

Announcement -- please post

## PHYS 4421 - PHYSICS OF CONTINUUM MATTER: Exotic and everyday Phenomena in the Macroscopic World

**INSTRUCTOR:** Predrag Cvitanović

**TIME:** Spring semester 2004, Tue, Thu 12:05-1:25 in Howey S201

**COURSE DESCRIPTION:** Continuum physics describes the macroscopic physical world around us. The enormous progress of quantum physics in 20th century has almost eliminated this kind of physics from the core physics curriculum - still research in nonlinear science, geophysics, biology, engineering, demands increased mastery of its methodology. The course aims to redress the balance by offering a modern, unified introduction to the basic concepts and phenomenology of continuous systems.

The course is intended for physics, biology, math, engineering and geophysics advanced undergraduates, starting graduate students. The mathematical prerequisites are modest and are developed further as the need arises.



- Historical perspective.
- Gravitational fields.
- Fluids.
- Euler/Lagrange description.
- Viscosity.
- Navier-Stokes equations.
- Whorls and vortices.
- Stress, strain.
- Elastodynamics.

**DETAILS:** check [www.cns.gatech.edu/PHYS-4421](http://www.cns.gatech.edu/PHYS-4421).

**TEXTBOOK:** *Continuum Physics, Exotic and everyday Phenomena in the Macroscopic World*, by [Benny Lautrup](#), a modern advanced undergraduate introduction into the subject.

**TEACHING METHOD:** Two lectures per week, homework sets, midterm and a final exam.

**START:** Thursday Jan 8 2004, 12:05-1:25 in Howey S201

[Predrag.Cvitanovic](#) at [physics.gatech.edu](http://physics.gatech.edu) -- updated Nov 5 2003