

Course Guide Advanced Calculus: Fall 2015:

Date	Topic	Text	Comment	Assignment
T: 8-25	vector spaces and norms			
R: 8-27	limits and topology in normed spaces			
T: 9-1	the frechet derivative and linearization			
R: 9-3	partial differentiation and directional derivatives			
T: 9-8	one chain rule to rule them all and product rules galore			
R: 9-10	intuitive proofs of the inverse and implicit function thm. & implicit differentiation			
T: 9-15	an implicit and explicit talk about tangent and normal spaces			
R: 9-17	optimization on the edge, the Lagrange multiplier technique			
T: 9-22	a study of quadratic forms & local extrema			
R: 9-24	differentiation under the integral			
T: 9-29	variational calculus (the Euler-Lagrange Equations)			
R: 10-1	variational calculus (geodesics & mechanics)			
T: 10-6	Test 1			
R: 10-8	manifolds, tangent space of derivations, the differential of a map			
	Fall Break : no class 10-8 & 10-9			
T:10-13	dual spaces, tensors and the wedge product			
R:10-15	musical morphisms and the hodge dual			
T:10-20	differential forms and exterior derivatives			
R:10-22	the pull-back and integration of forms			
T:10-27	on the derivation of non-Cartesian formulae for vector calculus			
R:10-29	generalized stokes theorem			
T: 11-3	poincare lemma			
R: 11-5	electromagnetism in differential forms			
T: 11-10	Elementary differential geometry OR introduction to A-calculus			
R:11-12	Elementary differential geometry OR introduction to A-calculus			
T:11-17	Elementary differential geometry OR introduction to A-calculus			
R:11-19	Elementary differential geometry OR introduction to A-calculus			
	Thanksgiving Break: no class 11-23 to 11-27.			
T:12-1	Elementary differential geometry OR introduction to A-calculus			
R: 12-3	Elementary differential geometry OR introduction to A-calculus			
T: 12-8	Test 2			
F:12-11	Final Exam: Friday, Dec. 11, 1-3pm. (in-class)			