MATH 55B (2007), PROGRAM

Week 1.
Day 2: exterior powers, two versions
Day 3: exterior powers, the theorem

Week 2.
Day 1: determinants, field extensions
Day 2: field extensions
Day 3: fundamental theorem of algebra

Week 3.
Day 1: eigenvalues and eigenvectors
Day 2: generalized eigenvalues and decomposition
Day 3: generalized eigenspaces, Jordan decomposition

Week 4.
Day 1: holiday
Day 2: spectral decomposition on Hermitian vector spaces
Day 3: integration on $\mathbb{R}^n$, measure 0, integrability criterion

Week 5.
Day 1: integration on $\mathbb{R}^n$, integrability criterion, Fubini's theorem
Day 2: Fubini's theorem, partition of unity
Day 3: partition of unity, integration over open domains

Week 6.
Day 1: integration over open domains, change of variables
Day 2: change of variables
Day 3: review for the midterm

Week 7.
Day 1: differential forms, de Rham differential
Day 2: functoriality of differential forms, review of vector fields
Day 3: Lie derivative
Week 8.
Day 1: review: Lie derivative
Day 2: Poincare lemma
Day 3: Integration of differential forms, line integrals
Week 9.
Day 1: Stokes theorem
Day 2: no class
Day 3: manifolds
Week 10.
Day 1: submanifolds, presheaves, sheaves
Day 2: tangent and cotangent spaces, differential
Day 3: differential forms and tensor fields on a manifold

Date: September 7, 2007.

Week 11.
Day 1: vector bundles
Day 2: review
: Day 3: total space of vector bundle, Cech cocycles
Week 12.
Day 1: orientations, integration of diff. forms
Day 2: orientation of vector bundles, $\mathbb{RP}^2$.
Day 3: $\mathbb{RP}^2$, $\mathbb{CP}^2$
Week 13.
Day 1: Stokes theorem