清華大學數學系
高等微積分一 Advanced Calculus (I)

Math 2030-00 Fall 2005

Chapter 1. Euclidean Spaces
1.1. Basic set theory (9/13)
1.2. The real number system (9/16)
1.3. Algebraic structure of Euclidean spaces (9/20)
1.4. Hyperplanes (9/23)

Chapter 2. Sequences and Series
2.1. Sequences and convergence (9/27)
2.2. Bolzano-Weierstrass theorem (9/30)
2.3. Limits supremum and infimum (10/4)
2.4. Series and convergence (10/4, 10/7)
2.5. Absolute convergence (10/11)

Chapter 3. Topology of Euclidean Spaces
3.1. Open and closed sets (10/14)
3.2. Interior, closure, and boundary (10/18)
3.3. Compact sets (10/21, 10/28, 11/1)
3.4. Connected sets (11/4)

Chapter 4. Continuous Functions
4.1. Limits of functions (11/8)
4.2. Continuity (11/11, 11/15)
4.3. Continuity and compactness (11/18)
4.4. Continuity and connectedness (11/22)

Chapter 5. Uniform Convergence
5.1. Uniform convergence of sequences (11/25, 11/29)
5.2. Uniform convergence of series (12/2, 12/9)
5.3. Power series (12/13, 12/16, 12/20)
5.4. Analytic functions (12/23)
5.5. Arzelà-Ascoli theorem (12/27, 12/30)

Midterm Exam 1 (Tuesday, Oct 25): Chapter 1, Chapter 2, Sections 3.1 and 3.2
Midterm Exam 2 (Tuesday, Dec 6): Sections 3.3 and 3.4, Chapter 4, Section 5.1
Final Exam (Friday, Jan 6): Chapter 1 ~ Chapter 5