

DEPARTMENT OF MATHEMATICS

SYLLABUS

Course # & Name: MAT 25: Advanced Calculus

Recommended Text(s) & Price: Kenneth Ross "Elementary Analysis: The Theory of Calculus." (Springer-Verlag; \$34.70)

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Lecture(s)	Sections	Comments/Topics
1 (Set Notation)	1	Handout
1	1	The set \mathbb{N} of Natural Numbers
1 (Chapter 1)	1, 2	The set \mathbb{Q} of Natural Numbers
1	3	The set \mathbb{R} of Natural Numbers
1	4	The Completeness Axiom
1	5, 6	Development of \mathbb{R}
1 (Chapter 2)	7	Limits of Sequences
1	7	Limits of Sequences
1	8	A Discussion about Proofs
1	8	A Discussion about Proofs
1	9	Limit Theorems for Sequences
1	9	Limit Theorems for Sequences
Midterm Exam I		
1	10	Monotone and Cauchy Sequences
1	10	Monotone and Cauchy Sequences
1	11	Subsequences
1	11	Subsequences
1	12	Limsup's and liminfs
1	12	Limsup's and liminfs
Review and Catch-Up		
Midterm Exam II		
1	14	Series
1	14	Series
1	15	Alternating Series and Integral Tests
1	15	Alternating Series and Integral Tests
1	16	Decimal Expansions of Real Numbers
1	16	Decimal Expansions of Real Numbers
1	13	Topology in Metric Spaces
1	13	Topology in Metric Spaces

Additional Notes:

Students are required to communicate mathematical ideas using appropriate terminology and presenting informal and formal proofs in oral and written formats.