FALL 2006 COURSE ANNOUNCEMENT

COMPUTATIONAL PHYSICS
PHZ 5156-C-901 REF 84297

THE INSTRUCTOR ACTS AS A CONSULTANT.

This is a get-your-hands-dirty course in how to apply computers to problems in science and engineering. Although we shall treat topics in numerical analysis and programming, as well as in science, the aim is rather to give students the tools and confidence to write big, grungy programs for research or eventual employment. The course is particularly suited to students in Engineering, Geology, Physics, Chemistry, Mathematics, and Computer Science.

Students should be familiar with programming.

Tentative projects:

- **Review** of C programming; reading data; histograms; digital signal processing
- **Neurobiology**: spike sorting; fast Fourier transform
- **Chaos**: integrating classical dynamics
- **Quantum magnetism**: exact diagonalization of a Heisenberg spin chain
- **Materials modeling**: molecular-dynamics calculation of crack propagation on a parallel computer

**MEETING TIMES**: MWF 10:00-10:50 in Physics Building (PHY) room 102. Notes available on the Web. Recommended references: Press *et al.*, *Numerical Recipes*; Kernighan and Ritchie, *The C Programming Language*. For more information, contact Dr. David A. Rabson, davidra@ewald.cas.usf.edu. For help with registration, contact Ms. Evelyne Keeton-Williams in the physics office.