PHYS 661: Particle Physics 1

Fall 2018

Syllabus

This course is designed as the first quarter of a three-quarter sequence on particle physics.

A rough outline of topics includes:

1. QFT down and dirty
2. Cross Section me and I'll Decay you
3. Interactions the Feynman way
4. QED ends for the Particle Physicist
5. Compositeness all the way down
6. Going deep (inelastic scattering)
7. Symmetrize this!

I’ll be more precise about exactly what we are covering and where we are headed as the
Objectives

The objectives of the course is to gain sufficient grasp of the syllabus material to calculate basic processes in particle physics and to grasp how particle detectors are able to measure particle properties. This involves gaining an understanding of particle classifications, detectors, cross sections, decay rates, symmetries, and other topics relevant to a modern particle physicist. The course expectations are that you successfully work through all of the problems of the homework assignments and give an excellent mini-lecture/presentation.

Text:

Thompson: Particle Physics

Useful References:

Peskin: Concepts of Particle Physics

Particle Data Group: pdg.lbl.gov

Instructor:

Prof. Graham Kribs

Office:

470 Willamette Hall

Office Hours:

Generally, anytime my door is open. For questions about assignment problems, I’ll schedule a block of time each week that works for most students at the beginning of the course.

E-mail:

kribs@uoregon.edu

(This is the best way to reach me)

Class Communication:

I will use email to your UO email address for all class communication, including announcements, assignments, auxiliary ma-
Assignments:
Homework assignments will be assigned periodically and due roughly one week later. There will be one homework assignment due either the last week of classes and/or the exam week.

Grade:
85% Assignments
15% Mini-Lecture/Presentation

Grading Policy:
Pass (A- and above): All or virtually all problems of all homework assignments done correctly and turned in on-time. Mini-lecture/presentation is clear, well-organized, understandable, and student questions are adequately addressed.
Pass (B- and above): A solid attempt on virtually all problems of all homework sets turned in on-time. Mini-lecture/presentation is clear, organized, understandable but with some issues, and student questions are partially addressed.
Fail (C+ and below): Habitually late homework,
≥ 1 missed homework sets, several missed or incorrect problems on several problem sets. Mini-lecture/presentation is unclear, not well organized, not understandable by other students, and most student questions cannot be addressed.

Class Cancellation:
In the unlikely event that I have to cancel class at the last minute (bad weather or otherwise), I will attempt to email everyone.

Late Assignments:
General
You must do all of the assignments, and turn them in on-time to get a passing grade in the course.

24 hour rule
Assignments will be accepted up to 24 hours late, but with a late penalty. Assignments will *not* be accepted nor graded more than 24 hours after the deadline.

Late penalty
The late penalty is an overall reduction of grade by “1
/ 3” times the number of late assignments

minus 1
. (
B
+ becomes
B
, after two late assignments;
A
– becomes
B
after three late assignments, etc.). However, it is *your* responsibility to find the grader and be sure he personally gets it within this timeframe.

One late penalty waiver
Inevitably some students need an extra day to finish one assignment due to some unforeseen reason.

To be fair to everyone, all students get one waiver. Use your waiver wisely.

**Comments on Assignment Grading**

Please write clearly, legibly, and organize your solution. Don’t be afraid to waste paper to ensure your solution can be clearly followed, step-by-step. It is highly preferred that you use one-side of the paper, and start new problems and/or parts of problems on new pages.