

St. Mira's College for Girls, Pune

Dept of Economics

2021-22

Credit/ Certificate Course (60 Hrs.)

Number of Credits- 4 (For St. Mira's Students)

Certificate for Outside participants

Course Title- Quantitative Economics

Aims & Objectives of the course

The aim of this Course is to provide students with the mathematical and statistical skills and understanding needed for 'knowing why' and 'when' to apply these techniques.

Learning Outcomes:

At the end of the course

1. Students can perform graphical analysis of functions, sketch curves defined by simple equations.
2. It will build an ability to explain the economic applications of derivative, Matrices and use it to understand economic concepts such as elasticity, marginal cost, income and interest rate determination and input-output determination.
3. The course will help to develop various quantitative concepts and their application to economics and basic finance.

Module I: Equations, Graphs and Derivatives and its applications

A: Linear Equations and Graphs, slope-intercept form, Applications of linear equations in economics-Graphing functions and applications of nonlinear functions in economics—Supply and Demand analysis-Break-Even analysis.

B: Differential Calculus-Derivatives- Higher order derivatives-Increasing and decreasing functions-Optimisation of economic function.

C: Applications in Economics—marginal concepts, relationship between total, marginal and average functions—elasticity of demand- effects of subsidy etc.



Manisha
Coordinator
Dr. Manisha Pimpalkhara

Course Coordinator

Module II: Linear Algebra

A: Matrices and basic operations on matrices– Determinants-Inverse of a matrix– Cramer's rule and its application to IS-LM Analysis

B: Input-Output Analysis and policy implications

Module III: Descriptive Statistics and Techniques for presenting data

A: Concepts of Cross -sectional data. Times series data, primary and secondary data along with tabulation and select graphical techniques -Measures of central tendency (only arithmetic-mean, median, and mode) and their suitability.

B: Measures of Dispersion: Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications

Module IV: Correlation and Regression Analysis

A: Concept and significance of Correlation; Karl Pearson's coefficient of correlation: Spearman's rank correlation coefficient (with the help of excel)

B: Simple regression analysis-Method of Least Squares and Regression Lines, Regression Coefficients, Estimation and forecasting of trend by the Least Squares Method.

Evaluation:

A. Mathematics

1. Objective type test to assess fundamental concept clarity & comprehension of the suitability of applying mathematical methods (20 marks)
2. Application based assignment on mathematical techniques (30 marks)

B. Statistics

3. Objective type test to assess fundamental concept clarity & comprehension of the suitability of applying statistical methods (20 marks)
4. Assignment including application based empirical application of the statistical methods (30 marks)

The tests will be conducted online using google quiz/forms and the assignment will have to be submitted by the students on google classroom within the time span assigned by the course instructors.

Additional Reference Reading List

Chiang A. C (1984). Fundamental Methods of Mathematical Economics, 3rd

Ushma
Coordinator
Dr. Manisha Pimpelkhare



edition, McGraw-Hill,.

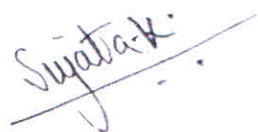
Dowling Edward T. (2004). Introduction to Mathematical Economics, Schaum's Outline Series in Economics, Tata McGraw -Hill.

Gupta S.P. (2014). Statistical Methods, S. Chand publishing

Patra S.C.: Mathematical Techniques for Economic Analysis, Himalaya Publishing House, Mumbai,2010.

Sancheti D.C. and V.K. Kapoor (2014). Statistics-Theory Methods and Applications, S.Chand.Sydsaeter, Knut., and Peter Hammond (2002) , Mathematics for Economic Analysis, Pearson Education India, 1st edition, 2002.

- **The syllabus for this Certificate/ Credit Course on Quantitative Economics is designed by Dr. Sujata S. Khadilkar and Mr. Harishchandra Sharma from the Dept of Economics, S.K. Somaiya College of Arts, Science and Commerce, Vidyavihar Mumbai. They are also the course instructors.**



Dr. Sujata Khadilkar

Course Instructor – Statistics



Mr. Harishchandra Sharma

Course Instructor- Mathematics



Dr. Manisha Pimpalkhare

Course Coordinator

Course Coordinator



Dr. Shalini Iyer

Credit Course Incharge