

Astronomy 233 – Physical Cosmology – Winter 2009

Class meets MW 2-3:45PM, ISB 231

Website: <http://physics.ucsc.edu/~joel/Ay/233/>

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Office hours: Thursdays 2:30-3:30 or by appointment

Catalog description: Survey of modern physical cosmology, including Newtonian cosmology, curved space-times, observational tests of cosmology, the early universe, inflation, nucleosynthesis, dark matter, and the formation of structure in the universe. Prerequisite(s): course 202. Offered in alternate academic years.

Textbook: Steven Weinberg, *Cosmology* (Oxford University Press, 2008). This is an excellent, up to date book. It has far more material than we can cover in this course, but it does not cover galaxy formation in very much detail. You should think of Weinberg's *Cosmology* as a reference book where you can find more information on subjects covered in lectures. I do not plan to follow Weinberg's book in detail, and you may find other books to be of equal value in learning the material of this course. As I mentioned in the first lecture, another highly recommended book is Scott Dodelson, *Modern Cosmology* (Academic Press, 2003).

The organization of the course will depend on the interests and previous knowledge of the students. From the questionnaire I see that most students are either especially interested in inflation, the very early universe, and the particle physics aspects of cosmology, or else especially interested in galaxy formation and evolution. Ay233 will emphasize the former – students interested in the latter topic should attend Ay214 (see next paragraph). Many of the weekly Astronomy colloquia and seminars this quarter are relevant to cosmology. You may also be interested in Astronomy 214, which is a seminar course on galaxies in Winter Quarter 2009. It meets MW 12:15-1:45 in ISB 102. During January 21 through February 23, Prof. Avishai Dekel will be lecturing in Ay214 on the formation of galaxies – important material for anyone who wants to understand modern cosmology.