Syllabus for Applied Mathematics I (Spring, 2010)

Week 1 (Feb 22): class begins
Week 9 (Apr 19): midterm
Week 14 (May 24): reading report
Week 18 (June 21): Final

Chapter 2 Complex Numbers (3 lectures)

- Complex numbers – the basics (Sec 1-5)
- Complex series (Sec 6-10)
- Complex functions (Sec 11-16)

Chapter 3 Linear Algebra (9 lectures)

- Linear algebra – introduction (Sec 1)
- Matrices and determinants (Sec 2-3)
- Vectors, lines and planes (Sec 4-5)
- Matrix operations (Sec 6)
- Linear operators (Sec 7-8)
- Linear vector space (Sec 9-10)
- Eigenvalues and eigenvectors (Sec 11)
- Application of matrix diagonalization (Sec 12)
- Group theory (Sec 13-14)

Chapter 4 Partial Differentiation (4 lectures)

- Total differential (Sec 1-4)
- Implicit differentiation (Sec 5-7)
- Maximum and minimum problems (Sec 8-10)
- Change of variables (Sec 11-12)

Chapter 6 Vector Analysis (5 lectures)

- Differentiation of vectors (Sec 1-4)
- Gradient (Sec 5-7)
- Green's theorem (Sec 8-9)
- Divergence (Sec 10)
- Curl (Sec 11)

Chapter 7 Fourier Series and Transforms (4 lectures)

- Periodic functions (Sec 1-4)
- Fourier series (Sec 5-8)
- Parseval's theorem (Sec 9-11)
- Fourier transform (Sec 12)