

Syllabus for Physics 5213-4213

Particle Physics

Instructor:	P. Skubic	Office:	NH 329
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Lecture:	in NH 103	Office Hours:	To be decided and by appointment
Web Site:	http://www.nhn.ou.edu/~pls/phys4-5213/		

- Text:
 - Introduction to Elementary Particle Physics *D. Griffiths*
- References—*on reserve in the library*
 - Particle Physics at the New Millennium *B. Roe*
 - Introduction to High Energy Physics *D. Perkins*
 - Subatomic Physics *H. Frauenfelder and E. Henley*
 - Modern Elementary Particle Physics *G. Kane*
 - Quarks and Leptons *F. Halzen, A. Martin*
 - Gauge Theories of the Strong, Weak and Electromagnetic Interactions *C. Quigg*
 - Relativistic Quantum Mechanics *Bjorken and Drell*
 - An Introduction to Quantum Field Theory *Peskin and Schroeder*
- Grading:
 - Homework 20%.
 - Midterm Exam 20%.
 - Class Presentations 25%.
 - Final Exam 35%.
- Homework:
 - The goal of the homework is to expand on what is covered in class and also to serve as a self test to insure that you understand the material. As a policy I do not accept late homework, but if you have a valid reason such as illness, please come talk to me as soon as possible.
- Exams:
 - There will be one 75 minute exam during the semester. The final exam will be two hours long. Each exam will cover all lecture and reading material.
- Exam Schedule:
 - Midterm Exam
 - Final Exam Tuesday, Dec. 9 4:30 to 6:30 PM
- Class Presentations

- Presentations will be given in class by students covering material from the text or from other sources. Every effort will be made to choose topics that are of interest to the student in each case. These presentations will be optional for Undergraduate students. (If presentations are not given, the homework and exams will be weighted proportionally higher in the final grade.)
- Prerequisites
 - I am assuming that you have had upper level courses through the first semester of quantum mechanics. I am also assuming that you know special relativity.
- Tentative Course Outline
 - The goal of this course is to learn the basics of elementary particle physics. This includes learning about the various conservation laws, electro-weak and strong interactions and how they relate to the quark model. In addition, by the end of the semester you will be able to calculate simple cross sections and particle decay rates.
 - * Introduction to particle physics.
 - * Relativistic kinematics.
 - * Conservation laws.
 - * Introduction to cross sections.
 - * Introduction to Feynman diagrams.
 - * Introduction to QED.
 - * PHYS 6213: Weak interactions (historical).
 - * PHYS 6213: Weak interactions (modern).
 - * PHYS 6213: Introduction to gauge theories.
 - * PHYS 6213: Strong interactions QCD.
- Special Notice
 - *Any student in this course who has a disability that may prevent him or her from fully demonstrating her or his abilities should contact me as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.*