Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Symbolic Logic GE 13	4	3	1	Nil	12th Passed	None

Learning Objectives

- This course is designed for students who are comfortable with elementary mathematical and algebraic techniques.
- It will cover both truth functional logic and methods of deductive proof, quantification and predicate logic along with the logic of relations.

Learning Outcomes

After completing this course students are expected to be able to do the following:

1. The student will be enabled to understand advanced methods in logic
2. The student will understand the importance of formal methods in philosophy
3. The student will be able to construct symbolic form of both sentential as well as predicate logic and finally examining more complex arguments for deriving a clear rational conclusion.
4. The student will develop competence in formulating counterexamples for invalid arguments symbolized in the notations of predicate logic.

Unit 1: Basic Logical Concepts & Connectives   **(9 Hours, 3 Weeks)**
1. Truth and Validity
2. Relevance of Symbolic Logic
3. Uses of Symbols and Symbolization
4. Truth Tables: Statements & Argument

Unit 2: The Method of Deduction   **(12 Hours, 4 Weeks)**
1. Formal proof of validity: Rules of Inference and Rules of Replacement
2. Techniques for proving validity/invalidity: Indirect Proof, Conditional Proof
3. Proofs of Tautologies

Unit 3: Quantification Theory   **(12 Hours, 4 Weeks)**
1. Symbolization of Singular, General and Multiply-general propositions

2. Restrictions on Quantifier Rules:
   (a) Special Restriction on UG (b) Special Restriction on EI
3. Proving validity and Proving invalidity

Unit 4: The Logic of Relations   (12 Hours, 4 Weeks)
1. Symbolization: Relation
2. Some attributes of relations
3. Predicate Variables and Attributes of Attributes.

Essential Recommended Readings: -
1. Copi, I.M. Symbolic Logic, 5th edition. India: Pearson, 2008.Ch1- 5
2. Copi, Irving M. *Introduction to logic*. 6th Ed. New York London: Macmillan Collier Macmillan, 1982. Ch1.

Suggested Readings:

- Hurley, Patrick J. *A concise introduction to logic*. Boston, MA: Wadsworth Cengage Learning, 2012.
- Sen, Madhucchanda. Logic. Delhi: Pearson, 2008.
- Jetli & Prabhakar. Logic. India: Pearson, 2012

Note: **Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.**