



SAVITRIBAI PHULE PUNE UNIVERSITY

(formerly University of Pune)

F.Y.B.A. LOGIC

Semester & Choice Based Credit System

(To be implemented from the Academic Year, 2019-20)

LOGIC AND PRINCIPLES OF REASONING

Syllabus

To be implemented from 2019-20

Class & Semester	Title of the Course	Credits
F. Y. B. A. Semester First (General-1)	TRADITIONAL LOGIC	03
F. Y. B. A. Semester Second (General-2)	PROPOSITIONAL LOGIC	03

Objectives:

1. To introduce Logic as an academic discipline to students.
2. To teach students to acquire pleasures in logical thinking.
3. To inculcate critical and systematic thinking in student's mind as well as common stakeholder in general.
4. To create awareness about the significance of logical thinking for academics and life in general, in students and common stakeholders.
5. To prepare students for university evaluation system and competitive examinations.

Semester First: **TRADITIONAL LOGIC**

Credit 1: Logic as the study of Inference:

1. Introduction to logic as branch of philosophy
2. Concept of logic, Utility of logic
3. Brief history of logic, Concept of Misology
 - Types of logic: Western , Indian
 1. Western : Induction and Deduction
 2. Indian : Theories of pramanas : Carvaka, Buddhism & Nyaya : The importance of anumana pramana, Jaina theory of Syadvada.
4. Recent applications of logic : Fuzzy Logic, Computer logic

Credit 2: Traditional understanding of propositions and their classification

1. Deductive and Inductive branches of logic.
2. Difference between
 - 1) Proposition and sentence;
 - 2) Proposition and propositional form;
 - 3) Argument and argument form
3. Basic subject-predicate structure and components: Quantifier, subject term, copula, predicate term
4. Classification of proposition into categorical proposition –(A.E.I.O.),
Four-fold scheme of Categorical Propositions (AEIO)

Credit 3: Inference and Fallacies

a) Traditional understanding and classification of Inference:

- 1) Venn Diagram (Representation of A, E, I, O Propositions)
- 2) Immediate Inference and Mediate Inference
 - a) Conversion,
 - b) Obversion
- 3) (Nature, Rules and deductions based on these types)
- 4) Categorical Syllogism
- 5) Figures and Moods of Syllogism

b) Fallacies

- 1) Concept of Fallacy
- 2) Types of Fallacies
- 3) Indian and Western
- 4) Formal fallacies
- 5) Non-formal fallacies : Division, Composition, Accident, Converse Accident, Many Questions, Petitio Principii (Ignoratio Elenchi : Argumentum : ad baculum, ad misericordiam, ad hominem, ad ignorantiam, ad verecundiam, ad populum)

Books for Study:

- 1) Copi I. M. *Introduction to Logic* Macmillan Company New York (Fourteenth Edition).
- 2) Kawale. S. R. and Gole Leela; *Sugama Akariha Tarkasastra* Pune Vidyarthz Prakashan Griha Pune 1972
- 3) More, Hema; *Tarkasastra* Nimitta Prakashan Pune 1995
- 4) Daryapurkar, Paramparik Tarkshastra, Bhupali Daryapurkar, Splapur, 1978
- 5) Santosh Thakare, Tarkshastra, Kumbh Prakashan, Amravati, 2001

Books for Reference :

1. Copi I. M. *Symbolic Logic* Macmillan Company New York 14 th Edition (Relevant Chapters).
2. Quine W.V.O. : *Methods of Logic* (Relevant Chapters)
3. 3.A Modern Introduction to Indian Logic: S. S. Barlingay,
4. Bhartiya Tarkshastrachi Ruparekha : S. S. Barlingay, Paramarsha Prakashan, University of Pune, Pune.
5. Pradnaprabodh : Editor, S. M. Bhave, Bhartiya Tarkshastrachi Vatchal : ek chikastak adhava, by Pradeep Ghokale, Pradnayapathashala mandal, Wai, 2016
6. Logic in Computer Science: Michael Huth and Mark Ryan, Cambridge university press, 2004
7. Fuzzy Logic: Timothy J. Ross, Wiley publication

Semester Second: **PROPOSITIONAL LOGIC**

Objectives:

1. To introduce Symbolic Logic as an academic discipline to students.
2. To teach students to acquire pleasures in logical thinking.

Credit 1: Modern understanding of propositions and their classification

1. Concept of Symbolic logic : nature, scope and applications
2. Modern understanding of Propositions and their classification into :
 - a) Simple and compound propositions
 - b) Truth-functionally and non-truth-functionally compound propositions.
3. Propositional variables, Propositional constants, Logical constants and basic truth functions
4. Symbolizing propositions using the above.

Credit 2: Decision Procedures

1. Concept of decision procedure
2. Use of the following Decision Procedures to identify propositional forms as
 - a) Tautologous,
 - b) Contradictory
 - c) Contingent:
3. Method of Truth Table
4. Shorter Truth-Table

Credit 3: Proving validity and invalidity

a) Deductive Proof:

1. The relation between Induction and Deduction
2. Concept of Deductive Proof
3. Rules of Inference; The Rule of Replacement.
4. Kinds of Proof:
 - a) Direct proof
 - b) Conditional proof

b) Proof of Invalidity

- 1) Concept of invalidity
- 2) Use of method of truth values
- 3) Assigning truth values of proving invalid argument

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1. Copi I. M. *Introduction to Logic* Macmillan Company New York (Fourteenth Edition).
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3. A Modern Introduction to Indian Logic: S. S. Barlingay, Bhartiya Tarkshastrachi Ruparekha : S. S. Barlingay, Paramarsha Prakashan, University of Pune, Pune.