Curious about special relativity? Antiparticles? Quarks and leptons? Neutrinos?

This spring a new course, **Particles and Symmetries**, will be offered as Phys 248 (Introductory Selected Topics). It will be an introduction to the fundamental constituents of matter and the symmetries which characterize their interactions.

Course goals: Learn about the fundamental symmetries of nature, including Lorentz invariance, the “building blocks” of the current standard model, the importance of symmetries in characterizing the interactions of particles, and key experimental evidence on which the standard model is based. Gain extensive experience in practical special relativity, and in the use of order of magnitude estimates relevant for interpreting and/or judging the feasibility of a variety of modern physics experiments.

Tentative syllabus (subject to change):

- **Week 1**: Special relativity
- **Week 2**: Spacetime physics
- **Week 3**: Known particles
- **Week 4**: Known interactions
- **Week 5**: Quarks
- **Week 6**: Symmetries
- **Week 7**: Electromagnetic interactions
- **Week 8**: Force carriers and the standard model
- **Week 9**: CP violation and neutrino oscillations
- **Week 10**: Frontiers

Texts: *Introduction to Relativity* by John Kogut and *Introduction to Nuclear and Particle Physics* by Das and Ferbel. There will also be extensive notes provided on the Web.