

St. Xavier's College (Autonomous), Ahmedabad

FACULTY OF ARTS

DEPARTMENT OF ECONOMICS (SF)

BA. Hons. (Economics) SF

SEMESTER-6

Major Course – 1: Mathematical Economics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Mathematical Economics (ECHMC-661C)	4	0	0	10 + 2 from a recognized board in any stream	Reading Graphs and Data in Economics

LO:

- 1 Understand mathematical tools such as optimization, linear programming, integration, and dynamic equations used in economic analysis
- 2 Explain how these mathematical techniques model economic behavior, constraints, and dynamic adjustment processes

CO:

- 1 Apply optimization methods, linear programming techniques, integration, and difference–differential equations to solve economic problems
- 2 Analyze static and dynamic economic models by interpreting solutions, stability conditions, and economic implications

Unit–1: Optimization without Equality Constraints and Multiple Constraints:

Unconstrained optimization with one and several variables, first-order and second-order conditions, local versus global maxima and minima, concavity and convexity, optimization with inequality constraints, Kuhn–Tucker conditions, complementary slackness, corner solutions, multiple inequality constraints, constraint qualification, economic interpretation of Kuhn–Tucker multipliers, comparison with Lagrange multiplier method, applications in consumer and producer theory

UNIT 2: Linear Programming

Linear programming, introduction to linear programming, terminology, formulation of linear programming problems, objective function, constraints, decision variables, feasible region, graphical method, corner-point method, unbounded solution, infeasible solution, redundant constraints, standard form, slack variables, basic and non-basic variables, simplex method, simplex tableau, pivot operations, optimality conditions

UNIT 3: Integration and Economic Applications

Introduction to integration, definite integral, indefinite integral, rules for finding indefinite integrals, finding definite integrals, total cost from marginal cost, total revenue from marginal revenue, consumer surplus, producer surplus, present value of continuous income stream

Unit–4: Difference and Differential Equations in Economic Dynamics:

Introduction to dynamic analysis, difference equations and their solutions, first-order difference equations, qualitative analysis of difference equations, cobweb model of supply and demand, stability and instability in the cobweb model, differential equations and their solutions, qualitative analysis of differential equations, dynamic stability of markets, equilibrium adjustment and market stability, economic interpretation of dynamic behavior

Reference Books:

1. Geoff Renshaw – Maths for Economics, Oxford University Press.
2. Teresa Bradley – Essential Mathematics for Economics and Business, Wiley.
3. Sydsaeter, Knut & Hammond, Peter J. – Essential Mathematics for Economic Analysis, Pearson.
4. Simon, Carl P. & Blume, Lawrence – Mathematics for Economists, W. W. Norton & Company.
5. Chiang, Alpha C. & Wainwright, Kevin – Fundamental Methods of Mathematical Economics, McGraw-Hill.

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SEMESTER-6

Major Course – 2: Behavioural Economics

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectur es	Tutori al	Practica l / Practice		
Behavioural Economics (ECHMC662C)	4	0	0	10 + 2 from a recognized board in any stream	Microeconomics

Learning Objectives:

1. Explain the foundations of behavioral economics and its key departures from traditional economic models, including the heuristics and biases paradigm.
2. Compare and contrast rational choice and behavioral models of decision-making under risk and uncertainty, applying concepts from Prospect Theory.

Course Outcomes:

1. Analyze strategic interactions using behavioral game theory, considering factors such as fairness, reciprocity, and bounded rationality.
2. Understand the concept of social preferences and their impact on economic outcomes.

Unit 1: Foundations of Behavioral Economics, Introduction to behavioral economics, Neoclassical tradition, Types of empirical studies, Motivation and hierarchical needs, Achievement and craftsmanship, Social drivers of economic decisions, Preferences and values, Utility basics, Bounded rationality introduction

Unit 2: Heuristics, Biases & Behavioral Choice Architecture, Axioms of neoclassical model, Bounded rationality, Heuristics (availability, representativeness, anchoring), Biases, Framing effects, Menu effects, Expectations effects, Choice architecture, Nudges, Probability fundamentals, Bayesian updating, Expected Utility Theory (axioms and violations), Prospect theory, Criticisms of prospect theory

Unit 3: Mental Accounting & Intertemporal Choice, Mental accounting introduction, Hedonic editing hypothesis, Hedonic framing, Acquisition and transaction utility, Payment decoupling, Budgeting, Life-cycle theories (classical and behavioral), Choice bracketing, Dynamic mental accounting, Policy implications, Two-period model of optimal consumption, Discounted utility model, Anomalies in discounted utility, Time-inconsistent behavior, Hyperbolic and quasi-hyperbolic discounting, Projection bias

Unit 4: Behavioral Game Theory & Strategic Interaction, Classical game theory fundamentals, Sequential and simultaneous games, Problems with classical game theory, Behavioral game theory introduction, Ultimatum game, Dictator game, Public goods game, Trust games, Fairness and reciprocity in strategic interaction

References:

1. Angner, E. (2021). *A Course in Behavioral Economics* (3rd ed.). Red Globe Press.
2. Cartwright, E. (2018). *Behavioral Economics* (3rd ed.). Routledge.

References:

1. Wilkinson, N., & Klaes, M. (2017). *An Introduction to Behavioral Economics* (3rd ed.). Palgrave.
2. Camerer, C. F., Loewenstein, G., & Rabin, M. (Eds.). (2004). *Advances in Behavioral Economics*.

Princeton University Press.

3. Dharmis, S. (2016). *The Foundations of Behavioral Economic Analysis*. Oxford University Press.

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SEMESTER-6

Major Course – 3: Econometric Analysis-2

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Pre-requisite(s) of the Course (if any)
	Lectures	Tutorial	Practical / Practice		
Econometric Analysis-2 (ECHMC663C)	4	0	0	10 + 2 from a recognized board in any stream	Basic Stats & Maths

LO:

- 1 Understand the sources, consequences, and diagnostic methods for multicollinearity, heteroskedasticity, and serial correlation in regression models
- 2 Explain the theoretical and practical issues involved in time series regression analysis, including trends, seasonality, and dynamic model specification

CO:

- 1 Analyze regression models using appropriate tests and corrections for multicollinearity, heteroskedasticity, and serial correlation to ensure valid inference
- 2 Apply OLS, robust methods, and GLS techniques to time series data and evaluate model performance under classical and non-classical assumptions

Unit-1: Multicollinearity

Perfect versus Imperfect Multicollinearity, The Consequences of Multicollinearity, The Detection of Multicollinearity, Remedies for Multicollinearity, An Example of Why Multicollinearity Often Is Best Left Unadjusted, Summary and Exercises, Appendix: The SAT Interactive Regression Learning Exercise

Unit-2: Heteroskedasticity

Pure versus Impure Heteroskedasticity, The Consequences of Heteroskedasticity, Testing for Heteroskedasticity, Remedies for Heteroskedasticity, A More Complete Example, Summary and Exercises, Appendix: Econometric Lab

Unit-3: Basic Regression Analysis with Time Series Data

The nature of time series data, Examples of time series regression models, Static models, Finite distributed lag models, A convention about the time index, Finite sample properties of OLS under classical assumptions, Unbiasedness of OLS, The variances of the OLS estimators and the Gauss-Markov theorem, Inference under the classical linear model assumptions, Functional form, Dummy variables, and Index numbers, Trends and seasonality, Characterizing trending time series, Using trending variables in regression analysis, A detrending interpretation of regressions with a time trend, Computing R-squared when the dependent variable is trending, Seasonality

Unit-4: Serial Correlation and Heteroskedasticity in Time Series Regressions

Properties of OLS with serially correlated errors, Unbiasedness and consistency, Efficiency and inference, Goodness-of-fit, Serial correlation in the presence of lagged dependent variables, Serial correlation–robust inference after OLS, Testing for serial correlation, A t test for AR(1) serial correlation with strictly exogenous regressors, The Durbin-Watson test under classical assumptions, Testing for AR(1) serial correlation without strictly exogenous regressors, Testing for higher-order serial correlation, Correcting for serial correlation with strictly exogenous regressors, Obtaining the best linear unbiased estimator in the AR(1) model, Feasible GLS estimation with AR(1) errors, Comparing OLS and FGLS, Correcting for higher-order serial correlation, What if the serial correlation model is wrong?, Differencing and serial correlation, Heteroskedasticity in time series regressions, Heteroskedasticity-robust statistics, Testing for heteroskedasticity, Autoregressive conditional heteroskedasticity, Heteroskedasticity and serial correlation in regression models

Practical sessions for the above topics will be conducted on STATA or R software.

Reference Books:

Gujarati, D. N. & Porter, D. C. – Basic Econometrics

Wooldridge, J. M. – Introductory Econometrics: A Modern Approach

Stock, J. H. & Watson, M. W. – Econometrics

Hill, R. C., Griffiths, W. E., & Lim, G. C. – Principles of Econometrics

Studenmund, A. H. – Using Econometrics: A Practical Guide