Physics 626  Fall 2015

Elementary Particle Physics

Section 626001

Time:  MWF 9:05 – 9:55
Room:  Nielsen 512
Instructor:  Stefan Spanier

Nielsen 502
Email: sspanier@utk.edu
Tel: 974 0597
Office: Wed 11am – 12pm (or time by appointment)

Web-page:  online.utk.edu (blackboard)

Synopsis

This graduate level course presents phenomenological approaches and basic theoretical concepts of experimental Particle Physics. Key experiments in the field are described and their contribution discussed. Most of the material is in the context of the Standard Model of Particle Physics, but shortcomings of the model and new physics beyond the Standard Model will also be presented. The list of subjects to be addressed (is subject to change that will be announced during class and on blackboard):

- Introduction/History
- Relativistic Kinematics
- Elementary Particle Dynamics
- Accelerators and Detectors
- Symmetries
- Bound States
- Static Quark Model
- Feynman Calculus
- QED
- Interactions with Quarks
- QCD
- Weak Interactions
- CP Violation
- Gauge Theories
- Higgs
- Neutrino Oscillations
- Physics Beyond the Standard Model

The grade in this course is derived from

- 80% homework
  weekly assignments on blackboard (deadline on homework)
  need to solve 80% of the assignments

- 20% presentation project (last two lecture dates at end of semester)

Recommended Textbooks


F. Halzen and A. Martin, Quarks and Leptons: An Introductory Course in Modern Particle Physics

D. Griffith, Introduction to Elementary Particles

J.R. Aitchinson and J.G. Hey, Gauge Theories in Particle Physics

Review of Particle Properties, online at pdg.lbl.gov

C. Amsler, Nuclear and Particle Physics, IOP Expanding Physics, also as e-book
Students with disabilities

If you need course adaptations or accommodations because of a documented disability, please contact the Office of Disability Services at 2227 Dunford Hall (telephone/TTY 865-974-6087; e-mail ods@utk.edu) by January 16. This will ensure that you are properly registered for services.

Academic Honesty

All work submitted by a student is expected to represent his/her own work. Students are expected to enter their own homework without assistance from others. Students are expected to perform all work in conformance with the University policies regarding Academic Honesty.