4, 10, 11				Prelab #1 Due HW #2 Due
	19	20	21	22	23
	Poisson statistics continued				Lab rpt #1 1st draft due
	26	27	28	29	1
	Poisson statistics Taylor Ch. 3				HW #3 due Lab rpt #1 final due In-class presentations
October	4	5	6	7	8
	In-class presentations				Fall Recess
	11	12	13	14	15
	HW #4 Due				Kater's pendulum
	18	19	20	21	22
	Kater's pendulum				Prelab #2 Due
	25	26	27	28	29
	Kater's pendulum				Lab rpt #2 first draft due
November	1	2	3	4	5
	Kater's pendulum				Kater's pendulum
	8	9	10	11	12
	In-class presentations				Lab rpt #2 final draft due In-class presentations
	15	16	17	18	19
	Cavendish balance				Lab #3 prelab due
	22	23	24	25	26
	Thanksgiving Recess				
	29	30	1	2	3
	Cavendish balance				Lab #3 first draft due
December	6	7	8	9	10
	In-class presentations				Lab rpt #2 final draft due In-class presentations
	13	14	15	16	17
	Last day to submit late reports				