- **Lecture 1** (Mon Jan 27): Course logistics; metric spaces; open sets, continuity, limits
- **Lecture 2** (Wed Jan 29): Topological spaces, bases, subspaces and products; interior and closure
- **Lecture 3** (Fri Jan 31): interior and closure; limit points; Hausdorff spaces
- **Lecture 4** (Mon Feb 3): product and uniform topologies; connected spaces
- **Lecture 5** (Wed Feb 5): connected and path-connected spaces; compact spaces
- **Lecture 6** (Fri Feb 7): connected vs. path-connected; compact spaces; compact subspaces of R^n
- **Lecture 7** (Mon Feb 10): compact subspaces of R^n; compactness in metric spaces; sequential compactness
- **Lecture 8** (Wed Feb 12): sequential compactness; completeness; compactifications
- **Lecture 9** (Fri Feb 14): compactifications; countability and separation axioms; Urysohn's theorem
- **Lecture 10** (Wed Feb 19): Urysohn's metrization theorem; quotient topology
- **Lecture 11** (Fri Feb 21): quotient spaces; homotopy; homotopy equivalence
- **Lecture 12** (Mon Feb 24): deformation retracts; composition of paths, fundamental group
- **Lecture 13** (Wed Feb 26): fundamental group, homotopy invariance; covering spaces
- **Lecture 14** (Fri Feb 28): covering spaces, path-lifting; $\pi_1(S^1)$; Brouwer fixed point theorem
- **Lecture 15** (Mon Mar 3): Brouwer fixed point theorem and other applications; calculations of π_1
- **Lecture 16** (Wed Mar 5): more about covering spaces, lifting, and classification
- **Lecture 17** (Fri Mar 7): universal covering space; Seifert-van Kampen theorem; π_1 of surfaces
- **Lecture 18** (Mon Mar 10): continuity of real functions; sequences and series, power series; derivatives
- **Lecture 19** (Wed Mar 12): differentiation and integration in one variable
- **Lecture 20** (Fri Mar 14): the Riemann integral; L^p norms; equicontinuity, Arzela-Ascoli
- **Lecture 21** (Mon Mar 24): convolution, Stone-Weierstrass theorem, Fourier series
- **Lecture 22** (Wed Mar 26): Fourier series; differentiation in several variables
- **Lecture 23** (Fri Mar 28): inverse and implicit function theorems; integration in several variables
- **Lecture 24** (Mon Mar 31): integration in several variables; differential forms
- **Lecture 25** (Wed Apr 2): integration of differential forms, Stokes' theorem; complex functions
- **Lecture 26** (Fri Apr 4): complex derivative, analytic functions; rational functions; the Riemann sphere
- **Lecture 27** (Mon Apr 7): power series; exp and log; Cauchy's theorem and integral formula
- **Lecture 28** (Wed Apr 9): Cauchy's integral formula; derivatives; Cauchy's bound, Taylor series

- **Lecture 29** (Fri Apr 11): Cauchy's bound; Taylor series; zeros of analytic functions; further consequences
- **Lecture 30** (Mon Apr 14): more consequences of Cauchy; Laurent series, poles and singularities
- **Lecture 31** (Wed Apr 16): meromorphic functions; maximum principle; harmonic functions
- **Lecture 32** (Fri Apr 18): existence of mappings; open mapping principle; argument principle; residues
- **Lecture 33** (Mon Apr 21): residue calculus: residues and definite integrals
- **Lecture 34** (Wed Apr 23): keyhole integration; partial fractions and infinite sum expansions
- **Lecture 35** (Fri Apr 25: infinite sum and infinite product expansions
- **Lecture 36** (Mon Apr 28): special functions: Gamma and zeta
- **Lecture 37 (**Wed Apr 30): Riemann surfaces, elliptic integrals, Weierstrass P-function