

SAVITRIBAI PHULE PUNE UNIVERSITY

T.Y.B.A.

G III : LOGIC

Logic and Methodology of Science

First Term

[**Objectives** 1) To acquaint the students with some important issues regarding methodology of Science. 2) To introduce major methodological approaches in Natural Sciences and Social Sciences]

Unit I:

- 1.1 Nature of science, Pure and applied Sciences. Commonsense and Science.
- 1.2 Theory and fact. Role of theory and fact.
- 1.3 Values and Science

Unit II:

- 2.1 Nature of cause, Causal laws and Uniformity of Nature
- 2.2 Mill's Notion of Cause
- 2.3 Mill's Method of Causal analysis. Mill's five methods.

Unit III

- 3.1 Nature of Induction
- 3.2 Types of Induction: By simple enumeration and Analogy, Hypothetico-Deductive Method
- 3.3 Problem of Induction, Hume's Criticism of Induction

Unit IV:

- 4.1 Nature of Hypothesis, Kinds of Hypothesis
- 4.2 Confirmation of Hypothesis
- 4.3 Conditions of a good hypothesis

Second Term

Unit V:

- 5.1 Nature of Scientific Explanation
- 5.2 Distinction between Scientific Explanation and common-sense explanation
- 5.3 Kinds of scientific explanation : D.N. Model, Functional, Statistical, Teleological, Probabilistic.

Unit VI:

- 6.1 Laws of Nature
- 6.2 Law and Theory
- 6.3 Classifications of laws of Nature

Unit VII:

- 7.1 Distinction between Natural Sciences and Social Science,
Nature of human action and social institutions
- 7.2 Nature of social laws
- 7.3 Value neutrality and Objectivity in social sciences

Unit VIII:

- 8.1 Research Methodology in social sciences
- 8.2 Method of data collection: Survey, observation, Questionnaire, Interview.
(Nature, types, merits and limitations of each method)

Books for Reading:

1. Nagel E. *The Structure of Science Problem in the Logic of Scientific Explanation* MacMillan 1961.
2. Hempel C. G. *Philosophy of Natural Science*, Prentice Hall Englewood Cliff New Jersey 1966
3. Keat Russell Urry, *Social Theory as science* RKP London 1975
4. Ryan Alan *Philosophy of social science* MacMillan 1970
5. Lessnoff M.H. *The Structure of Social Science: A Philosophical Introduction* George Allan Unwin Ltd. London 1974.
6. R. Rudner *Philosophy of Social Science* Prentice Hall Englewood Cliff New Jersey 1966

Books for Reference:

1. Hempel C. G. *Aspects of Scientific Explanation*, Free Press New York, 1968
2. Benton, Ted. *Philosophy of Social Science: Philosophical foundation of social thought*. Craib Ian, Palgrave, New York.
3. Tucker, John, *Philosophy of Social Science*.
4. Deshpande S.S., Ghokale P.P., More S.S.(Eds.) *Vijnanace Tattvajnana*, Granthali, Mumbai, 2006.