

Physics 129

Nuclear and Particle Physics

Winter Quarter 2008

Instructor: David A. Williams (office NS2 319, phone 459-3032, e-mail: daw@scipp.ucsc.edu)

Place: ISB 231

Time: Mondays, Wednesdays and Fridays, 9:30–10:40 am. First class Wednesday, January 9; last class Monday, March 17.

Office Hours: Wednesdays, 1:30–3 pm, and by appointment.

Text: The required text for the course is

- *Nuclear and Particle Physics* by W. S. C. Williams, Oxford University Press, 1991.

Course materials

Homework assignments, homework solutions, handouts and announcements will be posted at my course web site: <http://scipp.ucsc.edu/~daw/phys129/enrolled>

This web site is **password protected**. The username and password will be announced the first day of class. The website will also have a running list of reading assignments and lecture topics covered.

Science Library Reserves

There will be no electronic reserves for the course. Electronic materials will be distributed on the web site above. Nine texts on nuclear and particle physics, all at a level similar to this course, will be on reserve. The list is posted on the course web site.

Topics

Nuclear physics, radioactive decays, nuclear models. Properties and classification of the elementary particles, their weak and strong interactions. Experimental methodology. Nuclear and particle astrophysics, including recent developments. We will cover the majority of the text, although in order to allow time to reach some of the more interesting material at the end of the text, we will go into less detail than the text does on some topics.

Students will be expected to be familiar with special relativity and quantum mechanics; Physics 139A is a prerequisite.

Homework

There will be several homework problem sets, generally distributed on Friday and **due in class** the following Friday. You should feel free to discuss the homework problems with each other, but you should write up the problem sets on your own. **Late homework will not be graded.**

Midterm Exam

There will be a midterm exam in class, **tentatively** scheduled for **Friday, February 15**.

Final Exam

The final exam is scheduled for **Tuesday, March 18, 7:30–10:30 pm**. It will be a comprehensive exam covering the whole course.

Grading

Your performance in the class will be evaluated on the basis of the homework problem sets (35%), the midterm exam (25%), and the final exam (40%).