

SUNY Geneseo, Department of Physics and Astronomy

Physics 362: Intermediate Lab

Syllabus, spring 2012

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Summary Course Website: <http://www.geneseo.edu/~mclean/IntLab/>

Full Course Website available in mycourses.geneseo.edu

Learning Outcomes

This course will further your education in experimental physics. You will become familiar with more advanced equipment, use it to perform several classic physics experiments in a variety of fields, use more sophisticated mathematical tools to analyze the data, and report your results in a professional format. Work will generally be done in as collaborative teams, with greater autonomy than in previous lab courses.

Students completing this course will be able to:

1. set up advanced equipment, using the necessary resources (manuals, etc.),
2. trouble-shoot and solve equipment setup problems,
3. acquire and analyze data in the manner best addressing an experimental question,
4. manage their time and work constructively with others,
5. write standard format physics journal articles, with appropriate display of data, and analysis leading to conclusions.

Times and places:

Lab meeting: ISC 225A; Mon. 12:30–3:30pm

Lab work is expected during this time. Significant time outside of this period will be required in order to complete labs satisfactorily.

Laboratory rooms: ISC 221 and 228B will be used for specific labs.

Office hours: Tue. and Thu. 12:30–3:00pm

I am also available at other times; see the schedule on my web site. Just stop by my office, or to ensure that I'll be there, contact me by phone or email.

Required materials:

None. A bound notebook for recording notes, observations, data, and analysis is a good idea.

All other required equipment and books will be loaned from the physics department. With the exception of a few expendables, these materials must be left in the same condition (or better) as at the beginning of the semester.

Required coursework and grading (with fraction of final grade):

5% Each of three parts of an electronics lab, some performed individually

5% Presentation on final project.

For each of four physics experiments:

3% Timely progress on labs one week after assignment (scored on a team basis)

2% Quality of comments on others writing, in a report draft (scored individually)

15% Final draft of report (scored with a maximum 1% variation within a team)

This will be based both on the merits of the scientific work and the quality of the writing.

Late work will be penalized by 10% for each week day late.

Expected Schedule

M	Jan. 23	Advanced Oscilloscope Use	Radiation Safety Training
M	30	Lab 1a due	
M	Feb. 6	Lab 1b due	
M	13	Lab 1c due	Lab 2 Assigned
M	20		Lab 2 Progress check
M	27	Lab 3 Assigned	Lab 2 Draft report due (12:30pm)
W	29		Lab 2 Comments due (9:00am)
F	Mar. 2		Lab 2 Final report due (5:00pm)
M	5	Lab 3 Progress Check	
M	19	Lab 3 Draft report due (12:30pm)	Lab 4 Assigned
W	21	Lab 3 Comments due (9:00am)	Final Project Proposals due
F	23	Lab 3 Final report due (5:00pm)	
M	26		Lab 4 Progress check
M	Apr. 2	Final Project Assigned	Lab 4 Draft report due (12:30pm)
W	4		Lab 4 Comments due (9:00am)
F	6		Lab 4 Final report due (5:00pm)
M	9		
M	16	Final Project Progress check	
M	23		
M	30	Lab Clean-up Day	(all experimentation complete)
W	May 9	Final Project presentations	

Details:

Lab 1 concentrates on basic electronics skills, and will be performed individually.

Labs 2–4 will be classic physics experiments, performed by teams of two or three people. These labs all follow the same pattern:

Lab assigned: Each team will meet with instructor and must demonstrate readiness to proceed without direct supervision. Targets will be set for work to be completed over the coming week.

Progress check: Teams will demonstrate that their setup works, and will present preliminary data and calculations.

Draft report due: Report must be a *single* MS Word document, comprising six sections. Each team member is responsible for authoring certain sections.

Comments due: Each team member will provide comments on the other's writing, using the MS Word commenting feature.

Final report due: Each author revises their sections, in response to the comments provided by team member(s).

All documents are to be delivered to a myCourses drop box.

Lab 5 will be a physics experiment designed by the team. Progress check will as above, but instead of a written report, results will be presented orally to class during final exam period.

General Comments:

Bonus Material

At the beginning of each lab period, there may be a short presentation on such topics as journal article format or advanced error analysis.

Maintaining a clean & safe working area

All students must maintain a clean and safe working environment. Failure to do so will result in a substantial loss of credit on your experiment. Regular inspections of the research area will occur by the instructor during the week to ensure that such an environment is maintained.

Report Format

The goal is to produce a report similar in format to articles that appear in published journals. For each report, each member of a team will be responsible for certain sections. More details will be provided at the appropriate point.

Academic honesty

All written lab reports must be entirely original; any plagiarism will result in a failing grade in the course.

Departmental Writing Requirement

If you are a physics major, this course serves to satisfy part of the departmental writing requirement (which the college requires). Papers written for this course are also used for departmental assessment (evaluation of the department's, rather than students', performance). You do not have to actually do anything about this; just thought you'd like to know.