# Physics 771/2
# Spring 2009
# Graduate Physics Lab I/II
Tentative Syllabus

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Required textbook: "An Introduction to Error Analysis", 2nd Ed., John R. Taylor, University Science Books

Supplementary text: "Experiments in Modern Physics, 2nd Ed., Melissinos and Napolitano, Academic Press

The laboratories in J404 and J422 will be open Friday 9-12 AM, the regular class hours, and by appointment. At 9:30 AM on each Friday we will usually meet to discuss general topics, e.g., error analysis. Attendance is required!

You are expected to complete and hand in a report on reading assignment and five lab reports, including the three required experiments as well as two of the modern physics experiments listed below. Each student must collect his/her own data. Each lab report should be submitted no later than two weeks after you have completed taking data.

Current list of experiments for Physics 771/2:

Required experiments and other assignments

Methods of Statistical Analysis-Review

Statistics of Nuclear Decay - Theory

Statistics of Nuclear Decay - Experiment

Thin Film Optics, or

Spectroscopic and/or Laser Characterization of Laser-Active Crystals

Modern physics experiments (#3 and #4)

The Franck-Hertz Experiment

Millikan Oil Drop (requires two students to take the data)

Electron Diffraction

Radioactivity – Graduate Lab version

Your lab report for each experiment should contain the following sections:

- Cover page (course number, title of experiment, your name, date)
- Introduction (including the goal of the experiment)
- Theory (development of necessary theory and derivation of formulas)
- Experiment (description of equipment and methods used to collect data)
- Results and Discussion (data tables; a complete error analysis - no measurement is complete without an estimate of the experimental uncertainty; interpretation of results; comparisons of results with theory; answers to any questions)
- Conclusions (including your brief summary of what you learned.)
- List of references, software used, etc.

All reports should be typewritten, preferably using a word-processor so that additions/corrections can be easily made. Reports handed in on time will receive an initial grade and will be returned to the student for possible improvements. All lab reports must be returned to me by the end of the semester.