

**Real Analysis I**  
**Math 323, Fall 2012, Tentative schedule**

Day Number	Date of Lecture	Reading in Text
1	8/29	1.1, 1.5: The Irrationality of $\sqrt{2}$ ; Cantor's Diagonalization Method
2	8/31	1.3: The Axiom of Completeness
3	9/3	2.2: The Limit of a Sequence
4	9/5	2.3: The Algebraic and Order Limit Theorems; Problems
5	9/7	2.3 (cont'd), 2.4: The Monotone Convergence Theorem and a First Look at Infinite Series ;
6	9/10	2.4 (cont'd), 2.5: Subsequences and the Bolzano-Weierstrass Theorem
7	9/12	2.6 The Cauchy Criterion
8	9/14	2.6 (cont'd), 2.7*: Properties of Infinite Series
9	9/17	2.7* (cont'd), 2.8*: Double Summations and Products of Infinite Series
10	9/19	Problems; 3.2: Open and Closed Sets
11	9/21	3.2 (cont'd)
12	9/24	3.3: Compact Sets
13	9/26	Problems; 4.2: Functional Limits;
14	9/28	4.3 Combinations of Continuous Functions
15	10/1	4.4: Continuous Functions on Compact Sets
16	10/3	Midterm review
17	10/5	First midterm
	10/8	Midterm recess
18	10/10	4.4 (cont'd), 4.5: The Intermediate Value Theorem
19	10/12	4.5 (cont'd) 4.6*: Sets of Discontinuity
20	10/15	5.2: Derivatives and the Intermediate Value Property
21	10/17	Problems; 5.2 (cont'd)
22	10/19	5.3: The Mean Value Theorem
23	10/22	5.3 (cont'd), 5.4*: A Continuous Nowhere-Differentiable Functions
24	10/24	Problems; 5.4* (cont'd)
25	10/26	6.2: Uniform Convergence of a Sequence of Functions
26	10/29	6.2 (cont'd) 6.3: Uniform Convergence and Differentiation
27	10/31	Problems; 6.3 (cont'd)
28	11/2	6.4*, 6.5*: Series of Functions; Power Series
29	11/5	6.5* (cont'd)
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Day Number	Date of Lecture	Reading in Text
30	11/7	Midterm review
31	11/9	Second midterm
32	11/12	6.6*: Taylor Series
33	11/14	7.2: The Definition of the Riemann Integral
34	11/16	7.2 (cont'd), 7.3: Integrating Functions with Discontinuities
35	11/19	7.3 (cont'd), 7.4: Properties of the Integral
	11/21–11/25	Thanksgiving recess
36	11/26	7.5 (cont'd), 7.5: The Fundamental Theorem of Calculus
37	11/28	Problems; 7.5 (cont'd)
38	11/30	7.6*: Lebesgue's Criterion for Riemann Integrability
39	12/3	7.6* (cont'd)
40	12/5	Problems
41	12/7	Final review

**Note:** The sections marked with an “\*” are optional and we might skip them if we fall behind.