BOOK LIST FOR PHYSICS 557 & 558

Academic year 2012-13

There is no single required text (primarily because I have found no single book that covers all of the material that we will discuss in this course at the appropriate level in the desired order). I encourage you to look at several of the following texts (and maybe others) during the year and, perhaps, purchase one or two. I hope that the bookstore can stock several copies of each (although that does not seem to be true at the moment) and that the Physics Library can have a copy on each on Reserve or at least have a copy around.

I recommended the first book on the list when I taught this course 10 years ago. It has the advantage of being fairly up-to-date (although that statement is clearly less true today) with reasonably broad coverage. It is now available relatively inexpensively but many of the students at the time felt that the level of the discussion in the book was too shallow (i.e., without sufficient detail or depth – a natural problem for a book intended to cover many subjects for a fairly general audience). The second book has been up-dated recently and seems to provide good coverage (and you may be accustomed to using texts by this author). I have just received a copy of the third book and I have not yet had the opportunity to work through it in detail, but it seems to cover the important topics in a reasonable way (but is currently pretty expensive).

1) *The Fundamental Particles and Their Interactions*, William B. Rolnick, Addison-Wesley, 1994. (Not currently in stock at the UBook Store; $70 new, $13.33 used at Amazon.)

2) *Introduction to Elementary Particles*, David Griffiths, John Wiley-VCH, 2nd Edition 2008 (the 1st edition provided broad but somewhat shallow coverage); (Not currently in stock at the UBook Store, $74.76 new hardcover, $48.58 new paperback, $52.99 used at Amazon)

3) *Particle Physics*, Duncan Carlsmith, Pearson Education, Inc, 2013. (Not currently in stock at the UBook Store, $104.99 new hardcover at Amazon (some lower prices elsewhere).)
Other Introductory/Reference texts:

4) *Femtophysics: A Short Course on Particle Physics*, M.G. Bowler, Pergamon Press, 1990 (a text marked by its brevity and current low price in used form at Amazon).


7) *Quarks and Leptons*, Francis Halzen and Alan D. Martin, Wiley, 1984 (this quite old text has been a favorite of many students, especially for the homework in the first quarter; it lacks a discussion of more recent developments).

More focused texts with a bit more field theory:


A text that focusing on modern collider physics and the strong interactions (but within an introduction to the rest of the Standard Model) is:

A very comprehensive and fairly modern text that would be useful for the entire course but assumes considerable initial familiarity with particle physics and field theory is:


A nice summary of the experimental development of particle physics is given in:


Finally some useful references on group theory and its applications to physics:


As a field theory reference I recommend:
