PHYSICS 362L, FIRST DAY HANDOUT

Spring Semester 2019

MWF 12 - 1 PM Unique # 55590 RLM 5.104

Instructor: Rory Coker, RLM 8.312, 471-5194, `coker2@physics.utexas.edu`. `http://tinyurl.com/cokermain` contains links to all Coker's course information. Or `http://tinyurl.com/coker362L` takes you directly to the 362L web page.

Text/Reference: *Subatomic Physics*, by Henley and Garcia (3rd Ed.), World Scientific, 2007, 2010.

Office Hrs: TBA

Nature of the Course: This is the third semester of a course sequence involving quantum physics and its applications to solids, molecules, atoms, nuclei and fundamental particles. In general, you should **not** be in this course unless you are an upper-division physics major and have already taken Physics 373 and Physics 362K. Physics 362L offers a survey of nuclear and particle physics at a level appropriate to advanced undergraduate physics majors. We will use the text mainly as a reference; it offers a very uneven level of coverage, but most important topics are dealt with at one point or another.

Examinations: I don't like giving in-class exams in a course at this level. However, there will be a "pop quiz" at the beginning of each class. This quiz mainly serves as an attendance check, but it also gives you a solid indication of how well you are keeping up in the class.

TA Session: At his discretion, the TA assigned to the class may organize help-sessions or review sessions focussed on current and past homework assignments.

Homework: Homework will be the main basis of your grade in Physics 362L. "Late Homework" and "Makeup Homework" *DO NOT EXIST!* Doing the regularly assigned homework is vital! Trouble in doing the homework is a clear indication of trouble with your study habits; don't neglect the warning! When you need help, don't hesitate to get it, but try to work *on your own* and start work well before the homework is due. At this level you want to offer a complete, detailed, clearly explained solution to each problem. Do not just write down "the naked answer," or copy some solution to a similar problem easily found on-line. It is when doing the homework, *on your own*, that you find out what *you* don't understand and what *you* need to study more effectively, or ask the class TA, or coaches, or the instructor, for more information concerning.

Basis of Grade: Homework, 85%; Attendance (pop quiz grades), 15%.

Teaching Assistant: The TA and his office hours are tba.

Other Books on Course Topics:

- *Particles and Nuclei*, 7th edition, by Povh, Rith, Scholz, Zetsche and Rodejohann (Springer, 2015). [Recommended.]
- *Particle Physics in the LHC Era,* by Barr, Devenish, Walczak and Weidberg (Oxford, 2016). [Recommended.]
- *Modern Particle Physics*, by M. Thomson (Cambridge, 2013).
- *Particle Physics*, by D. Carlsmith (Pearson, 2013).
- *Introduction to Nuclear and Particle Physics*, by A. Das and T. Ferbel, 2nd Ed. (World Scientific, 2003). [A strange book that does not use quantum physics!]
- *Nuclear Physics in a Nutshell*, by C. A. Bertulani (Princeton, 2007).
- *Basic Ideas and Concepts in Nuclear Physics*, by K. Heyde, 3rd Ed. (IOP London, 2004).
- *An Introduction to Nuclear Physics*, by W. N. Cottingham and D. A. Greenwood, 2nd Ed. (Cambridge, 2001).
- *Introductory Nuclear Physics*, by P. E. Hodgson, E. Gadioli and E. Gadioli Erba (Oxford, 1997).

ROUGH OUTLINE OF COURSE

Date	Topics of lectures
Week of Jan. 21	Introduction
Week of Jan. 28	Particle Properties
Week of Feb. 4	Symmetries
Week of Feb. 11	Discrete Symmetries
Week of Feb. 18	Electromagnetic Processes
Week of Feb. 25	Weak Processes
Week of March 4	Strong Processes
Week of March 11	Standard Model
Week of March 25	Beyond the SM
Week of April 1	Nuclear Properties
Week of April 8	Nuclear Models
Week of April 15	Radioactivity, Power
Week of April 22	Nuclear Frontiers
Week of April 29	Astrophysics and Cosmology
Week of May 6	Frontiers of Fundamental Physics?