Course Description

Physics 662 continues the survey of the phenomena of the elementary particles of matter and their interactions begun in Physics 661. During this term we will study:

- Weak Interactions: Quarks and Leptons
- Weak Interactions: Electroweak Interactions
- Physics Beyond the Standard Model
- Discrete Symmetries: C, P, CP and CPT
- Experimental Methods

These topics include many of the fundamental issues of modern particle physics. Throughout the course, the interplay between theory and experiment will be emphasized.

Course Administration

Instructor: Prof. Jim Brau

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414B Willamette
(enter through 414 Willamette)
jimbrau at uoregon.edu

Class Hours: Monday 1:00-2:50 pm and Thursday, 9:30-11:15 am

Classroom: Willamette 412

Office Hours: MW 10-11 am

Physics 662 web page: http://physics.uoregon.edu/~jimbrau/ph662-2014
Reading and Study Material

**Required Textbook**

*Particle Physics, 3rd Edition (2008)*  
B. R. Martin and G. Shaw

**Recommended Supplementary Textbooks and Resources**

Each of the supplementary textbooks will be placed on reserve in the Science Library.

*Introduction to Elementary Particles, 2nd, Revised Edition (2008)*  
David Griffiths

Donald H. Perkins

*An Introduction to the Standard Model of Particle Physics, 2nd Edition (2007)*  
W.N. Cottingham and D.A. Greenwood

*An Introduction to Particle Physics and the Standard Model (2009)*  
Robert Mann

[Errata](#)

*Elementary Particle Physics in a Nutshell (2011)*  
Christopher G. Tully

[Particle Data Group Tables and Reports](http://pdg.lbl.gov/)

Grading Policy

Grades will be based on homework problem sets, a mid-term exam and a final exam.

Prerequisites

This course is the second quarter of a two quarter sequence covering the phenomenology of elementary particle physics. A third quarter of selected advanced topics is possible. The course is intended for students with an interest in the underlying theoretical basis of particle physics theory and experiment. Students should have mastered undergraduate courses on

- Modern physics
- Basic quantum mechanics
Relativistic mechanics.

as well as the material covered in the first quarter of this sequence, Physics 661.