



**Course Outline for Entrance Exam
Research/ Research Methodology**

Course Titles:

Unit 1: Research Methodology

Definition and nature of research.

Understanding the goals and purposes of conducting research.

Factors driving individuals and organizations to undertake research.

Basic vs. applied research.

Descriptive, analytical, fundamental, quantitative, qualitative, conceptual, and empirical research.

Qualitative and quantitative approaches.

Mixed-methods approach.

Role and importance of research in academic and practical fields.

Distinction and relationship between methods and methodology.

Principles of the scientific method in research.

Process and benefits of understanding research procedures.

Steps involved in conducting research.

Standards and benchmarks for high-quality research.

Common challenges and issues faced by Indian researchers.

Unit 2: Defining the Research Problem

Definition and characteristics of a research problem.

Criteria and considerations for choosing a research topic.

Importance of clear problem definition for successful research.

Methods and strategies for defining problems.

Unit 3: Research Design

Definition and purpose of research design.

Importance of planning in research.

Characteristics of an effective research design.

Concepts such as variables, hypothesis, experimental and control groups, etc.

Types of research designs: exploratory, descriptive, diagnostic, experimental, etc.

Fundamentals of designing experiments.

Unit 4: Research Ethics, Publications and Intellectual Property Rights

Metrics and indicators: indexing, impact factor, H Index, citation index.

Understanding plagiarism and ethical guidelines.

Tools and techniques for detecting plagiarism.

Overview of software tools available for plagiarism detection.

Basics of intellectual property rights: patents, copyrights, trademarks.

Role and significance of protecting intellectual property.

Unit 5: Interpretation and Report Writing

Definition and nature of data interpretation.

Importance and purpose of interpreting research data.

Methods and strategies for effective interpretation.

Common pitfalls and how to avoid them.

Role and importance of documenting research.

Steps in writing a research report.

Structure and format of a research report.

Various types of research reports and their purposes.

Techniques for presenting research findings orally.

Writing style, language, and technical aspects.

Clarity, accuracy, and coherence in writing Research Reports.

Unit 6 : Data Collection

Sources of Data

Types of Data

Methods of Data Collection

Unit 7: Data Processing and Analysis

Statistical Graphics

Descriptive Analysis

Qualitative Approaches

Unit 8: Scientific Writing

Structure and Components of Scientific Reports

Preparation of the Project Proposal

Reference Books:

- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. 2nd ed. New Age International.
- Kumar R (2005). *Research Methodology - A Step-by-step Guide for Beginners*, Singapore, Pearson Education.