

**OBJECTIVES**

The purpose of this course is to enhance the reasoning ability of new entrants and provide them basic information about the use of Logic in different areas of Computer Science. Studying Logic at the initial stage will equip the participants with understanding more clearly and effectively other higher level courses.

**Course Content:****1. BASIC CONCEPTS**

- 1.1 Argument, Premises and Conclusions.
- 1.3 Deduction and Induction.
- 1.4 Validity, Truth Soundness, Strength Cogency.

**2. CATEGORICAL PROPOSITION**

- 4.1 The Components of Categorical Propositions.
- 4.2 Quality, Quantity, and Distribution.
- 4.3 Venn Diagrams and the Modern Square of Opposition.
- 4.4 Conversion, Obversion and Contraposition.
- 4.5 Traditional Square of Opposition.
- 4.6 Venn Diagrams and the Traditional Standpoint.

**3. CATEGORICAL SYLLOGISMS.**

- a. Standard Form, Mood, and Figure.
- b. Venn diagram.
- c. Rules and Fallacies.

**4. PROPOSITIONAL LOGIC**

- 6.1 Symbols and Translation.
- 6.2 Truth Function.
- 6.3 Truth Table for Propositions
- 6.4 Truth Tables for Arguments.
- 6.5 Indirect Truth Tables.

5. Logic and Circuit

Electric Circuit

Logic Gates

Or gate

And gate

Not gate

Combining Logic gates

Mechanical Reasoning

Turing Machine

Computer Reasoning

Books Recommended:

1. Hurley. A Concise Introduction to Logic. 8<sup>th</sup> Edition Wadsworth/Thomson.
2. Morton L. Schagrin. *Logic a Computer Approach*, McGraw-Hill Book Comp