This is a course in advanced laboratory techniques intended for graduate students in physics, astronomy, and other physical sciences. There will be 1-2 hours of lecture each week as well as 3-4 hours of laboratory and computer work.

I. Lecturer: J.M. Lockhart

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Office hours to be announced in class + other times by appointment. You are encouraged to make use of my office hours. Small gaps in understanding can be easily corrected if taken care of promptly, but can lead to much greater difficulties later if ignored.


Pratap, Getting Started with MATLAB 7 (Oxford, 2006). Readable and useful. You would not absolutely need this if you are already familiar with MATLAB or IDL. (A new edition has just come out, Getting Started with MATLAB (Oxford, 2010), and is fine to use, as is the older edition Getting Started with MATLAB 6 (Oxford, 2002).)

Laboratory Notebook. National # 43-591 or #53-108 or similar. (Bound notebook with numbered pages.)


MATLAB Student Edition, Release 2009a for Windows. This is somewhat expensive ($99) but may be useful to you for other courses. Older versions are usually available which may meet your needs at lower cost, and of course you can use MATLAB for free in our computer lab (TH 123).

III. Prerequisites: Completion of undergraduate upper-division courses in mechanics, E&M, thermal physics, and modern physics. Knowledge of at least one standard computer programming language is expected.

IV. Assignments: A set of 6-7 laboratory experiments will be assigned. For three of these, short reports (3-4 pages) will be required. For one of the experiments, a full scientific paper must be prepared. All experimental work must be recorded in a laboratory notebook. There will also be weekly required homework assignments. A minimum 50% average homework grade is required.

V. Exams and Grades: There will be a final exam covering the lecture material. Grades will be assigned according to the following approximate percentages: Lab notebook and reports, 50%; homework, 25%; final exam, 25%.