Physics 4674/5674G: Introduction to General Relativity

Spring 2012

Tentative Syllabus

Jan 18:	intro & Lorentz transformations, vectors, C 1.1-1.4
Jan 23-25:	Tensors, C 1.4-1.7
Jan 30 - Feb 1:	Classical field theory, C 1.8-1.10
Feb 6-8:	Manifolds, tensors, C 2.1-2.4
Feb 13-15:	Metrics, differential forms, C 2.5-2.9
Feb 20-22:	Integration, C 2.10, test 1
Feb 27-29:	Covariant derivatives, geodesics, C 3.1-3.4
(Mar 5-7:	Spring break)
Mar 12-14:	Riemann curvature, C 3.5-3.10
Mar 19-21:	Einstein's equations, C 4.1-4.5
Mar 26-28:	Energy conditions, equivalence principle, C 4.6-4.7
Apr 2-4:	Schwarzschild metric, C 5.1-5.5, test 2
Apr 9-11:	Schwarzschild black holes, C 5.6-5.8
Apr 16-18:	More general black holes, C 6.1-6.4
Apr 23-25:	Kerr, Reissner-Nordström black holes, C 6.5-6.7
Apr 30 - May 2:	Gravitational waves, C 7.1-7.4
May 7:	Final exam

(C = Carroll, *Spacetime and geometry*)

All dates are approximate; time spent on any topic will be adjusted to the backgrounds of the enrolled students.