



**Anekant Education Society's**

**Tuljaram Chaturchand College, Baramati**

***(Autonomous)***

**Four Year B.A. Degree Program in Philosophy & Logic**

**(Faculty of Humanities)**

**CBCS Syllabus**

**S.Y. B. A. (Logic) Semester - IV**

**For Department of Philosophy & Logic**

**Tuljaram Chaturchand College, Baramati**

**Choice Based Credit System Syllabus (2023 Pattern)**

**(As Per NEP 2020)**

**To be implemented from Academic Year 2024-2025**

**CBCS Syllabus as per NEP 2020 for SYBA Philosophy  
(w. e. from September, 2024)**

<b>Name of the Programme</b>	: B.A Philosophy & Logic
<b>Program Code</b>	: LOG
<b>Class</b>	: S.Y.B.A.
<b>Semester</b>	: IV
<b>Course Type</b>	: Minor (Theory)
<b>Course Name</b>	: Symbolic Logic
<b>Course Code</b>	: LOG-261-MN
<b>No. of Lectures</b>	: 60
<b>No. of Credits</b>	: 04

**A. Course Objectives:**

1. To familiarize students with fundamental concepts in symbolic logic, such as propositions, truth functions, and logical connectives.
2. To provide a foundational understanding of the structure of logical arguments and reasoning processes.
3. To enhance students' critical thinking and analytical abilities through the study of logical forms.
4. To encourage students to apply logical reasoning in practical problem-solving scenarios.
5. To introduce students to formal methods of constructing and evaluating logical proofs.
6. To teach students how to translate natural language statements into symbolic form using logical notation.
7. To help students apply formal logical methods to assess the validity and soundness of arguments in various fields of study.

**B. Course Outcomes:**

- CO1. Students will be able to understand and manipulate basic propositional logic..
- CO2. Students to deconstruct and analyze complex arguments using formal logic methods, including truth tables and deductive reasoning.
- CO3. Students will acquire the ability to construct formal proofs using rules of inference
- CO4. Students will demonstrate knowledge of quantifiers
- CO5. Students will gain the skill to translate natural language sentences into formal symbolic logic.
- CO6. The course will significantly improve students' critical thinking abilities, allowing them to apply logical reasoning systematically to various academic, social, and professional contexts.
- CO7. Students will develop the ability to apply symbolic logic techniques to solve practical problems across disciplines. This includes applying logic to mathematics, computer science, philosophy, and decision-making processes in everyday life.

## Semester- IV LOG-261-MN Symbolic Logic

Unit No.	Topics & Learning Points	No. of Hours
<b>1</b>	<b>Introduction to Symbolic Logic</b> A. Introduction B. Classification of Propositions: Simple and Compound C. Basic Truth-functions	<b>12</b>
<b>2</b>	<b>Truth Tables</b> A. Tautologies B. Contradictory C. Contingent	<b>12</b>
<b>3</b>	<b>Methods of Decision Procedure</b> A. Truth-table B. Shorter Truth-table C. Exercises and examples	<b>12</b>
<b>4</b>	<b>Deductive proof</b> A. Rules of Inference B. Types of deductive proof: Direct Proof and Conditional Proof C. Exercises of direct and conditional proof	<b>12</b>
<b>5</b>	<b>Set Theory</b> A. Introduction to Set Theory B. Types of Set C. Exercises of set examples	<b>12</b>

## **Readings: Reference Book:**

1. Copi, I. M., Introduction to Logic, Macmillan Co. New York, 1986. (14th Edition)
2. Copi, I. M., Symbolic Logic, Macmillan Co. New York, 1995 (5th Ed.).
3. Patrick Suppes (Chapter on Set Theory)
4. Symbolic logic (4<sup>th</sup>ed.) I. M. Copi.
5. Formal logic : scope and limits
6. तर्कविद्या भाग १,२ डॉ. बी. आर. जोशी, प्रा. कुलकर्णी, प्रा. मठवाले
7. तर्कशास्त्र (पारंपरिक व सांकेतिक) – डॉ. सुनील ब. भोईटे
8. तर्कशास्त्र - श्रीनिवास दीक्षित
9. तर्कशास्त्राची मूलतत्त्वे वाडेकर दे.द.
10. सुलभ तर्कशास्त्र प्रा मुकुंद कदम
11. पारंपरिक तर्कशास्त्र - नांगरे, फडतारे, चौगुले, हिरवे, वाघमोडे

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

### Mapping of Program Outcomes with Course Outcomes

Class: SYBA (Sem IV)

Subject: Logic

Course: **Symbolic Logic**

Course Code: **LOG-261-MN**

**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

### Programme Outcomes (POs)

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
<b>C01</b>	3	1	1	2	1	3	1	1	2	1
<b>C02</b>	3	2	1	3	1	3	2	1	2	1
<b>C03</b>	3	2	1	3	1	3	1	1	2	1
<b>C04</b>	3	1	1	3	1	3	1	1	2	1
<b>C05</b>	3	3	2	2	1	3	1	1	2	1
<b>C06</b>	3	2	1	2	2	3	2	3	2	2
<b>C07</b>	3	1	1	2	2	3	2	3	2	2

### Justification for the mapping

C01: Understanding and manipulating basic propositional logic

- PO1 (Critical Thinking): Strong (3) – Propositional logic is foundational to critical thinking as students must analyze and evaluate logical propositions.
- PO2 (Communication Skills): Weak (1) – This outcome doesn't require advanced communication but involves expressing logical statements concisely.
- PO6 (Problem-Solving): Strong (3) – Students will use propositional logic to solve structured problems.

C02: Deconstructing and analyzing complex arguments

- PO1 (Critical Thinking): Strong (3) – Complex argument analysis requires deep critical thinking and logical evaluation.
- PO4 (Research Skills): Strong (3) – Breaking down arguments helps in forming and evaluating hypotheses, key to research methodology.
- PO6 (Problem-Solving): Strong (3) – Analyzing complex arguments directly relates to problem-solving.

CO3: Constructing formal proofs using rules of inference

- PO1 (Critical Thinking): Strong (3) – Constructing formal proofs enhances critical thinking and deductive reasoning.
- PO4 (Research Skills): Strong (3) – Formal proofs are essential in research, especially in validating arguments or hypotheses.
- PO6 (Problem-Solving): Strong (3) – Constructing proofs is a fundamental problem-solving tool.

CO4: Demonstrating knowledge of quantifiers

- PO1 (Critical Thinking): Strong (3) – Understanding quantifiers helps in analyzing arguments involving generalities or specific instances, improving critical thought.
- PO4 (Research Skills): Strong (3) – Quantifiers are crucial for formulating precise research questions.
- PO6 (Problem-Solving): Strong (3) – Quantifiers aid in solving logical problems involving categories of objects or ideas.

CO5: Translating natural language into formal symbolic logic

- PO1 (Critical Thinking): Strong (3) – Translating natural language into logic requires abstract and critical thinking.
- PO2 (Communication Skills): Strong (3) – This outcome is directly tied to the ability to communicate complex ideas precisely in formal logic.

CO6: Improving critical thinking abilities

- PO1 (Critical Thinking): Strong (3) – The entire course improves students' critical thinking abilities.
- PO8 (Value Inculcation): Strong (3) – Developing critical thinking also encourages adopting ethical and logical values.

CO7: Applying symbolic logic to solve practical problems

- PO1 (Critical Thinking): Strong (3) – Practical application of symbolic logic enhances critical and creative problem-solving.
- PO6 (Problem-Solving): Strong (3) – Directly related to solving real-world problems using logical techniques.
- PO8 (Value Inculcation): Strong (3) – Applying logic also ties into ethical reasoning, which promotes values such as fairness and objectivity.