MA 1025 — Introduction to Mathematical Reasoning (4-0)

Prerequisite: None.
Text: Discrete Mathematics (Brief Edition), S.S. Epp, Brooks/Cole 2011, ISBN 0-495-82617-0

HOURS	TOPIC	SECTION
1-1	Mathematical Language: Variables, Sets, Relations	1.1—1.3
2-3	Propositions, Connectives, Equivalence	2.1
2-5	Conditional Statements, Valid Arguments	2.2, 2.3
2-7	Predicates and Quantifiers	3.2
1-8	Nested Quantifiers	3.3
1-9	Inference Rules and Deduction	3.4
2-11	Proofs in Mathematics: Direct Proof of Conditionals	4.1—4.3
1-12	Proofs in Mathematics: Proof by Cases	4.4
2-14	Indirect Proof – Contraposition and Contradiction	4.5, 4.6
1-15	Sequences and Summation	5.1
3-18	Mathematical Induction	5.2, 5.3
1-19	Naïve Set Theory (Introduction, element-chasing)	6.1
1-20	Properties of Sets	6.2
1-21	Disproof, Algebraic Proof	6.3
1-22	Functions on General Sets	7.1
2-24	Surjections, Injections, Bijections	7.2
1-25	Composition of Functions	7.3
1-26	Cardinality and Countability	7.4
1-27	Relations (Introduction)	8.1
2-29	Properties of Relations	8.2
1-30	Equivalence Relations	8.3
1-31	Elementary Counting (Introduction)	9.1
2-33	Multiplication and Addition Rules	9.2-9.3
1-34	The Pigeonhole Principle	9.4
2-36	Counting: Combinations , Permutations w/Repetition	9.5
2-38	Combinatorial Reasoning, the Binomial Theorem	9.6
4-42	Exams, Reviews, and Holidays	

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