Tentative
Syllabus for Physics 441
Advanced Physics Laboratory
Spring 2015

Catalog Description:

441. *Advanced Physics Laboratory.* Two semester hours. (4 lab hours)
An introduction to the equipment and techniques of experimental physics. Experiments are selected from a wide range of fields in physics. Research grade equipment is used in many experiments. May be repeated for up to six hours credit. Prerequisites: Junior standing in physics and consent of instructor.

Text: 1. Experiments in Modern Physics – second edition
by A. Melissinos and J. Napolitano

additional optional texts:

Error Analysis
by John Taylor

The Art of Experimental Physics
by W. Preston and E. Dietz

Experimentation – An Introduction to Measurement Theory and Experiment
by D. Baird

Art of Electronics
by Paul Horowitz and Winfield Hill

Time: Friday 1-5 pm Science Room 116

Instructor: Charles Rogers
office S-238 & research lab S-108
charles.rogers@tamuc.edu

Office Hours: W 4-5pm or by appointment at other times. I am also available in my lab most days before and after classes.

Goals of the Course:
Students learn the principles of experimental physics at an advanced level. Several experiments designed to verify fundamental concepts in modern physics are conducted in this course. The instrumentation used to collect the data introduces the student to the equipment common to research and development laboratories. Computer codes are used to analyze and visualize the data that is collected. A laboratory notebook is maintained for each experiment. Student prepare and present formal written reports for these experiments. The formal student learning objectives for the course are as follows.

Demonstrate the ability to design and conduct an experimental investigation, analyze and interpret experimental data,including detailed error analysis. Demonstrate skills used in experiments including: instrumentation, computing/networking, and the use of the scientific literature. Demonstrate the ability to communicate an experimental investigation in both written and verbal form.

Grading Procedure and Scale:

The course grade is determined from the laboratory notebook(s) and experiment write-ups as outlined below.

- Laboratory notes 50 points per experiment (total 400 points)
- Laboratory Reports 100 points per report (total 800 points)

Course Grade: The course grade is determined from the average of the lecture and lab grades according to the schedule below.

90% and up	A
80% to 90%	B
60% to 80%	C
50% to 60%	D
less than 50%	F

Attendance and Tardiness: Students are expected to be on-time and present for all class meetings. Excused absences can be arranged prior to the class period being missed for appropriate activities as determined by the instructor. If an emergency results in an absence, the student should contact the instructor as soon as possible informing the instructor of the emergency and inquiring about ways to make up the missed class. The instructor will make judgements on how to handle the situation. Possible reasons for an excused absence are listed in the " Student's Guidebook" under class attendance policy. Attendance and tardy records will be maintained and both may result in deductions from your overall grade.

Classroom Behavior: Disorderly conduct which interferes with the normal classroom atmosphere will not be tolerated. The classroom instructor is the judge of such behavior and may instruct a disorderly student to leave the room with an unexcused absence or in more serious situations a student may be removed from the class with a failing grade.

Cheating and other Breaches of Academic Conduct: Academic cheating, plagiarism, and other forms of academic misconduct may result in removal of the student from class with a failing grade or may in extreme cases result in suspension or expulsion from the University as described in the "Code of Student Conduct" section of the " Student's Guidebook".

ADA Eligible Students: ADA eligible students should make arrangements with the instructor in the first week of the semester about special arrangements needed for classroom or testing facilities and procedures to accommodate the disability.

Evaluation of Instruction: Students will be given opportunities to evaluate instruction near the end of the semester. The physics department utilizes a scantron graded questionnaire with statements regarding various elements of instruction and in addition utilizes an open ended form where students can make comments on all elements of the classroom. These comments are given to the instructor and department head soon after the grades are recorded.