

New Course Offering Fall 2000

PHYS 410 COMPUTATIONAL PHYSICS

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Lectures: Tues 8:30-9:30, Hebb 10
Tues 10:30-11:30, Hebb 13
Thurs 10:30-11:30, Hebb 12

Tutorial: (Optional) 1 hr, time & location TBA

Text: (Optional) Numerical Recipes in Fortran OR
Numerical Recipes in C by Press et al

This course will provide an introduction to modern tools, techniques and applications in computational physics. The key goal of the course is to provide the student with experience and expertise in the formulation and solution of broad classes of problems from physics using appropriate computer software (perhaps custom written) and hardware. A chief overall focus of the course from the point of view of physics is the simulation of dynamical systems, although the techniques discussed can often be applied to time-independent problems.

A crucial component of each student's coursework will be the completion of a term project requiring the application of one or more of the techniques discussed in the course to a problem in physics of the student's own choosing.

TOPICS

Unix, Symbolic manipulation using Maple, Scientific programming using Fortran, Linear Systems, Finite Differencing, Non Linear Equations, ODEs, Monte Carlo Methods, Parallelization

Although this course is designed for third yr honours and fourth yr majors, M Sc students with limited experience in computational physics should also consider taking it.

Contact the instructor for further information