

**Department of Mathematics**

**Faculty of Science**

**MATH 216 (206216) INTRODUCTION TO MATHEMATICAL LOGIC**

**3(3/3-0/0)**

**Abbreviation INTRO TO MATH LOGIC**

**Prerequisite MATH 104 (206104) or MATH 112 (206112) or MATH 162 (206162)**

**Course Description**

Mathematical structure. Inductive and deductive reasoning. Method of proof. Arguments and their validity propositions. Symbolic Logic and Venn diagrams. Truth analysis. Truth table and deductive symbolic logic system. Applicable logic.

**Course Contents**

**No. of Lecture Hours**

1. Inductive and deductive reasoning	2
Inductive and deductive arguments. Truth and validity. Symbolic logic.	
2. Logic of propositions	
Analysis truth values of propositions. Valid and invalid propositions.	
Logically equivalent propositions. Deductive argument and proof.	
3. Methods of proof	6
Direct proof. Conditional proof. Indirect proof.	
4. Logic of quantified statements	8
Quantified statements. Categorical statements. Fundamental rule for categorical statements. Valid statements and logical equivalence.	
5. Logic of relational statements	7
Deductive of relational statements. Relation of identity.	
Symbolic logic of sets.	
6. Mathematical Structure	3
Deductive system. Mathematical system. Algebra of propositions, sets and number system.	
7. Boolean Algebra	7
Algebra of Boolean. Boolean algebraic functions.	
Karnaugh maps. Deduction by Boolean algebra.	
8. Application of logic	7
Switching circuits. Electronic gate circuits.	

**Total**

**45**