

# Syllabus

## PHYS 3880: Advanced Laboratory

Spring 2018

### Instructors

Don Rice      SER 218B      Don.Rice@aggiemail.usu.edu

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### Office Hours

During lab time, MW 11:30-2:30, or by appointment (Friday 11:30-2:30 is a good time too)

### Class Meetings

Class will meet in SER 132 at 11:30 Monday and Wednesday for approximately an hour. Instructors will be available in SER 109, 132, and 138 or their offices until 2:30 on Monday and Wednesday to assist with assignments.

### Class Web Site

Course materials, assignments, and notifications will be distributed via the Canvas system.

### Prerequisites

Students are expected to have taken and to be familiar with the content of **General Physics** (PHYS 2210 and 2220), **Introduction to Modern Physics** (PHYS 2710), **Introduction to Computer Methods in Physics** (PHYS 2500), and **Intermediate Lab** (Phys 3870).

## Objectives

During this semester, particular emphasis is placed on: (1) creating properly-researched proposals for an experimental project; (2) designing and implementing experimental projects; and (3) written and oral communication skills.

## Texts

J. R. Taylor, *An Introduction to Error Analysis*, 2nd ed. (Univ. Science Books, Mill Valley, CA, 1997). **REQUIRED**

## Attendance

Students are expected to attend the 11:30-12:30 segment of each class. This segment will be used for short lectures, problem-solving, and status reports. Attendance and participation is part of the course grade, so avoid scheduling other activities during this time.

## Assignments

Assignments will be made and submitted via the online Canvas system. The class assignments will have three sections.

1. Examine the experimental design of a laboratory experiment. Examine the instrumentation and uncertainties in detail.
2. Develop a proposal for an extended investigation. Research the literature and put together a convincing case that your proposed topic is practical and worthwhile.
3. Carry out an extended investigation of a physics topic, with a written and oral report.

All projects and experiments will be carried out in teams of 2-3 students. Partners may be changed during the semester.

## Grading

The experimental design analysis (1) and proposal research (2) are worth 25% each. The extended investigation is worth 50%, including a written report and an oral presentation. Attendance and participation in the class meeting time will be a part of the grade for each activity. Each assignment will have a timeliness score that will go negative for late assignments at a rate of 2% per day.

## Additional Information

**Science Writing Center:** Students are strongly encouraged to contact the [Science Writing Center](#) for assistance with the reports and other writing required for this class.

**Disability Resource Center:** USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) as early in the semester as possible (University Inn # 101, 435-797-2444, [drc@usu.edu](mailto:drc@usu.edu)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

**Academic Integrity:** Students are expected to adhere to USU Policy concerning [Academic Honesty and Integrity](#) which defines cheating, falsification, and plagiarism. Be sure that any information that you include from other sources, including textbooks and web pages, is clearly identified and properly cited.

**Class Fee:** A \$40 fee per semester is charged for this class to help cover the expenses for expendable supplies and computer usage. Please be aware that the equipment used in this lab was acquired over many years, at a cost well in excess of \$250,000; please treat it with appropriate care and respect.