# Physics 620 General Relativity Spring 2016

Professor: Marilena LoVerde
email: marilena.loverde@stonybrook.edu
Office: Math 6-103

Lectures: Wednesday and Friday 8:30AM - 9:50AM
Office Hours: Thursday 10:30-11:30AM, Math 6-103
Grading: 30% Homework, 30% Midterm, 40% Final Exam.

Course Topics: Flat spacetime and Special Relativity, intro to mathematical framework and basic differential geometry, gravity and Einstein's equation, Schwarzchild solution, black holes, conformal diagrams, cosmological solutions, gravitational waves and the weak field limit. Possible additional topics include cosmological perturbation theory, Hawking radiation, quantum fluctuations during inflation, astrophysical black holes and neutron stars.

Course Textbook: Sean Carroll's *Spacetime and Geometry: An Introduction to General Relativity*

Additional Recommended Texts: Bernard F. Schutz, *A First Course in General Relativity* (easy); Robert M. Wald, *General Relativity* (hard/more formal); Steven Weinberg *Gravitation and Cosmology: Principles and Applications of the General Theory of Relativity* (intermediate/more phenomenological); Misner, Thorne, and Wheeler, *Gravitation* (intermediate/excellent reference on specific topics, notation a bit nonstandard).