Course Title: Methods I (Economics)

Course Description:
This course introduces students to the fundamental methods used in the study of economics. It emphasizes mathematical tools, logical reasoning, and the basics of empirical analysis, laying the groundwork for advanced economic theory and applications.

Course Objectives:
By the end of this course, students should be able to:

1. Understand the role of methods in economic inquiry.
2. Apply mathematical and logical tools to analyze basic economic problems.
3. Develop problem-solving skills using quantitative techniques.
4. Gain a foundation in statistical and graphical methods relevant to economics.

Course Outline / Topics

Unit 1: Introduction to Economic Methods

- Nature and scope of economics
- The role of models in economics
- Assumptions and simplification in economic analysis

Unit 2: Mathematical Foundations for Economics

- Algebraic functions and equations
- Linear and quadratic functions in economics
- Systems of equations and matrices
- Calculus basics: differentiation and optimization

Unit 3: Economic Models and Graphical Analysis

- Demand and supply models
- Equilibrium analysis
- Comparative statics
- Graphical representation of economic relationships

Unit 4: Introduction to Statistics for Economics

- Descriptive statistics: mean, median, mode, variance
- Probability concepts
- Data presentation (tables, graphs, charts)
- Introduction to sampling

Unit 5: Problem-Solving and Applications

- Applying mathematical methods to demand, supply, and production functions
- Elasticity concepts (price, income, cross elasticity)
- Cost and revenue functions
- Case studies and practical problem-solving

Unit 6: Introduction to Empirical Economic Analysis

- Data sources in economics
- Simple correlation and regression (conceptual introduction)
- Limitations of quantitative methods

Teaching Methods

- Lectures and guided discussions
- Problem-solving sessions
- Group work and presentations
- Use of software tools for graphs and data analysis (e.g., Excel, R basics)

Assessment Methods

- assignments (20%)
- Midterm examination (20%)
- Class participations (10%)
- Final examination (50%)

Learning Resources

- Chiang, Alpha C. & Wainwright, Kevin. *Fundamental Methods of Mathematical Economics.*
- Studenmund, A. H. *Using Econometrics: A Practical Guide.*
- Supplementary lecture notes and datasets.

Expected Learning Outcomes:
By the end of the course, students will be able to:

- Apply mathematical and statistical methods to basic economic problems.
- Construct and interpret simple economic models.
- Analyze and present economic data effectively.
- Demonstrate critical thinking in problem-solving and model evaluation.