PHYSICS 225A
INTRODUCTION TO GENERAL RELATIVITY
SPRING 2012

Instructor: Kim Griest
Time: Tu Th 11:00am - 12:20pm
Place: Maher Hall Annex 2623 (first week only: MH 5301)

Griest Office: 337 SERF, 534-8914

Griest Office Hours:
Mon: 2:00pm-3:00pm, or drop by anytime, or make an appointment

Text: Bernard Shutz: A First Course In General Relativity

Final: Tuesday June 12, 11:30am-2:30pm

Web page: http://physics.ucsd.edu/students/courses/spring2012/physics225A/

SYLLABUS

1. Special Relativity
2. Vector analysis in special relativity
3. Tensor analysis in special relativity
4. Perfect fluids in special relativity
5. Preface to Curvature
6. Curved manifolds
7. Physics in curved spacetime
8. The Einsten field equations
9. Gravitational radiation
10. Spherical solutions for stars
11. Schwarzchild geometry and black holes
12. Cosmology

Other books on GR

Misner, Thorne, and Wheeler: Gravitation
The classic book; Old, but contains everything up to the 1970's
Very much from the differential geometry point of view; very long
and somewhat hard to find things in.

Weinberg: Gravitation and Cosmology
Excellent book for the practicing physicist; also old. Basically
ignores differential geometry and does everything in coordinates

Wald, General Relativity
Nice compact treatment from the differential geometry point of view

Padmanabhan, Gravitation
Modern complete treatment that puts in the steps of the derivation

Hobson, Efstathiou, and Lasenby, General Relativity: An introduction for Physicists
Modern treatment by cosmologists

Hartle, Gravity
Very nice modern treatment at the undergraduate level