Est. in 1921

UNION CHRISTIAN COLLEGE (AUTONOMOUS) ALUVA

Affiliated to Mahatma Gandhi University, Kottayam, India
NAAC Accredited with A++ Grade in Vth cycle
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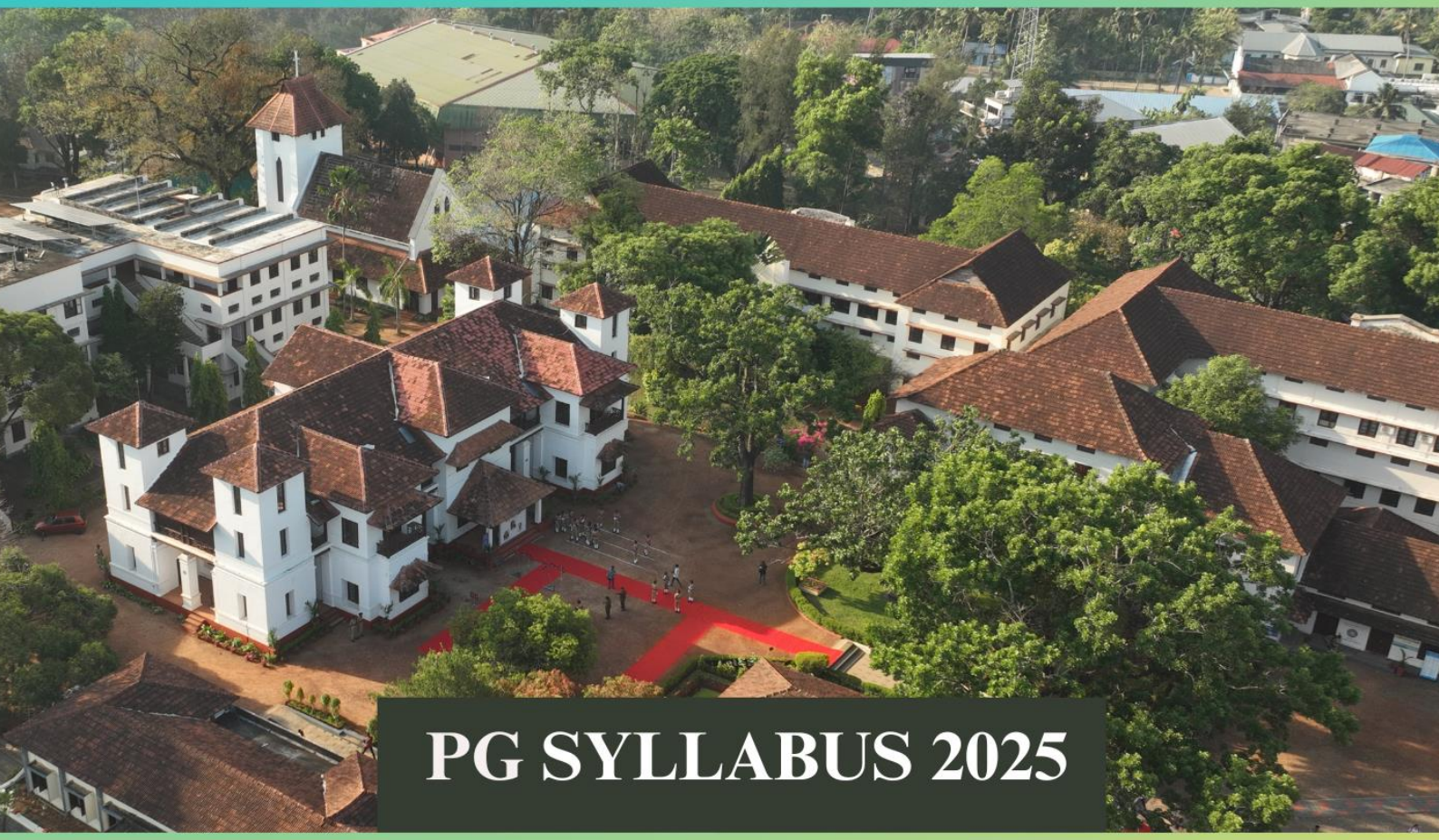
DEPARTMENT OF ECONOMICS



PG SYLLABUS 2025

POSTGRADUATE PROGRAMME {UCC PGP} IN ECONOMICS

MASTER OF ARTS IN ECONOMICS

PROGRAM STRUCTURE AND SYLLABUS
2025-2026 ADMISSION ONWARDS

(UNDER UNION CHRISTIAN COLLEGE

PGCSS REGULATIONS 2025)

PREFACE

The Master of Arts in Economics program has been designed to provide students with a deep and comprehensive understanding of economic theories, policies, and practices. This syllabus serves as a roadmap for the academic journey that will shape individuals into educators, critical thinkers, effective researchers, and informed decision-makers in the field of economics.

The curriculum blends foundational courses with advanced topics, ensuring a balance between theoretical knowledge and practical application. Subjects such as microeconomics, macroeconomics, econometrics, and development economics form the core, while elective courses enable students to specialize in areas of their interest.

Our teaching methodology emphasizes complementing classroom lectures with seminars, case studies, and independent research opportunities that encourage students to explore real-world economic issues.

This program reflects our commitment to nurturing a new generation of economists who will be equipped with not only academic expertise but also with the ethical understanding and leadership qualities needed to contribute meaningfully to society.

Dr. Ann George
Chairperson,
Board of studies (PG)

BOARD OF STUDIES

Sl.No.	Name and Designation	Position
01	Dr. Ann George (Head &Chairperson) Assistant Professor, Union Christian College, Aluva	**Chairperson**
02	Dr. Sunil Abraham Thomas, Assistant Professor, Union Christian College, Aluva	**Member**
03	Dr. G. Geethika (Political Science), Assistant Professor, Union Christian College, Aluva	**Member**
04	Smt Liji Lawrence, Assistant Professor, Union Christian College, Aluva	**Member**
05	Smt Rajalakshmi. R, Assistant Professor, Union Christian College, Aluva	**Member**
06	Smt Nino Baby, Assistant Professor, Union Christian College, Aluva	**Member**
07	Dr. Alex Thomas Associate Professor of Economics, School of Arts and Sciences; Azim Premji University, Bengaluru	Subject expert from outside the University
08	Dr. Pleasa Serin Abraham, Assistant Professor of Economics, Shiv Nadar University, Chennai.	Subject expert from outside the University
09	Mr. Aashish Benjamin Oommen Co-Founder; Chief Marketing & Revenue Officer, OHSOGO.	(Industry Expert)
10	Dr Nithin Thomas Assistant Professor, Department of Economics, Bharata Mata College, Thrikkakkara.	(Alumni Representative)
11	Mr. Eljo Joseph T , Assistant Professor, Department of Economics, St Thomas College, Trissur**.**	(Subject Expert nominated by University)
12	Dr Surya Aravindakshan, Associate Professor, Department of Political Science, Maharaja's College	(Subject Expert, Political Science)
13	Dr. Reshmi H Fernandez , Assistant Professor, Department of Political Science, Maharaja's College	(Subject expert, University Nominee, Political Science)

ACKNOWLEDGEMENT

The Postgraduate Board of studies expresses our sincere thanks to the Principal, the Manager of Union Christian College, Aluva and the Academic Council of the College for the guidance and help extended to us during the revision of M.A Economics syllabus.

We also express our sincere appreciation to the members of the PG Board of Studies in Economics of Mahatma Gandhi University, who originally formulated and restructured the M.A. Economics syllabus to suit the Credit and Semester System.

The present syllabus is a modification of the MG University syllabus and is the result of efforts put in by the current Board of studies members. We have strived to make the syllabus more contemporary, inclusive and relevant by incorporating the latest developments both in theory and real-world events and trends. Our sincere gratitude to external members of this Board of studies for their valuable guidance and directions in the making of this syllabus.

Contents

Masters of Arts in Economics

Aims and objectives of the program

- To give students knowledge in the various fields of Economics and an in-depth understanding of the theoretical and empirical constructs in the field of Economics.
- Develop the powers of inquiry, critical analysis, logical thinkingto apply theoretical knowledge to current issues of policy and practice in economics.
- Encourage initiative, independent learning, awareness of analytical and theoretical approaches in the field of economics, exposure to recent research and state-of-the-art tools in applied for work in economics;
- To train students for model building, test economic models using advanced methods and sophisticated economic tools, analysis interpretation and formulation of development policies.
- To give the students a level of knowledge in economics to equip them to get employment in professional occupations or in other Research focused roles.

Program Learning Outcomes

Specifically, upon successful completion of the program students will be:

- Displaying Command of Existing Knowledge: Students are able to demonstrate knowledge of theoretical and empirical bases underpinning the construction, implementation and interpretation of Economic theories and assessment techniques, and be able to assess the Economic and social consequences regarding the same.
- Utilizing Existing Knowledge to Explore Issues: To take a rigorous, quantitative approach to solve economic problems and to build and test economic models, using sophisticated economics tools.
- Creating New Knowledge: Think critically, independently and creatively to synthesize concepts to formulate cases, issues, identify and formulate a question or series of questions about some economic issues that will facilitate investigation of the issue

Eligibility for Admissions

Students admitted under this programme are governed by the University Regulations in force.

Medium of Instruction and Assessment

English shall be the medium of instruction and examination.

Faculty under which the Degree is Awarded

Faculty of Social Science

Note on compliance with the UGC minimum standards for the conduct and award of post graduate degrees

The Programme Structure, Scheme and Syllabus of the M.A. Programme in Economics is in compliance with the UGC Minimum Standards for the Conduct and Award of Post Graduate Degrees.

Program Structure

1. Students shall be admitted into the four -semester postgraduate programme in Economics.
2. The programme shall include two types of courses; Core courses and Elective Courses.
3. There are 17 core courses and 3 groups-wise electives with three courses. The core courses are designed to provide students with rigorous academic training, as well as with tools that can be used in policy analysis.
4. The elective courses shall be in the fourth semester. All the elective courses should hold same credit for a programme.
5. There shall be three groups of three Elective courses for the programme such as Group A, Group B and Group C.
6. The elective courses mainly aim to provide specialization in various economics courses such as applied, mathematical stream and advanced microeconomics. The department will offer any one group in the fourth semester.
7. The selection of courses from different groups are not permissible.
8. Course evaluation would consist of seminar presentations, assignments, written examinations, Project and viva-voce.
9. There shall be a Project with a dissertation to be undertaken by all students.
10. The student shall submit one assignment as an internal component for every course.
11. The PG student may deliver one seminar lecture as an internal component for every course.

12. Every student shall undergo two class tests as an internal component for every course.
13. Total credits for the programme are eighty (80). No course shall have more than four (4) credits.
14. Project shall be completed by working outside the regular teaching hours. Project shall be carried out under the supervision of a teacher in the department concerned. A candidate may, however, in certain cases be permitted to work on the project in an industrial / research organization on the recommendation of the Supervisor. There shall be an internal assessment and external assessment for the project.
15. The external evaluation of the dissertation work is followed by the presentation of work including dissertation.
16. Comprehensive viva voce shall be conducted at the end of the programme. This shall cover questions from all courses in the programme.
17. The weight for the Internal Evaluation of Theory Project/Comprehensive viva-voce is **5** and the External evaluation of Project /Comprehensive viva-voce is **15** and its maximum Weighted Grade Point (WGP) is **25** and **75** respectively. The Internal External ratio is **1:3.**
18. There shall be no separate minimum grade point for internal evaluation.
19. The minimum requirement of aggregate attendance during a semester for appearing the end semester examination shall be 75%.
20. The programme shall include a study tour for students, which can be done during any semester. The tour shall be to research institutions/ industrial sites, extending for a maximum of five working days, excluding journey time.

THE SEMESTER-WISE COURSE DETAILS

Course Code	Title of the Course	Type of the Course	Hours per week	Credits
FIRST SEMESTER				
UCEC010101	Microeconomics-I	Core	**05**	**04**
UCEC010102	Macroeconomics-I	Core	**05**	**04**
UCEC010103	Development Economics	Core	**05**	**04**
UCEC010104	Indian Economy-I	Core	**05**	**04**
UCEC010105	Mathematical Methods for Economic Analysis	Core	**05**	**04**
SECOND SEMESTER				
UCEC010201	Microeconomics-II	Core	**05**	**04**
UCEC010202	Macroeconomics-II	Core	**05**	**04**
UCEC010203	Public Economics	Core	**05**	**04**
UCEC010204	Indian Economy-II	Core	**05**	**04**
UCEC010205	Statistical Methods for Economic Analysis	Core	**05**	**04**
THIRD SEMESTER				
UCEC010301	International Economics	Core	**05**	**04**
UCEC010302	Econometrics-I	Core	**05**	**04**
UCEC010303	Heterodox Economics	Core	**05**	**04**
UCEC010304	Environment Economics	Core	**05**	**04**
UCEC010305	Kerala Economy	Core	**05**	**03**
FOURTH SEMESTER				
UCEC010401	International Finance	Core	**05**	**04**
UCEC010402	Econometrics-II	Core	**05**	**04**

ELECTIVE (Credit 3*3=9)		
GROUP A	**GROUP B**	**GROUP C**
UCEC800401 Agricultural Economics	UCEC810401 Mathematical Economics	UCEC820401 Financial Economics

UCEC800402 Industrial Economics	UCEC810402 Operations Research	UCEC820402 Game Theory and Its Economic Applications
UCEC800403 Labour Economics	UCEC810403 Multivariate Data Analysis for Social Sciences	UCEC820403 Economics of Business Strategy

UCEC010403	Project/Dissertation	Core	**Credit**	**02**
UCEC010404	Comprehensive Viva -Voce	Core	**Credit**	**02**
		Total weight of the course		**80**

FIRST SEMESTER

Course Code	Title of the Course	Type of the Course	Hours per week	Credits
UCEC010101	Microeconomics-I	Core	**05**	**04**
UCEC010102	Macroeconomics-I	Core	**05**	**04**
UCEC010103	Development Economics	Core	**05**	**04**
UCEC010104	Indian Economy-I	Core	**05**	**04**
UCEC010105	Mathematical Methods for Economic Analysis	Core	**05**	**04**

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
I	UC**EC010101**	**Microeconomics –I**	**Core**	**4**	**90**

Course Objectives

The purpose of this course is to provide students with a solid understanding of modern microeconomic theory. The course presents a rigorous treatment of the principles governing individual behaviour, market structure, and game theory. The cardinal end of the course is to equip the students themselves in a comprehensive manner with the multiple facets of the Modern Microeconomic theory and the applications of theories in analyzing current economic problems and to develop the ability to synthesize knowledge. In a abroad sense, it provides an intuitive platform for what students will learn in the courses that follow. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyses real-life situations. By the end of this course, the student is expected to be familiar with basic concepts of microeconomics and acquire analytical skills to analyses problems of economic policy. Besides, students should be able to demonstrate: (i) an understanding of relevant microeconomic concepts; (ii) a capacity to explain and evaluate critically theoretical arguments.

UNIT 1 Hours: 25 Hours

Theory of Consumer Behaviour

1.1 The Slutsky Equation- Compensated and Uncompensated Demand Function- Indirect Utility Function- Ray's Identity- Duality in Consumer Theory;

1.2 The Pragmatic Approach to Demand Theory ─ Constant Elasticity Demand Function

1.3 Dynamic Versions of Demand Function; Nerlove, Houthakker and Taylor-Linear expenditure system.

1.4 Consumer Choices Involving Risk and Uncertainty, Time and Characteristics - Bernoulli Hypothesis, Neumann and Morgenstern Index, Friedman and Savage hypothesis, Markowitz hypothesis.

1.5 Inter-temporal Substitution effect- Choices Involving Time- Time Allocation model Attributes model of Kevin Lancaster

1.6 Network Externalities ─ Bandwagon, Snob and Veblen Effects

UNIT 2 Hours: 20 Hours

Theory of Production and Cost Production Function

2.1 Homogenous and Non-Homogenous Production Functions –A brief account of Production function of a single product firm- Production function of a multi-product firm (with illustration)

2.2 Empirical production functions - Cobb-Douglas Production Function - Constant Elasticity Substitution Production Function—Variable Elasticity of Substitution (VES) Production Function-- Homothetic Production Function

2.3 A summary of Short- run and Long-run cost in Traditional and Modern Microeconomic Theory (without illustration)

2.4 The L shape Scale curve- Engineering production function and Engineering cost curves (with illustration). Learning Curve- Returns to Scope

UNIT 3 Hours: 30 Hours

Oligopoly and Economic Behaviour of Firm

3.1 Oligopoly–Price and Output Determination; Collusive and Non-collusive oligopoly

3.2 A brief account of collusive Oligopoly (Cartels and Price Leadership)

3.3 Oligopoly with Homogeneous Product-Cournot, Bertrand & Stackelberg Model

3.4 Oligopoly with Non-homogeneous Product-Chamberlin's model, Sweezy's Kinked Demand Curve. The Contestable Market Theory- Baumol

3.5 Theory of Games-Strategies - Zero-Sum Game & Non-Zero-Sum Game -Prisoner's Dilemma - Nash Equilibrium- Game Theory Applications - Important Issues in Game Theory - Cooperation, Competition.

UNIT 4 Hours: 15 Hours

General Equilibrium and Welfare Economics

4.1 Partial and General Equilibrium, - Walrasian General Equilibrium System- Existence, Uniqueness and Stability of an Equilibrium-2x2x2 General Equilibrium Model- Static Properties of a General Equilibrium State- General Equilibrium and the Allocation of Resources- Prices of Commodities and Factors- Factor Ownership and Income Distribution

Reference:

1. A. Koutsoyiannis (1985): Modern Microeconomcis,2nd Ed, MacMillan Education (Reprint).
2. Andreu Mas-Colell, Michael D. Whinston and Jerry R. Green (2005): Microeconomic Theory, OUP.
3. Austan Goolsbee, Steven Levitt and Chad Syverson (2013): Microeconomics, Worth Publishers
4. B. Douglas Bernheim and Michael D. Whinston (2016): Microeconomics, McGraw-
5. Christopher Snyder, Walter Nicholson and Robert Stewart (2015): Microeconomic Theory: Basic Principles and Extensions, Cengage Learning.
6. David Besanko and Ronald R.Braeutigam (2014): Microeconomics, 4th Ed, John Wiley and Sons, Inc.
7. David M. Kreps, (1990) A Course in Microeconomic Theory, Princeton University
8. Genaro C. da Costa (2005): Value and Distribution in Neoclassical and Classical System, 2nd Ed, Himalaya Publishers, Mumbai.
9. Geoffrey A. Jehle and Philip J. Reny (2014): Advanced Microeconomic Theory 3rd Ed, Prentice Hall.
10. Gibbons, R. (1992): Game Theory for applied economists, Princeton University Press.
11. Hal R. Varian (2014): Intermediate Microeconomics with Calculus,1st Ed, W. W. Norton & Company.
12. Henderson, M. and R.E. Quandt (1989): Microeconomic Theory: Mathematical Approach, 3rd Ed, McGraw Hill.

Hill.

13. Jeffrey M. Perloff (2016): Microeconomics with Calculus, 3rd Ed, Pearson.
14. Judy A. Whitehead (2015): Microeconomic: A Global Text, Routledge.
15. Mas-Colell A, Whinston M and J. Green (2012): Microeconomic Theory, Oxford University Press.
16. Mike Rosser (2011): Microeconomics: The Firm and the Market Economy, MacMillan
17. Robert Awh (2001): Microeconomics, John Wiley.
18. Robin Bade and Michael Parkin (2017): Foundations of Microeconomics, 7th Ed, Pearson.

19. Saul Estrin, David Laidler and Michael Dietrich (2016): Microeconomics,5th Ed, Prentice Hall
20. Snyder and Nicholson (2016): Microeconomic Theory: Basic Principles and Extensions, 11th Ed, Pearson.
21. Steven E. Landsburg (2017): Price Theory and Applications,8th Ed. Cengage Learning.
22. Thomas J Nechyba (2010): Microeconomics: An Intuitive Approach with Calculus-1stEdition, South Western Cengage Learning.
23. William A. McEachern (2017): Principles of Microeconomics, 4th Ed, Cengage Learning.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
I	**UCEC010102**	**Macroeconomics -I**	**Core**	**4**	**90**

Course Objectives

This course provides a rigorous framework for understanding the aggregate economy in both the short run and the long run. The objective of the course is to provide an overview of modern macroeconomics at the post-graduate level, to show how this body of theory can be adapted to the characteristics of developing economies. Another objective of the course is to familiarize the students with the contribution of various schools of thought in macroeconomics. The first part of the course is intended to present a thorough understanding of three outstanding orthodoxies, viz, Classical, Keynesian, Modern Neoclassical synthesis, Neo Keynesianism and Monetarism. The course structure covers the major debates and controversies intends to provide a wider vision of the present discourses in macroeconomics. The course will help to develop the aptitude to relate concepts with research and policy.The course aims to introduce students to key concepts, methodologies, theories, and techniques in modern macroeconomic analysis. Particular emphasis is placed on the modeling techniques of some of the theoretical models used widely in the analysis of economic growth, consumption, and investment.At the end of this course, students should be able to (i) know of the major issues as they arise in the field of macroeconomics, (ii) understand alternative approaches to modeling consumption, and investment, (iii) critically evaluate the usefulness of macroeconomic techniques.

Unit- 1: Classical versus Keynesian Approach (40 Hours)

1.1 Classical: Labour Market-Employment and Output-Say's Law- Interest Rate-Quantity Theory of Money: Neutrality of Money and Classical Dichotomy. (Self-Study)

1.2 Keynesian Fixed Price Models: Keynesian Cross Model (Three Sector Model) and IS-LM Model: Liquidity Trap- Fiscal and Monetary Policies- Crowding Out Effect.

1.3 Keynesian Flexible Price Model: AD-AS Framework-Policy Implications-Multiplier: T and G-Multiplier, Balanced Budget Multiplier- Built-in-Stabilizers-Ricardian Equivalence.

1.4 Labour Market: Classical versus Keynes -Keynes Effect and Real Balance Effect

1.5 Inflation: Inflationary Gap-Demand-Pull and Cost-Push Inflation-Phillips Curve: Lipsey's excess-demand model - The Samuelson-Solow modification of the Phillips curve- Tobin's views on Phillips curve- Strategies to control inflation.

1.6 Neo-Keynesian Analysis (Disequilibrium Models): Walrasian Vs. Keynesian Models. Effective Demand and Notional Demand ---Incompatibility of Walras Law and Neoclassical Synthesis of Keynes's General Theory- Disequilibrium models of Robert Clower- Leijonhufvud's, Barro-Grossman and Malinvaud.

Unit- 2: Monetarism (10 Hours)

2.1 Main Propositions of Monetarism—Friedman's Re-statement of Quantity Theory of Money - Monetarist Inflation Theory -Adaptive Expectation Hypothesis

2.2 Monetarism and the Philips Curve: The Friedman-Phelps Expectations-Augmented Phillips Curve -Natural Rate of Unemployment Hypothesis-Accelerationist Hypothesis and NAIRU.

2.3 Policy Implications- Business Cycles and Monetary Policy: -Rule Versus Discretion-Cold Turkey versus Gradualism-Taylor rule-Inflation Targeting.

Unit- 3: Demand for Money and Supply of Money (20 Hours)

3.1 Theoretical Approaches to the Demand for Money: The Classics, Keynes, and Friedman.

3.2 Transactions Theories of Money Demand: The Baumol Model-The Shopping-Time Model -Cash-in-Advance Models.

3.3 Tobin's Portfolio Theories of Money Demand- Buffer Stock Demand for Money: Akerlof and Milbourne (A-M) Model, Miller and Orr(M-O) Model.

3.4 Supply of Money: Financial Intermediation- Mechanistic Model of Bank Deposit Determination- Behavioural Model of Money Determination- Demand Determined View of Money Supply Process.

3.5 Measures of money supply; H- theory of money supply- Money Multiplier and Its Determination- Methods of Monetary Control- RBI Approach -- High Powered Money- Inside and Outside Money--Money Supply Determination in an Open Economy.

Unit- 4: Behavioural Foundations of Macroeconomics (20 Hours)

4.1 Consumption Function: Current Income Theories (Absolute Income Hypothesis of Keynes, Kuznets's Consumption Puzzle, Drift Hypothesis of Smithies and Relative Income Hypothesis of Duesenberry). (Self-Study)

4.2 Fischer's Intertemporal Choice Model.

4.3 Normal Income Theories: Permanent income Hypothesis of Friedman and Life Cycle Hypothesis of Modigliani et.al -Robert Hall's Random Walk Hypothesis. (Self-Study)

4.4 Investment Function: Keynes's Investment Theory– MEC Approach - Accelerator Theory of Investment -Capital Stock Adjustment Principle - Financial Theory of Investment – Tobin's Q Ratio- Modigliani-Miller Theory –Metzler Inventory Cycle Model--- Jorgenson's Neoclassical Investment Model.

Reference:

1. Aschheim, Joseph and Hsieh, Ching-Yao (1970): Macroeconomics: Income and Monetary Theory, Charles E. Merrill Publishing Co. (Unit- 1,2 & 3)
2. Blanchard, Olivier and Johnson, David R (2018): Macroeconomics, 8th Ed, Pearson.(Unit-1& 2)
3. Brendan Sheehan (2009): Understanding Keynes' General Theory, Palgrave Macmillan (Unit- 1 & 2)
4. Carlin, Windy and Soskice, David (1990): Macroeconomics and the Wage Bargain: A modern Approach to Employment, Inflation, and the Exchange Rate, OUP.(Unit-1,2)
5. Chirichiello, Giuseppe (1994): Macroeconomic Models and Controversies, The Macmillan Press Ltd.(Unit- 1& 2)
6. D'Souza, Errol (2012): Macroeconomics, 2nd Ed. Pearson India. (Unit-4)
7. De Vroey, Michel (2016): A History of Macroeconomics from Keynes to Lucas and Beyond, CUP. (Unit- 1& 2)

8. Dilip M.Nachane (2018): Critique of the New Consensus Macroeconomics and Implications for India, Springer.(Unit- 1& 2)
9. Edgmand, Michael R (1987): Macroeconomic Theory and Policy, PHI. (Unit-4)
10. Felderer, Bernhard and Homburg, Stefan (1987): Macroeconomics and New Macroeconomics, Springer-Verlag.(Unit- 1&2)
11. Galbraith, James, K and Darity, William Jr (1994): Macroeconomics, Houghton Mifflin Co, NJ.(Unit- 1,2 & 4)
12. Gardner Ackley (1978): Macroeconomic theory, Collier Macmillan Ltd; International Edition. (Unit-1 & 4)
13. Gärtner, Manfred (2009): Macroeconomics,3rd Ed, Prentice Hall.(Unit- 1& 2)
14. Ghatak, Anitha (1994): Macroeconomics: A Mathematical Approach, Concept Publishing Co, ND.(Unit- 1,2)
15. Greenaway, David and Shaw G.K (1995): Macroeconomics: Theory and Policy in UK,2nd Ed, Blackwell. (Unit-4)
16. Heijdra, Ben J. (2017): Foundations of Modern Macroeconomics,3rd Ed, OUP (Unit- 1& 2)
17. Hagger,A.1(1977):Inflation: Theory and Policy, MacMillan.
18. Helmut Frisch (1983): Theories of Inflation, Cambridge University Press.
19. Hillier, Brian (2006): Macroeconomics: Models, Debates and Development, Basil Blackwell.(Unit- 1& 2)
20. Jagdish Handa (2009): Monetary Economics, 2nd Ed, Routledge. (Unit-3)
21. Jansen, Dennis W and Delorme, Charles Jr and Ekelund, Robert B, Jr (1994): Intermediate Macroeconomics, West Publishing Co. (Unit-1,2 & 4)
22. Junankar, P.N (1972): Investment: Theories and Evidence, Macmillan Education. (Unit-4)
23. Keith Bain and Peter Howells (2003): Monetary Economics: Policy and its Theoretical Basis, Palgrave. (Unit-3)
24. Laidler, D.F.W. (1977): Demand for Money: Theory and Evidence, Dum-Don Valley, New York (Unit-3)
25. Levacic, Rosalind and Rebmann, Alexander (1982): Macroeconomics: An Introduction to Keynesian- Neo-Classical Controversies, 2nd Ed, MacMillan (Unit-1,2 & 4)
26. Lewis, Mervyn and Mizen, Paul D (2000): Monetary Economics, OUP. (Unit-3)
27. Makinen, Gail E. (1977): Money, The Price Level, and Interest Rates: An Introduction to Monetary Theory, Prentice Hall Inc.(Unit- 1,2 & 3)
28. Nattrass, Nicoli and Varma, G. Visakh (2014): Macroeconomics Simplified: Understanding Keynesian and Neoclassical Macroeconomic Systems, Sage India.(Unit- 1,2)
29. Pentacost, Eric (2000): Macroeconomics: An Open Economy Approach, MacMillan.(Unit- 1,2 & 4)
30. Peterson, Wallace C and Estenson, Paul S (1992): Income, Employment and Economic Growth, 7th Ed, W.W Norton, NY.(Unit- 1,2 & 4)
31. Pierce, David G.andTysome, Peter J (1985): Monetary Economics theories, evidence and policy, Butterworth. (Unit-3)

32. Pierre Picard (1993): Wages and Unemployment: A Study in Non-Walrasian Macroeconomics, Cambridge University Press.(Unit- 1& 2)
33. Poindexter, Carl J (1976): Macroeconomics. The Dryden Press. (Unit-4)
34. Scarth, William (2014): Macroeconomics: The Development of Modern Methods for Policy Analysis, Edward Elgar.(Unit- 1& 2)
35. Serletis, Apostolos (2007): The Demand for Money Theoretical and Empirical Approaches Second Edition, Springer. (Chapters: 7,8 & 9) (Unit-3)
36. Snowdon, Brian and Vane, Howard R (1997): A Macroeconomics Reader, Routledge.
37. Snowdon, Brian and Vane, Howard, R (2005): Modern Macroeconomics: Its Origins, Development and Current State, Edward Elgar.(Unit- 1,2) Todd A. Knoop (2015): Business Cycle Economics: Understanding Recessions and Depressions from Boom to Bust, Praeger.
38. Thomas Alex (2021), Macroeconomics: An Introduction, Cambridge University Press.
39. Tsoulfidis, Lefteris (2010): Competing Schools of Economic Thought, Springer.(Unit- 1& 2)
40. Venieris, Yiannis P and Sebold, D Frederick (1977): Macroeconomics: Models and Policy, John Wiley and Sons. (Unit-3 &4)

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
I	**UCEC010103**	**Development Economics**	**Core**	**4**	**90**

Course Objectives

Development economics is an exciting and challenging branch of Economics. The approach of this course is to provide a comprehensive introduction to the theoretical paradigms of economic development. In a fast-moving global economic order, there is a persistent demand to synchronize the approaches, theories and development issues for a better understanding of the problems of the developing economies. By its very nature, the scope is interdisciplinary in nature, incorporating non-economic dimensions like culture, norms, and values as well as political, historical and social processes. The discourse, however, is essentially based on the logic and theoretical framework of standard economic analysis. The objective of this course is to familiarize students with the conceptual routes, theoretical dynamics and practical strategies of growth and development. It is expected that this course would orient them towards major themes of development, lead them towards more methodical probes and equip them with adequate analytical knowledge.The aim of this course is to provide an advanced treatment of the main issues, concepts and techniques in modern growth theory. At the end of this course, students should be able(i) to understand and critically evaluate alternative theories of growth. (ii*) show a clear understanding of the recent literature, both empirical and analytical, on theories of underdevelopment and growth in developing countries;(iii) be able to evaluate critically some of the results in the literature, particularly those related to development issues.*

Module-I: Economic Development –Overview (Self-Study) (10 Hours)

1.1 Meaning and measurement of economic development: conventional, human development index (Human Development Index, Gender Related Development Index, Gender Empowerment Measure, Gender Inequality Index, Human Poverty Index).

1.2 Quality of life indices: Entitlements approach- Capabilities and Functioning- Development as Freedom- Human Rights-Based Approach- Three Core Values of Development

1.3 Development Gap -Inequality in income distribution- Kuznets Inverted U hypothesis- Lorenz Curve and Gini-coefficient - Concept of Sustainable Development.

Unit- 2: Theories of Underdevelopment (25 Hours)

2.1 Vicious Circle of Poverty—Dualistic Theories. – Social – Financial and Technical Dualism Prebisch- Singer thesis and Myrdal thesis: Backwash and spread effect- Circular and cumulative causation- Rostow's stages of growth. —Vent for Surplus theory of Hla Myint—Stable Theory –the Dutch Diseases.

2.2 Rural-urban migration and urban unemployment (Harris-Todaro model).

2.3 Political Economy of Underdevelopment (Theory of dependency): Paul Baran, Gundar Frank, Samir Amin and Emmanuel Wallerstein (World systems approach).

Unit- 3: Theories of Development and Growth (25 Hours)

Introduction to economic growth- data of economic growth and development; other stylised facts (Charles I Jones and Dietrich Vollrath)

3.1 Classical Theory of Development–Adam Smith, David Ricardo, and Karl Marx

3.2 Theories of Economic Growth: Harrod-Domar Model.

3.3 Neo-Classical Growth Models –Features of neo classical model-Solow

3.4 Cambridge Growth Models: Mrs. Joan Robinson's.

3.5 Endogenous Growth Models: features of endogenous growth models (Romer;, AK, Schumepeterian model-Grossman and Helpman’s model, Aghion and Howitt)

3.6 Papers of latest twoNobel prize winners

3.7 Indian development thinkers- Ambedkar, K N Raj, Krishna Bharadwaj

Unit- 4: Approaches to Development (20 Hours)

4.1 Theory of Big Push- Critical Minimum Effort Thesis- Low Income Equilibrium Trap. - Balanced and Unbalanced Growth. (Self-Study)

4.2 Development with Unlimited Supply of Labour, Ranis and Fei Model - Michael Kremer's O-Ring Theory of Economic Development--The Jorgenson model and Dixit-Marglin model.

Unit- 5: Critical Issues in Development Process (10 Hours)

5.1. Role of Financial Institutions in Economic Development: (Acemoglu and Zilibotti model)

5.2. Globalization and Development: Views of Stiglitz.

5.3. Development and Human Rights

5.4. Social Capital and Development.

5.5. Corruption, Crime, Social Exclusion and Development.

5.6. Climate Change and Development.

5.7. Energy and Development .

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Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
I	**UCEC010104**	**Indian Economy-I**	**Core-4**	**4**	**90**

Course Objectives

This course offers an analytical introduction to the main aspects of the Indian economic policy and performance in the post-independence period. It focusses on Indian economic problems in the light of relevant economic theories, and in a comparative perspective. The course is expected to enable the students to appreciate the evolution of the economy, its institutional framework, nuances in using statistical information for analysing public policy, and to get familiar with the issues for research. This course also enables the students to understand the pre-reform and post-reform development experience of the Indian Economy. A thorough understanding of Indian economic policies is a must for post-graduate students of economics and that is what this course aims to develop among the students.

Unit-1 – Structure and Growth of the Indian Economy (15 Hours)

1.1 India's Economic growth in historical perspective.
1.2 National Income – growth and measurement Database on Indian Economy.
1.3 Economic Planning – Development strategies - planning and development – debates on planning and import substitution -Rationale – Achievements – failures — crisis of 1991.
1.4 Economic Reforms – Structural Adjustment Programmes – Neo-liberalism in India-Disinvestment Policy – PPP-impact of 25 years of reforms on various sectors of the economy- NITI Aayog- and its structure, NITI Aayog Verses Planning Commission.
1.5 State-Local financial relations in India.

Unit-2: Agriculture and Industry (15 Hours)

2.1 Productivity in agriculture; Land reforms; New technology in Indian agriculture- Green Revolution- Need for second Green Revolution; Modern farm inputs and marketing-; Commercialization and diversification.

2.2 Agricultural Finance and Marketing – globalization and Indian Agriculture —- New Agricultural Policy- WTO and- Indian Agriculture- Current Issues in Indian agriculture. Investments and subsidies in Indian agriculture- Agrarian distress and related issues- Govt. Supports and schemes in agriculture sector.

2.3 Industrial Growth – Trends patterns and structure – industrial stagnation debates- Industrial Policies in India- Reforms in industrial sector – industry under globalization- Research and development — Make – in – India initiatives- Small and Medium Scale Industries (MSMEs)Role, problems and remedies- Role of FDI in industrialization process- Public Sector Enterprises -Make in India. Recent developments on Indian Industry (*Economic Survey,EPW& other articles*)

Unit-3: Service Sector and Infra-Structure (15 Hours)

3.1 Growth and performance of service sector in India – Pre and post-Independence period

3.2 Health and Education Infrastructure –

3.3 Energy, Transport, Telecommunication- recent infrastructure policy – Inadequacies and structural bottlenecks in infrastructure development- Trade in services- Global technological change and Indian IT boom. Challenges of India's Service sector.

3.4 Recent developments on Indian Service Industry (*Economic Survey,EPW& other articles*)

Unit-4. Trade and External Sector (15 Hours)

4.1 Evolution of trade policies since independence.

4.2 External Sector reforms – Trade reforms – changing structure, composition and direction of India's foreign trade – Balance of Payment; Exchange rate- India and WTO -EXIM policy – SEZ.

4.3 FII and FDI in India – role of MNC's.

4.4 Recent development in India's foreign trade (*Economic Survey,EPW& other articles*)

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Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
I	**UCEC010105**	**Mathematical Methods for Economic Analysis**	**Core**	**4**	**90**

Course Objectives

This is a course on the basic mathematical methods necessary for understanding modern economics literature. Mathematics provides a logical, systematic framework within which quantitative relationships may be explored, and an objective picture of the reality may be generated. The deductive reasoning about social and economic phenomena naturally invites the use of mathematics. Among the social sciences, economics has been in a privileged position to respond to that invitation, since two of its central concepts, commodity, and price, are quantified in a unique manner. Thus, a good understanding of mathematics is indispensable for better cognizance of almost all fields of economics, both applied and theoretical. The goal of the course is to make students understand, assimilate and thus capable of using the mathematics required for studying economics at the master's level. This course will focus on developing the mathematical tools that are used extensively in Microeconomics, Macroeconomics, and Econometrics. Students should be given an introduction to the Linear algebra, Differential Calculus, Integral Calculus, etc. These mathematical methods would help students in their understanding of advanced and core courses in Economics. The aim of this course is to: (i) introduce the students to several mathematical tools used in modern economics; (ii) illustrate the use of these tools by applying them to various well-known economic models; and (iii) complement the core postgraduate microeconomic and macroeconomic theory courses. Learning outcomes: On completion of this unit, successful students should be able to demonstrate understanding of static optimization and dynamic systems applicable to economics.

Unit-1: Linear algebra **(10 Hours)**

1.1. Definition of matrix.

1.2.Types of matrices, Addition, subtraction and multiplication of matrices.

1.3.Determinants, Minors, Cofactors, Adjoint and Inverse of a matrix.

1.4.Solution of a system of linear equations - Cramer's rule and Inversion method.

1.5.Rank of a matrix -Linear independence of vectors.

1.6. Some applications in Economics - Input -output analysis

Unit-2: Differential Calculus **(25 Hours)**

2.1. Limit of a function - Derivative of a function.

2.2. Rules of differentiation - Higher order derivatives

2.3. Differentiation of implicit function - Partial and total derivative of a function with several variables

2.4. Maxima and minima of a function.

2.5. Curvature properties - Convexity and concavity - Points of inflection.

2.6. Properties of homogeneous functions - Euler's theorem.

2.7. Matrix calculus: Rules of Matrix differentiation, differentiation of a matrix by a scalar, differentiation of a scalar by a matrix

2.8. Some applications in Economics- Derivation of Marginal cost, Marginal revenue functions - Derivation of point elasticity. Production function, utility functions, cost functions. Cobb- Douglas production function, CES production function, national income model, determination of partial elasticities of demand.

Unit-3: Integral Calculus (25 Hours)

3.1. Indefinite integrals - rules of integration.

3.2. Integration by substitution, Integration by parts - Integration of natural exponential functions.

3.3. Definite integrals - properties of definite integrals

3.4. Area under a curve, area between curves

3.5. Difference equations and differential equations (basic concepts only).

3.6. Improper integrals - Beta and Gamma integrals.

3.7. Some applications in Economics - Consumer surplus and producer surplus - Cobweb model, Harrod-Domar and Solow model.

Unit-4: Linear Programming (10 Hours)

4.1. Formulation of LPP and solution using graphical and Simplex methods.

4.2. Duality theory - constrained optimization with inequality and non-negativity constrains

4.3. Primal and duel, shadow prices.

Unit 5 R Software 20 Hours

5.1 Introduction to R. Variables in R, Data types in R, Operators in R, Functions using statements and loops in R.

5. 2 Data structures in R – Vectors, List, Matrices, Data frames.

5.3 Matrix operations using R. Solving system of linear equation using R.

5. 4 Rank of a matrix using R. Solving simple problems of derivation and integration using R.

5.5 Plots using R.

Reference:

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SECOND SEMESTER

Course Code	Title of the Course	Type of the Course	Hours per week	Credits
UCEC010201	Microeconomics-II	Core	**05**	**04**
UCEC010202	Macroeconomics-II	Core	**05**	**04**
UCEC010203	Public Economics	Core	**05**	**04**
UCEC010204	Indian Economy-II	Core	**05**	**04**
UCEC010205	Statistical Methods for Economic Analysis	Core	**05**	**04**

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
II	**UCEC010201**	**Microeconomics –II**	**Core**	**4**	**90**
Course Objectives					
This is the second part of the core Microeconomics Sequence. This course is designed to provide students with a sound understanding of advanced microeconomic theory. It will cover the aspects of microeconomic theory that is required to analyze contemporary economics issues and to create new models to explain the behavior of individuals, firms, and markets, and to evaluate economic policies. The topics will include alternative theories of firms' behavior, information, institutional, behavioral economics, theory of general equilibrium and welfare economics. This course is intended to acquaint the student with decision making in the context of market interdependence, complexity, uncertainty and informational asymmetry; give insights into developments in the areas of general equilibrium and welfare economics; and to enable the student to apply microeconomic principles in the areas of industrial organization, exchange, and welfare.					

Unit 1:Theories of The Firm **20 Hours**

1.1.Why firms, their size and structure – Ronald Coase-O Williamson-

1.2.Team production approach by Armen Alchian and Harold Demsetz

1.3.Hierarchical structures- U form and M form1.6.Network Externalities ─ Bandwagon, Snob and Veblen Effects

Unit 2: Alternative Theories of The Firm's Behaviour **25 Hours**

2.1.Hall and Hitch Report and Full Cost Pricing

2.2.Gordon's attack on Marginalism

2.3.Theory of Limit Pricing -Bain, Sylos-Labini, F. Modigliani, Bhagwati and Pashigian

2.4.Managerial Theories-W J Baumol- O Williamson –Marris

2.5.Behavioural theories- March and Cyert-Contestable Market Theory by W.J. Baumol

Unit 3: Institution, Information and Behavioural Economics **30 Hours**

3.1. Information Economics-Asymmetric Information - the market for Lemons- the Principal Agent Problem - Moral Hazard, Adverse Selection-Screening and Market Signalling.

3.2. Adverse Selection in Labour Market - A Simple Model of Educational Attainment Adverse Selection in credit market.

3.3. Behavioural Economics-Classical and Neo-Classical views of human nature -framing - anchoring effect – uncertainty

3.4. Role of time and emotions in economic decisions - role of constraints and information -

satisficing – bounded rationality - altruism and common good.

3.5. New Institutional Economics: Transaction costs - Social cost vis-à-vis individual costs Identification and measurements of transaction costs, Coase Theorem, Bounded Rationality

3.6. Concepts of Property and defining Property Rights- Problems of Ill-defined Property rights, Externalities-Market failure and property rights- Issues relating to ill-defined property rights

3.7. Contracts - Rent Seeking-Incentives- Applications to Markets- the Firm and the State.

Unit 4: Social Economics and Happiness **15 Hours**

4.1Auctions and Bargaining

4.2. The Economics of Charity and fairness – The economics of revenge and trust – How others influence our decisions – Where do our preferences come from – The economics of peer effects– Following the Crowd: Herding - Cooperation, negotiation, conflicts of interest, and social norms.

4.3. Arrow's impossibility, Sen's Capability Theory, Rawl's theory of justice and equity Nussbaum's Central Capabilities

4.4Easterlin Paradox. Human Happiness index

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7. B. Douglas Bernheim and Michael D. Whinston (2016): Microeconomics, McGrawHill. (Chapter 14 transaction cost, information and behavioural economics. Chapter 18- information economics Chapter 9 information economics)
8. Christopher Snyder, Walter Nicholson and Robert Stewart (2015): Microeconomic Theory: Basic Principles and Extensions, Cengage Learning.
9. David Besanko and Ronald R. Braeutigam (2014): Microeconomics, 4th Ed, John Wiley and Sons, Inc.Edition, South Western Cengage Learning.
10. Genaro C. da Costa (2005): Value and Distribution in Neoclassical and Classical System, 2nd Ed, Himalaya Publishers, Mumbai.
11. Geoffrey A. Jehle and Philip J. Reny (2014): Advanced Microeconomic Theory 3rd Ed, Prentice Hall.
12. Hal R. Varian (2014): Intermediate Microeconomics with Calculus,1st Ed, W. W. Norton & Company.
13. Hal R. Varian (2017): Intermediate Microeconomics: A Modern Approach, 10th Ed, WW Norton & Co, NY.
14. Henderson, M. and R.E. Quandt (1989): Microeconomic Theory: Mathematical Approach, 3rd Ed, McGraw Hill.
15. Jeffrey M. Perloff (2016): Microeconomics with Calculus, 3rd Ed, Pearson.
16. Judy A. Whitehead (2015): Microeconomic: A Global Text, Routledge.
17. Maria Moschandreas (1994): Business Economics, Cengage Learning.
18. Mike Rosser (2011): Microeconomics: The Firm and the Market Economy, MacMillan
19. Robert Awh (2001): Microeconomics, John Wiley.
20. Robin Bade and Michael Parkin (2017): Foundations of Microeconomics, 7th Ed, Pearson.
21. Saul Estrin, David Laidler and Michael Dietrich (2016): Microeconomics,5th Ed, Prentice Hall (Chapter 25 Economics of Information)
22. Snyder and Nicholson (2016): Microeconomic Theory: Basic Principles and Extensions, 11th Ed, Pearson. (Chapter 18 Information Economics)
23. Steven E. Landsburg (2017): Price Theory and Applications,8th Ed. Cengage Learning.
24. Thomas J Nechyba (2010): Microeconomics: An Intuitive Approach with Calculus.

25. William A. McEachern (2017): Principles of Microeconomics, 4th Ed, Cengage Learning.
26. Yew-Kwang Ng (2004): Welfare Economics: Towards a More Complete Analysis, Palgrave-Macmillan

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
II	**UCEC010202**	**Macroeconomics -II**	**Core**	**4**	**90**

Course Objectives

Analyzing today's hot-button policy issues requires approaching macroeconomic theory with the models that researchers and policymakers employ. The second part of macroeconomics intendeds to present the students with a firm grounding in modern macroeconomic thoughts. It, therefore, pays special heed to the major developments in the classical and Keynesian orthodoxy with clear historical perspectives. Here the emphasis is both on competing hypotheses and analytical techniques. The principal objective of the course is to provide the students with an intuitive understanding of both the sources of controversies and how the debates have led to the development of modern macroeconomics.At the end of this course students should be able to: (i) Understand the strengths and weakness of the main macroeconomic tools and models used in modern macroeconomics; (ii) Learn to evaluate and critically compare results in alternative macroeconomic models; and (iii) Understand the importance and limitations of modeling assumptions for macroeconomic policy.

Unit- 1: New Classical Macroeconomics (20 Hours)

1.1.Main Propositions of NCM: The Rational Expectations Hypothesis-Continuous Market Clearing - The Lucas Supply Curve - Rational Expectations -

1.2.The New Classical Economics and the Business Cycle - The Ineffectiveness of Government

Intervention - The Lucas Critique

1.3.Monetary Policy in the NCM and the Philips Curve -Credibility and Dynamic TimeInconsistency.

Unit- 2: Real Business Cycle and Supply-Side Economics (20 Hours)

2.1.Real Business Cycles Model: Labour Market in RBC Model—Intertemporal Substitution.

2.2.AS- AD in RBC Model—Supply Shocks in RBC Model-- Technology Shocks- Neutrality of Money and Flexibility of Wages and Prices- Stabilization Policy

2.3.Supply side Economics: Main features- and Types of supply-side policies -Tax (Laffer Curve), incentive and production- SSE and role of the Government. 7

Unit- 3: New Keynesian School and Post-Keynesian Economics (30 Hours)

3.1.New Keynesian School**:** Imperfect Competition and Price Setting – Sticky Nominal Wages—Staggered Wage-Contract Theory.

3.2.Sticky Price Model: Menu Costs and Demand Externality.

3.3.Sticky Real Wages: Asymmetric Information Model-Implicit Contract Theory- Insider Outsider Model and Hysteresis.

3.4.Efficiency Wage Theories of Involuntary Unemployment: - Shapiro–Stiglitz Model Turnover Cost-Selective Theory—On the Job Efficiency -Shirking Theory and Coordination Failure- Policy Implications of NKE.

3.5.Search and Matching Models-DMP Model.

3.6.Post-Keynesian Economics (PKE): Essentials Characteristics of Post Keynesian Economics - Various Strands of PKE- Principles of Effective Demand and Labour Market: Employment and Unemployment—Consumption Theory-Pricing Theory and Distribution of Income---Expectation—Investment Theory Money: Endogenous Supply of Money and Circuit Theory- Minsky's Financial Instability Hypothesis- Path Dependency and Hysteresis-Role of State- Fiscal and Monetary Policy in PKE

Unit- 4: Macroeconomic Theories of Business Cycles (20 Hours)

4.1**.** Samuelson's Interaction between Multiplier and Accelerator. Hicksian theory of Cycles. Kaldor's model of Cycles. Goodwin's Non-Linear Model. Kalecki's Theory of Cycles and Dynamics of a Capitalist Society and Political business cycles.

4.2. The Great Recession of 2008: The Roots of the Current Crisis -Financial Innovation and Agency Problems in the Mortgage Markets. - Asymmetric Information and Credit Rating Agencies-Residential Housing Prices (The Subprime Debacle)

4.3. Financial Deregulation and Securitization.

Reference:

1. Agenor, Pierre-Richard and Montiel, Peter J. (2015): Development Macroeconomics 4th Ed, Princeton University Press, Princeton.
2. Bober, Stanley (1968): The Economics of Cycles and Growth, New York: John, Wiley and Sons
3. Carlin, Windy and Soskice, David (1990): Macroeconomics and the Wage Bargain: A modern Approach to Employment, Inflation, and the Exchange Rate, OUP.
4. Chirichiello, Giuseppe (1994): Macroeconomic Models and Controversies, The Macmillan Press Ltd.
5. Dilip M. Nachane (2018):Critique of the New Consensus Macroeconomics and Implications for India, Springer.
6. D'Souza, Errol (2012): Macroeconomics, 2nd Ed. Pearson India. (Module-II)
7. De Vroey, Michel (2016): A History of Macroeconomics from Keynes to Lucas and Beyond, CUP.
8. Felderer, Bernhard and Homburg, Stefan (1987): Macroeconomics and New Macroeconomics, Springer-Verlag.
9. Galbraith, James, K and Darity, William Jr (1994): Macroeconomics, Houghton Mifflin Co, NJ.
10. Gärtner, Manfred (2009): Macroeconomics,3rd Ed, Prentice Hall.
11. Ghatak, Anitha (1994): Macroeconomics: A Mathematical Approach, Concept Publishing Co, ND.
12. Harcourt, G. C. (2006): The Structure of Post-Keynesian Economics the Core Contributions of the Pioneers, CUP. (Module-III-B)
13. Heijdra, Ben J. (2017): Foundations of Modern Macroeconomics,3rd Ed, OUP
14. Hillier, Brian (2006): Macroeconomics: Models, Debates and Development, Basil Blackwell.
15. Homburg, Stefan (2017): A Study in Monetary Macroeconomics, OUP.
16. Jansen, Dennis W and Delorme, Charles and Ekelund, Robert B, Jr (1994): Intermediate Macroeconomics, West Publishing Co.
17. Knoop, Todd A. (2015): Business Cycle Economics: Understanding Recessions and Depressions from Boom to Bust, Praeger.

18. Lavoie, Marc (2006): Introduction to Post-Keynesian Economics, Palgrave. (ModuleIII-B)
19. Lavoie, Marc (2014): Post-Keynesian Economics: New Foundations, Edward Elgar. (Module-III-B)
20. Levaccic, Rosalind and Rebmann, Alexander (): Macroeconomics: An Introduction to Keynesian- Neo-Classical Controversies, 2nd Ed, MacMillan
21. Paul Davidson (1994): Post Keynesian Macroeconomic Theory, Edward Elgar, 1994. (Module-III-B)
22. Peel, David and Minford, Patrick (2016): Advanced Macroeconomics: A Primer, Edward Elgar.
23. Pentacost, Eric (2000): Macroeconomics: An Open Economy Approach, Macmillan.
24. Peter Galba´cs (2015): The Theory of New Classical :Macroeconomics: A Positive Critique, Springer.
25. Peterson, Wallace C and Estenson, Paul S (1992): Income, Employment and Economic Growth, 7th Ed, W W Norton, NY.
26. Phelps, E. (1990): Seven Schools of Macroeconomic Thought, Oxford University Press, Oxford
27. Philip Arestis (1992): Post-Keynesian Approach to Economics, Edward Elgar (ModuleIII-B)
28. Richard P.F. Holt and Steven Pressman (2001) (Ed): A New Guide to Post Keynesian Economics, Routledge.
29. Romer, David (1996): Advanced Macroeconomics 4th Ed, McGraw-Hill.
30. Rousseas, Stephen (1999): Post Keynesian Monetary Economics MacMillan. (ModuleIII-B)
31. Scarth, William (2014): Macroeconomics: The Development of Modern Methods for Policy Analysis, Edward Elgar.
32. Snowdon, Brian and Vane, Howard R (1997): A Macroeconomics Reader, Routledge.
33. Snowdon, Brian and Vane, Howard, R (2005): Modern Macroeconomics: Its Origins, Development and Current State, Edward Elgar.
34. Taylor, Lance (2004): Reconstructing Macroeconomics: Structuralist Proposals and Critiques of the Mainstream, Harvard University Press.

35. Thomas Alex (2021), Macroeconomics: An Introduction, Cambridge University Press.
36. Tsoulfidis, Lefteris (2010): Competing Schools of Economic Thought, Springer.
37. Westaway, A J and Jones, T G Weyman (1977): Macroeconomics theory, evidence and policy, Longman. (Module-IV 4.1.)
38. Williamson, Stephen D. (2018): Macroeconomics, 6th Ed, Pearson.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
II	**UCEC010203**	**Public Economics**	**Core**	**4**	**90**

Course Objectives

Public economics is the study of government policy from the points of view of economic efficiency and equity. Public economics explores the economic effects of government tax and expenditure policies, as well as the optimal design of these policies. The primary objective is to teach the leading current tools and methods of public finance. The course covers major topics in public finance including externalities, public goods, benefit/cost analysis, fiscal federalism, taxation, and others. The course deals with the nature of government intervention and its implications for allocation, distribution, and stabilization. The thought content encompasses a host of topics including public goods, market failures, and externalities. The objective of this course is to familiarize students about the rationale for and role of government intervention in economic activities and how the government makes economic decisions. The course will also examine the recent developments in both theoretical and empirical literature in the area. At the end of this course, students should be able to demonstrate a clear understanding of established concepts and theoretical results on collective choice, optimal income taxation, and the effects of income redistribution on the provision of public goods. The course will be useful for students aiming towards careers in the government sector, policy analysis, business, and journalism.

Unit- 1: Role of State and Macroeconomic Perspective of Public Finance (10 Hours)

1.1 Role of Government: Issues related to market failure and government intervention- Government failure.

1.2 Changing Role of State: Issues in Public Finance in a Globalizing World with special emphasis on Global Public Goods.

1.3 .Macroeconomics of Public Finance: The Interaction between Fiscal and Monetary Policy and Fiscal Stabilization

Unit- 2: Economic Analysis of Public Goods and externalities (25 Hours)

2.1 Public goods: Pure and Impure Public Goods.

2.2 Market failure and Externalities- Types of Externalities, Coase Theorem and Property Rights, Free-Rider Problem

2.3 Optimal provision of public goods – Voluntary Exchange Models – Samuelson's contribution.

2.4 The Theory of Clubs and Local Public Goods- Tiebout Model

2.5 Voting and Public Choice – Reasons for Public Choice- Public Choice under Direct Democracy unanimity rule –Wicksell approach

2.6 Majority Rule – Buchanan and Tullok model - Bowen Black model

2.7 Preference Revelation Mechanisms - Lindahl equilibrium- Groves–Clarke mechanism

Unit- 3: Economic Decision Making of Government (15 Hours)

3.1 Normative social choice theory – Arrow's theorem – Majority Voting – The Median

3.2 Voter Model – Representative Democracy -Downs Model on Demand and Supply of Government Policy- Niskanen Model of Bureaucratic Behavior

3.3 Positive Social Choice Theory: The Leviathan Hypothesis – Theory of Rent Seeking – Property Rights Dimension, Rent Seeking and X- Efficiency

3.4 Lobbying and Interest Groups.

Unit- 4: Fiscal Administration and Management (25 Hours)

4.1 Incidence of Taxation – Optimal Taxation – Dead Weight Loss – Equity Vs Efficiency- Theories of taxation: Benefit Theory, The Cost Service Theory and Ability to Pay Theory

4.2 Impact and Incidence of Taxation, Theories of Shifting- Diffusion Theory, Concentration Theory, Demand and Supply Theory.

4.3 Theories of Public Expenditure: Adolf Wagner- Wiseman- Peacock - Colin Clark- Bowen Model, Lindahl Model, Pigou Model and Samuelson Model

4.4 Theories of Public debt: Classical – Keynesian – Modern

4.5 Burden of Public Debt - Intergenerational Equity –Buchanan Thesis

4.6 Measurement and Macroeconomic Impact of Deficits: Alternative Paradigms

4.7 Deficitconcepts-Problem of fiscal deficit –Corrective measures-FRBM Act

4.8 Budgetary Policy in India- Stages involved in the preparation, presentation and execution of government budget – A brief review of recent budgets in India

4.9 Recent trends in the fiscal parameters in India -Its macroeconomic implications

Unit- 5: Fiscal Federalism: Theory and Practice (15 Hours)

5.1 Theory of Fiscal Federalism: The Decentralization Theorem

5.2 Theory of Intergovernmental Transfers

5.3 Issues of Indian Federalism and Intergovernmental Transfers in India- Vertical and Horizontal Imbalances.

5.4 Centre-State financial relations in India- Finance Commission and the recent most reports of the Finance commissions of India

Essential Readings:

1. Anthony B. Atkinson and Joseph E. Stiglitz (2015): Economics of the Public Sector,2nd Rev.Ed, Princeton University Press.
2. C.V. Brown and Peter. M. Jackson (2010): Public Sector Economics,5th Ed, Wiley-Blackwell
3. Harvey Rosen (2012): Public Finance. 8th Ed, McGraw Hill Education.
4. Hyman David: Public Finance (2015): A contemporary Application of Theory to Policy,5th Ed, Thomson Learning.
5. John Cullis and Philip Jones (2009): Public Finance and Public Choice: Analytical Perspectives,3rd Ed, OUP (India)
6. Patrick A. McNutt (1997): The Economics of Public Choice: Contemporary Issues in the Political Economy of Governing, Edward Elgar Publishing Ltd.

Additional Readings:

1. Amaresh Bagchi (2005): Readings in Public Finance, OUP(India)
2. Bailey, Stephen J: Public Sector Economics (2001): Theory and Practice. Second Edition. Palgrave, New York.
3. Bharti Pandey (2017): Fiscal Federalism in India: Challenges and Reforms, Serials Publications.
4. Buchanan, J. M (1968): The Demand and Supply of Public Goods. Randy McNally, Chicago.
5. Cornes, Richard and Todd Sandler (1996): The Theory of Externalities, Public Goods and Club Goods. Cambridge University Press.
6. Friedman, A (1986): Welfare Economics and Social Choice Theory. Martins Nijhoff, Boston.
7. Glennester, H. and J. Hills (1998): The State of Welfare: the Economic and Social Spending, Oxford University Press, London.
8. Greene, Joshua E (2012): Public Finance: An International Perspective, World Scientific.
9. Gruber, Jonathan (2016): Public Finance and Public Policy,5th Ed,Worth Publishers.

10. Hindriks, Jean and Gareth D. Myles (2007): Intermediate Public Economics.

Prentice Hall of India.

11. Holley H. Ulbrich (2007): Public Finance in Theory and Practice,2nd Rev.Ed, South-Western.
12. Jean-Jacques Laffont (1998): Fundamentals of Public Economics, MIT Press
13. Jha, R (1997): Modern Public Economics, Routledge, London.
14. John Leach (2003): A Course in Public Economics, Cambridge University Press.
15. Kenneth J. Arrow (2012): Social Choice and Individual Values (Cowles Foundation Monographs Series), 3rd Ed, Yale University Press
16. Mueller, Dennis C. (1979): Public Choice, Cambridge University Press.
17. Musgrave, R.A. and P.B. Musgrave (2017): Public Finance in Theory and Practice, Fifth Edition, McGraw Hill Education.
18. Stiglitz, Joseph E and Rosengard, Jay K (2015): Economics of the Public Sector,5th Ed, W.W. Norton and Co, Inc.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
II	**UCEC010205**	**Indian Economy-II**	**Core**	**4**	**90**
Course Objectives					
The Objectives of this course would be to horn the analytical acumen of the student by highlighting, and integrated approach to the functioning aspects of the Indian economy. Keeping in view the scope for alternative approaches, such an analysis is imperative because of the Indian the economy is a unique amalgam of alternative competing and often conflicting Theories and a proper understanding of its functioning is imperative if the student is to comprehend the ramification that underlines most of the observed phenomena in the Indian economic set-up.					

Unit-1: Labour and Employment **(20 Hours)**

1.1 Demographic changes in India – Census –Population policies – Demographic Dividend

1.2 Labour Market – Demand and Supply in labour market – Problems – Child Labour – Labour Market Reforms – Rural Urban Migration – Global Migration and Foreign remittance- Labour Policy and Social Security

1.3 Problems of Unemployment in India – NSSO Estimates – Employment trends in organized and unorganized sector – Employment Generation Programmes in India – MGNREGS

Unit-2: Poverty and Inequality (20 Hours)

2.1 Poverty in India – definition, head count ratio, poverty gap and squared poverty gap index; Extent and distribution of poverty in India; Estimates of Poverty: Tendulkar and Rangarajan committee. Household Consumption Expenditure Survey and latest estimates of poverty- critique of the same2.2. Food Security and Nutrition – Rural development – issues and strategies and micro level planning - SHGs and microfinance

2.2 Inequality — Inclusive growth – concepts and policy initiative

2.3 Gender and caste in India

Unit-3: Fiscal Policies and Reforms in India (25 Hours)

3.1 Fiscal reforms in India post 1991- Tax reforms and reforms in public expenditure management- Goods and Services Tax - Public Debt and Sustainability issues- Implementation of FRBM Act - - Centre State Fiscal relationship- cooperative and competitive federalism in India- Role of Finance Commission- Local Bodies in India. Two latest articles on fiscal policies and centre state relations

3.2 National Institution for Transforming India (NITI) Aayog, Make in India

3.3 Black money and parallel economy in India, Consequences and Remedies.

3.4 Demonetisation and its macro- economic impacts

3.5 Recent global developments and its impact on Indian Economy

Unit-4: Financial Sector in India (25 Hours)

4.1 Financial system – Structure – Social Banking under nationalization – Financial Repression in the Pre-1991 period

4.2 Financial Sector Reforms

4.3 Rural indebtedness – informal credit market – trends

4.4 Financial inclusion - Strategies and progress

4.5 Second Generation Financial Reforms.

Reference:

1. Agarwal A N (2017), Indian Economy: Problems of Development and Planning, Vikas Publishing House, New Delhi.

2. Ahulwaia, J.J. and I.M.D. Little (Eds.) (1999) India's Economic Reforms and Development (Essays in hon/ of Manmohan Singh) Oxford University Press, New Delhi.
3. Ashima Goyal (2015): A Concise Handbook of the Indian Economy in the 21st Century, OUP.
4. B A Prakash (ed) (2012) The Indian Economy Since 1991: Economic Reforms and
5. Performance, Pearson, New Delhi
6. Banik Nilanjan (2015), The Indian economy-A Macro-Economic Perspective, Sage India
7. Bardhan R.K. (9th Edition) The Political Economy of Development in India, Oxford University Press, New Delhi.
8. Bhagwati Jagdish and Arvind Panagariya (2012): 'India's Tryst with Destiny'. Collins Business, Noida, India.
9. Bhalotra Sonia (1998): 'The Puzzle of Jobless Growth in Indian Manufacturing'. Oxford Bulletin of Economics and Statistics, Vol. 60 No 1.
10. Byres T.J (1998): 'The Indian Economy: Major Debates since Independence'. Oxford University Press, New Delhi.
11. Chakraborty Pinaki (2015): Finance Commission's Recommendations and Restructured Fiscal Space, Economic and Political Weekly, Vol . 50, No. 12, March 2015.
12. Chakraborty Pinaki (2016): 'Emerging Issues in Union-State Relations' Economic and Political Weekly,Vol 52, No. 9, March 2017.
13. Chakraborty Pinaki (2016): Restructuring of Central Grants: Balancing Fiscal Autonomy and Fiscal Space, Economic and Political Weekly, Vol. 51, No. 6, February 2016.
14. Chetan Ghate (2016): The Oxford Handbook of the Indian Economy, OUP.
15. Deaton, A. and V. Kozel (ed) (2005): 'The Great Indian Poverty Debate'. New Delhi: Macmillan.
16. Dipak Mazumdar, Sandip Sarkar (2008): Globalization, Labour Markets and Inequality in
17. India, International Development Research Centre
18. Eswaran Mukesh and Ahosk Kotwal (1994): 'Why Poverty Persists in India'. Oxford University Press, New Delhi.
19. Gopalji and Suman Bhakri (2013), Indian Economy, Performance and Policies, Pearson, New Delhi.
20. Government of India, Census of India (2011); Paper I, Paper II and Paper III.
21. Government of India, Economic Survey (Annual Issues), Ministry of Finance, New Delhi.
22. Himanshu (2011). "Employment Trends in India: A Re-examination." Economic and Political Weekly, Vol.46, No. 37, pp 497-508.
23. Himanshu. (2007). "Recent Trends in Poverty and Inequality: Some Preliminary Results." Economic and Political Weekly, Vol.42, No. 6,pp 497-508.
24. India 2019, Publication Division, New Delhi.
25. Jayaraj D, Subramanian S (2010): Poverty, Inequality and Population- Oxford University Press, New Delhi.

26. Jean Dereze and Amartya Sen (1996): 'An Uncertain Glory: India and its Contradictions'. Penguin Books Ltd. London.
27. Jyotsna Jalan, Sugata Marjit (2016): India Public Finance and Policy Report 2016: Fiscal Issues and Macro Economy, OUP.
28. Kannan, K P and G Raveendran (2009), "Growth sans Employment: A Quarter Century of Jobless Growth in India's Organised Manufacturing", Economic and Political Weekly, Vol. 44, No. 10, pp. 80-91.
29. Kannan, K P and G Raveendran (2012), "Counting and Profiling the Missing Labour Force", Economic and Political Weekly, Vol. 47, No. 06, pp. 77-80.
30. Kaushik Basu and Annemie Maertens (Editors) 2010, The Concise Oxford Companion to Economics in India, OUP India
31. Kohil Atul (2012): Poverty Amid Plenty in the New India. Cambridge University Press, New Delhi.
32. Mahendra Dev S. (2016): Economic Reforms, Poverty and Inequality. IGIDR Working paper, 2016-09.
33. Mahendra Dev S. (ed) (2007): 'Inclusive Growth in India'. Oxford University Press, New Delhi.
34. Mahesh C. Purohit & Vishnu Kanta Purohit (2014): The Oxford Handbook of Tax System in India: An Analysis of Tax Policy and Governance.
35. Martin Ravallion (2016): The Economics of Poverty: History, Measurement, and Policy, OUP.
36. Mehrotra, S., Parida, J., Sinha, S., and Gandhi A., (2014), "Explaining Employment Trends in the Indian Economy: 1993-94 to 2011-12", Economic & Political Weekly, Vol. 49, No. 32, pp. 49-57.
37. Mehrotra, Santosh and Jajati Parida (2017), "Why is the Labour Force Participation of Women Declining in India?", World Development, Vol. 98, pp. 360–380.
38. Nayak, Pulin, Economic Development of India (Critical Concepts in Economics), London & New York, Routledge, 2015
39. Nicholas C. Hope, Anjini Kochhar, Roger Noll and T. N. Srinivasan (2013): Economic Reform in India: Challenges, Prospects, and Lessons, Cambridge University Press.
40. Nilanjan Banik (2015): The Indian Economy: A Macroeconomic Perspective. Sage India. P.S. Krishnan (2018): Social Exclusion and Justice in India, Routledge.
41. Radhakrishna R.(2015): Well-being, Inequality, Poverty and Pathways Out of Poverty in India. Economic and Political Weekly, October 10.
42. Raghbendra Jha (2018): Facets of India's Economy and Her Society Volume II: Current State and Future Prospects, Palgrave.
43. Ratan Khasnabis • Indrani Chakraborty (2014): Market, Regulations and Finance: Global Meltdown and the Indian Economy, Springer.
44. Reddy, Rammohar C (2017) Demonetization and Black Money, Orient Black swan, New Delhi.
45. Ruddar Dutt and Sundaram (2018): Indian Economy, S Chand and Company, New Delhi
46. Shankar Acharya (2005): 'Thirty years of Tax Reforms in India' Economic and Political Weekly May 14, 2005.

47. T. J. Byres (ed): The State, Development Planning and Liberalisation in India, OUP.
48. Thomas Piketty and Nancy Qian (2009): 'Income Inequality and Progressive Income Taxation in China and India, 1986–2015'. American Economic Journal: Applied Economics, Vol. 1, No. 2, pp. 53-63.
49. Uma Kapila (2018): Indian Economy: Performance and Policies, 2018-19.
50. Uma Kapila (2019): Indian Economy Since Independence: A comprehensive and critical analysis of India's economy, 1947-2017 (Academic Foundation)
51. Vinod B. Annigeri • R. S. Deshpande Ravindra Dholakia (2018): Issues in Indian Public Policies, Springer
52. Y.V. Reddy and G.R. Reddy (2019): Indian Fiscal Federalism, OUP (India)
53. Y.V. Reddy, Partha Ray & Narayan Valluri (2014): Financial and Fiscal Policies Crises and New Realities.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
II	**UCEC010205**	**Statistical Methods for Economic Analysis**	**Core**	**4**	**90**

Course Objectives

This course is designed to cover the statistical material required for entry into Econometrics. It begins with some basic concepts and terminology that are fundamental to Inferential Statistics. It then develops the notion of probability, followed by probability distributions of discrete and continuous random variables and of joint distributions. This is followed by a discussion on sampling techniques used to collect survey data. The objective of this course is to train students in the use of the most common statistical tools and techniques encountered in economics for analysis of data with valid logic and inferences. At the end of the course, students are expected to learn a clear understanding of the inferential statistics as well as the interpretation of data.

Unit- 1: Probability Theory and Probability distributions (20 Hours)

1.1 Random variables - Discrete and Continuous.
1.2 Density function, Distribution function - Definition and properties.
1.3 Mathematical Expectation and Variance of random variables (Definition and properties)..
1.4 Moment Generating function - Definition and properties.
1.5 Discrete distributions - Binomial - Mean, variance, mgf of Binomial distribution. Computation of probability using Binomial distribution. Fitting of Binomial.
1.6 Poisson distribution - mean, variance, mgf of Poisson distribution. Computation of probability using Poisson distribution, Fitting of Poisson distribution.
1.7 .Continuous distributions - Normal distribution - Mean, variance and mgf of Normal distribution (Derivation is not required). Standard Normal distribution - pdf, tables of

standard normal distribution, Computation of probabilities of Normal distribution. Lognormal distribution - pdf, relation between normal and log-normal distribution.

1.8 Central Limit Theorem (Concept and statement only).

Unit- 2: Sampling methods and Sampling Distributions (20 Hours)

2.1 Population and Sampling - Parameter and Statistic - Definition and examples.

2.2 Probability and non-probability sampling methods - Practical methods of drawing random samples – with replacement and without replacement.

2.3 Sampling distributions - Standard error. Sampling vs Non-sampling errors.

2.4 Chi-square, t, and F distribution - Definition, properties and tables of distribution. Examples of statistics following t, Chi-square and F distributions.

Unit- 3: Inferential Statistics- Estimation (20 Hours)

3.1 Estimation - Point and interval Estimation - Properties of Good estimators – Cramer-Rao inequality.

3.2 Methods of Estimation - Maximum Likelihood estimators and estimation using method of moments.

3.3 Calculation of MLE of parameters of Poisson and Normal distributions..

3.4 Interval estimation - Confidence interval - population mean of normal distribution when population variance is known and unknown.

Unit- 4: Inferential Statistics - Testing of Hypothesis (20 Hours)

4.1 Hypothesis testing - Hypothesis - Simple and composite hypothesis - Null and alternative hypothesis Rejection and acceptance region - Type I and Type II errors, Significance level and power of a test. p-value of a test.

4.2 Large sample tests of population mean of one sample and two samples, proportion of a population of one sample and two samples, Goodness of fit, independence of attributes (twoway classification).

4.3 Small sample tests of mean and variance of normal population of one sample and two samples - paired sample and independent sample tests, ratio of variances of two normal populations.

4.4 Non-parametric tests - Sign test, Wilcoxon Matched-pairs Test (or Signed Rank Test), run test, Mann-Whitney test, Kruskal- Wallis test.

Unit- 5: Research methodology **(10 Hours)**

5.1 Objectives of Research - Types of Research -Research Process - Criteria of Good Research - Research Problem - Selecting the Problem - Technique Involved in defining a Problem

5.2 Research Design - Features of a Good Design - Different Research Designs

5.3 Research Report - Technique of Interpretation - Significance of Report Writing - Different Steps and layout of writing report - types of Reports - Precautions for Writing Research Reports.

Reference:

1. Anderson, Sweeney and Williams (2016): Statistics for Business and Economics 12th Ed, South-Western.
2. Bryman, Alan (2008), Social Research Methods, Oxford University Press, New Delhi.
3. Don E. Ethridge (2004): Research Methodology in Applied Economics, 2nd Ed, Wiley-Blackwell
4. Earl Babbie (2008): The Basics of Social Research, 4th Ed, Thomson.
5. Gerald Keller (2012): Statistics for Management and Economics,9th Ed, South-Western.
6. Gerard Guthrie (2010), Basic Research Methods, Sage Publications New Delhi
7. James P. Stevens (2007): Intermediate Statistics: A Modern Approach, 3rd Ed, Lawrence Erlbaum Associates.
8. Joseph F. Healey (2012): Statistics: A Tool for Social Research, 8th Ed, Wardworth.
9. Lind A. Douglas, Marchal G. William and Wathen A. Samuel (2016)- Basic Statistics for Business and Economics, 7th Ed, McGraw Hill International Edition.
10. McClave, Benson and Sincich (2012): A First Course in Business Statistics,8th Ed, Prentice Hall.
11. Mendenhall William, Beaver J. Robert and Beaver M. Barbara (2014) - Introduction to Probability and Statistics – 12th Ed, Thomson Books/Cole publishers.
12. Moore, McCabe, Alwan, Craig and Duckworth (20111a): The Practice of Statistics for Business and Economics H Freeman and Company.
13. Peter J. Diggle and Amanda G. Chetwynd (2011): Statistics and Scientific Method: An Introduction for Students and Researchers, OUP.

14. Ronald M. Weiers (2010): Introduction to Business Statistics,7th Ed, South-Western.
15. Roxy Peck and Jay Devore (2014): Statistics: The Exploration and Analysis of Data,8th Ed, Cengage.
16. Sheldon M Ross (2016): Introductory Statistics,5th Ed, Associate Press.
17. William J. Goode and Paul K. Hatt: Methods in Social Research, McGraw-Hill Book Company, Inc.

THIRD SEMESTER

Course Code	Title of the Course	Type of the Course	Hours per week	Credits
UCEC010301	International Economics	Core	**05**	**04**
UCEC010302	Econometrics-I	Core	**05**	**04**
UCEC010303	Heterodox Economics	Core	**05**	**03**
UCEC010304	Environment Economics	Core	**05**	**04**
UCEC010305	Kerala Economy	Core	**05**	**03**

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
III	**UCEC010301**	**International Trade**	**Core**	**4**	**90**

Course Objectives

This course surveys and studies the various theories of international trade and applies them to the analysis of current trade problems. The topics covered include theories explaining trade patterns, the effect of trade on national welfare, the welfare of groups within a country, trade policy, international economic integration and so on. The course aims to provide an understanding of the broad principles and theories, which govern the free flow of international trade, with empirical evidence. It would also provide an exposure to the theoretical underpinnings and empirical evidence of the major trade policies followed both at national and international level. The theoretical knowledge of international trade and policy imparted in the course would help the students to solve real-world problems. It will prepare them to become trade policy-makers and key strategists on trade issues.

Unit- 1: Classical Trade Theory (Self-Study) (15 Hours)

1.1. Mercantilism

1.2. Absolute Advantage Theory

1.3. Comparative Advantage of Trade - Real and Opportunity Cost Approaches

1.4. Gains from Trade- Reciprocal Demand (Offer Curves)

1.5. Terms of Trade and its Computation

1.6.Revealed comparative advantage (Case Study- Estimate India's revealed comparative advantage using Balassa index)

Unit- 2: Neo- Classical Trade Theory (20 Hours)

2.1. Heckscher-Ohlin theorem

2.2. Factor-Price Equalization Theorem – Factor Intensity Reversal

2.3. Empirical Verifications of Heckscher-Ohlin Theory

2.4. The effect of growth on trade – Immiserating Growth – Rybczynski Theorem

2.5. Technical progress and trade – neutral, capital saving, labour saving

Unit-3: Modern Trade Theory (25 Hours)

3.1. Kravis and Linder Theory of Trade- Technology Gap Theory and Product Life Cycle Theory.

3.2. Intra-industry trade- causes, emergence and measurement- imperfect competition and trade

3.3. The Neo-Heckscher -Ohlin Models

3.4. Neo- Chamberlin models- Neo-Hotelling models- Krugman Model

3.5. Oligopolistic models- Brander- Krugman Model- Reciprocal Dumping Model- - Gravity Model- Porter Diamond Model

3.6. Empirical work in intra-industry trade-Balassa index- Grubel-Lloyd index, Acquino index- - impact of intra industry trade on developing economies-trade in services.

3.7. Introduction to supply chain management (SCM) - impact of SCM on international trade

3.8. Trade and economic development- role and significance- Singer- Prebisch Thesis

Unit-4: Trade Policy (30 Hours)

4.1. Free trade and protection

4.2. Effects of tariff —Metzler Paradox- Optimum Tariff- Effective rate of protection 4.3. Quotas and other non-tariff barriers- technical/ quality/ safety standards (regulations)- case study on India's EXIM policy

4.4. Economic integration – theory of customs union – partial and general equilibrium analysis –dynamic effects

4.5. Integration experiences- European Union, BRICS- NAFTA, PAFTA ASEAN

4.6. Regional trade blocs and barriers to free flows of trade

4.7. Multilateral trade negotiations- the GATT rounds – UNCTAD and evolution of world trading arrangements – World Trade Organization and fair trade- Development Round- Trade Facilitation- Trade War.

Essential Readings:

1. Appleyard D. R and Field A J (2014) -International Economics 8th Ed McGraw Hill, New Delhi

2. Chacholiades, M. (1990), International Trade: Theory and Policy, McGraw Hill, Kogakusha, Japan
3. Krugman P R and Obsfeild M (2009) - International Economics- Theory and Policy, 8th Ed, Pearson, Dorling Kindersley (India) Pvt. Ltd, New Delhi
4. Salvatore, D (2008) - International Economics, 8th Ed, Wiley India, New Delhi
5. Soderston, B and Reed G. (1994) - International Economics, 3rd Edition, McMillan Press Ltd. London

Supplementary Readings:

6. A.J. Smit (2010): The competitive advantage of nations: Is Porter's Diamond Framework a new theory that explains the international competitiveness of countries? Southern African Business Review, Volume 14 Number 1
7. Bhagwati, J. N. (1987), International trade: Selected readings, Second Edition, MIT Press, Cambridge, Massachusetts
8. Bhagwati and Srinivasan (1983), Lectures on international trade, The MIT Press.
9. Carbaugh, R J (2008) - International Economics, (11th Edition) Thomson South Western, New Delhi
10. Feenstra Robert C (2004), Advanced International Trade- Theory and Evidence, Princeton University Press, Princeton
11. Grimwade Nigel (2001), International Trade, (Second Edition), Routledge, London
12. Grubel H G and Lloyd P J (1975), Intra-industry Trade, Macmillan, London.
13. Haberler G (1961), A Survey of International Trade Theory, International Finance Section, Department of Economics, Princeton University.
14. Handbook of International Business, Oxford University Press
15. Kindleberger, C P -International Economics, R.D. Irwin, Homewood
16. Michele Fratianni: (2007) The Gravity Equation in International Trade, Indiana University, Kelley School of Business, CIBER, Bloomington, Indiana 47405, USA.
17. Prebisch, Raul (1959). ''Commercial Policy in the Underdeveloped Countries, AER 49, no.2. pp. 251- 73.
18. Reinert K A (2012), An Introduction to International Economics, Cambridge university Press, New York
19. Richard Baldwin and Charles Wyplosz (2004), The Economics of European Integration, McGraw Hill, New York
20. Richard E Caver and Harry G Johnson, Readings in International economics

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
III	**UCEC010302**	**Econometrics—1**	**Core**	**4**	**90**

Course Objectives

An Economic model is a family of probability distributions proposed by a researcher that could possibly have generated the data of some economic variables -viewed as random variables. Given the economic data either cross-section or time series or panel, a researcher would like to select a particular probability distribution from the family of distributions to "best match" the data. This course helps the students to learn how to estimate a general class of parametric models or semiparametric models, how to conduct testing and inference, given the data. The course also aims to cover (1) identification of model parameters; (2) consistency, asymptotic normality, and semiparametric efficiency of various estimators; (3) hypothesis testing and model selection. It also covers the problems encountered in estimation and inference in the context of the single-equation linear regression model. Empirical applications include estimation and inference of some popular economic models in microeconomics and macroeconomics. The true objective of this course is to acquaint students with econometric techniques that are widely used in empirical work in Economics and other related disciplines. It is intended to expose students to the art of performing estimation, analyzing and interpretation of the estimated econometric model. At the end of the course students should be able to: (i) demonstrate their understanding of the appropriate econometric methods for analyzing data; (ii) interpret computer output for the estimation and testing of econometric relationships; and (iii) interpret and discuss results.

Unit- 1: Two Variable Regression Model **(25 Hours)**

1.1 Definition & Scope of Econometrics-Methodology-Modern Interpretation

1.2 Classical Linear Regression Model-PRF-Linearity-Stochastic Disturbance Term Significance- SRF

1.3 Method of OLS-Derivation of OLS Estimators-Deviation Form, Properties- 1.4. Assumptions-Gauss-Markov Theorem-Goodness of the Fit-R^2

1.4 Estimation and Testing of Hypothesis-Standard Error.

1.5 Practical sessions of estimation using relevant software

Unit- 2: Multiple Regression Model **(15 Hours)**

2.1 Multiple Regression-Matrix Approach—General k variable Model—Variance Covariance Matrix—OLS Estimators and Guass-Markov Theorem (Matrix Notation)

2.2 Partial Regression Coefficients—Multiple Coefficient of Determination-R Square and Adjusted R Square

2.3 Estimation and Testing of Hypothesis-Test of Coefficients and Overall Significance-t-test and F test-P-value—Testing the Equality of Two Regression Coefficients

2.4 Restricted Least Squares-Testing Linear Equality Restrictions
2.5 Practical sessions of estimation using relevant software

Unit- 3: Violation of the Assumptions of Classical Model and Extensions (25 Hours)

3.1 Heteroscedasticity: Nature, Consequences, Tests, and Remedial Measures
3.2 Auto-correlation: Nature, Consequences, Tests, and Remedial Measures
3.3 Multicollinearity: Nature, Consequences, Tests, and Remedial Measures
3.4 Model Specification and Errors: Consequences—Underfitting and Overfitting—Measurement Errors
3.5 Regression through Origin -Scaling and Units of Measurement
3.6 Different Functional Forms of Regression Models and their Applications (Log-linear, Semi- log, Double log, Reciprocal and Log Reciprocal Models)—Choice of Functional Forms

Unit- 4: Regression with Qualitative Variables and Simultaneous Equation Models

(25 Hours)

4.1 Qualitative Explanatory Variables—Dummy Variable Regression–ANOVA and ANCOVA Models—Dummy variable Trap—Interpretation of Regression Results
4.2 Models with Qualitative Dependent Variables- LPM, Logit, Probit, and Tobit Models—Interpretation of Regression Results
4.3 Simultaneous Equation Models—Simultaneous Equation Bias—Inconsistency of OLS Estimators—Identification Problem—Test of Simultaneity and Exogeneity
4.4 Problem of Estimation—Single Equation Methods —OLS—ILS– 2SLS and Systems Methods—2SLS and SURE Model—Lurking Variables
4.5 Practical sessions using relevant software

Essential Readings:

1. Gujarati, Damodar & Dawn C Porter (2017): Basic Econometrics,5th Ed, McGraw Hill.
2. Stock James and Watson, Mark (2017): Introduction to Econometrics,3rd Ed, Pearson Education (Indian Edition).
3. J Johnston (1997): Econometric Methods,4th Ed, McGraw-Hill Higher Education.

Complementary Readings:

1. Badi H. Baltagi (2011): Econometrics,3rd Ed, Springer.
2. Chandan Mukherjee, Howard White and Marc Wuyts (1998): Econometrics and Data Analysis for Developing Countries, Routledge New York.

3. Christopher Dougherty (2016): Introduction to Econometrics, Oxford University Press, Indian Edition.
4. G.S. Maddala and Kajal Lahiri (2012): Introduction to Econometrics, 4th Ed, John Wiley &Sons (Indian Edition).
5. Kmenta, Jan (1976), Elements of Econometrics, 2nd Ed, McMillian, New York.
6. Michael Bailey, Real Econometrics: The Right Tools to Answer Important Questions, Oxford University Press, 2016
7. Peter Kennedy (2008): A Guide to Econometrics, 6th Ed, Wiley-Blackwell.
8. Ramu Ramanathan (2002): Introductory Econometrics with Applications,3rd Ed, Thomson Learning Inc, Singapore.
9. Robert S. Pindyck and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts,4th Ed, McGraw-Hill Publishing Co.
10. Russell Davidson & James G. MacKinnon (2009): Econometric Theory and Methods, Oxford University Press.
11. Sankar Kumar Bhaumik (2015): Principles of Econometrics: A Modern Approach Using EViews, Oxford University Press (India)
12. Studenmund A. H (2017): Using Econometrics: A Practical Guide,7th Ed, Pearson (India).
13. William H. Greene (2018): Econometric Analysis,8th Pearson Education (India).
14. Wooldridge, Jeffrey M (2018): Introductory Econometrics: A Modern Approach, Thomson,7th Ed, South Western, USA.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
III	**UCEC010304**	**Heterodox Economics**	**Core-15**	**4**	**90**

Course Objectives

Over the past two decades, the intellectual agendas of heterodox economists have taken a decidedly pluralist turn. Leading thinkers have begun to move beyond the established paradigms of Austrian, feminist, Institutional-evolutionary, Marxian, Post-Keynesian, radical, social, and Sraffian economics – opening up new lines of analysis, criticism, and dialogue among dissenting schools of thought. This cross-fertilization of ideas is creating a new generation of scholarship in which novel combinations of heterodox ideas are being brought to bear on important contemporary and historical problems. A better understanding of heterodox principles will lead to a more informed understanding of mainstream economics. Heterodox economics is defined as a collection of separate schools of thought or traditions such as Marxism, institutionalism, post-Keynesianism, evolutionary economics, feminist and green economics, and more. The aim of this course is to revisit a set of economic concepts that are being extensively used in the economics curriculum--but with a critical stance that concentrates on philosophical and methodological considerations. This course will survey contemporary heterodox approaches to economic research, both from a microeconomic and a macroeconomic perspective.

Unit- 1: What is Heterodox Economics? (25 Hours)

1.1 A brief history of economic thought
1.2 Rise of marginalism
1.3 Internal& external critiques of mainstream economics
1.4 Understanding different strands of competition (Walling 2024)

Unit- 2: Classical and Marxian Political Economy (25 Hours)

2.1 Historical materialism & exploitation
2.2 Output determination in classical political economy (Thomas 2023)
2.3 Value & distribution & social surplus (Garegnani)
2.4 Taste formation & consumption in classical political economy
2.5 Marxian political economy (Yadav 2025)

Unit- 3: Sraffian& Post-Keynesian Economics (25 Hours)

3.1 Sraffian Research Programmes
3.2 Lavoie, Post Keynesian Economics
3.3 Keynes &Kalecki
3.4 Politics of Full Employment (Kalecki)
3.5 Keynes's Policy Proposals (Aspromourgos)
3.6 Capital Controversy (Harcourt; Fratini)
3.7 Demand-led growth theory

Unit- 4: Feminist Political Economy (15 Hours)

4.1 Women in economics (Feba David, 'Women in History of Economic Thought: A Critical and Historical Perspective', forthcoming in *Review of Development and Change*)
4.2 Contradictions of capital and care (Nancy Fraser)
4.3 Social reproduction theory (Picchio, selected chapters)

Select Readings:

1. Thomas Alex (2021), Macroeconomics: An Introduction, Cambridge University Press.
2. Krishna Bharadwaj, RC Dutt lectures, Lecture 1
3. Thomas Alex (2019) *Romer and Nordhaus's Nobel Winning Contributions*
4. https://www.epw.in/journal/2019/54/commentary/romer-and-nordhauss-nobel-winning-contributions.html
5. Walling (2024), Two Traditions in the Conceptualisation of Competition,
1. https://journals.sagepub.com/doi/10.1177/09722661241304858
6. Sweezy, *The Theory of Capitalist Development: Principles of Marxian political economy*)
7. Classical Economics and the Question of Aggregate Demand; https://www.tand fonline. com/doi/full/10.1080/09538259.2022.2156160
8. Value and Distribution InThe Classical Economists And Marx https://academic.oup. com/oep/article-abstract/36/2/291/2361049?redirectedFrom=fulltext
9. Taste formation in Classical Political Economy;https://www.tandfonline.com/ doi/full/ 10.1080/09672567.2024.2396856?src=recsys
10. Capitalism, Competition and Class Conflicts: A Pedagogical Introduction to Marxist Political Economy**;** https://journals.sagepub.com/doi/10.1177/09722661241311378
11. Sraffian research programmes and unorthodox economics**;** https://www.tandfonline .com/doi/abs/10.1080/0953825042000183181
12. Marc Lavoie **(2022)** 'Post-Keynesian Economics'; https://www.e-elgar.com/shop/gbp/post-keynesian-economics-9781839109638.html (selected chapters)
13. Maria Cristina Marcuzzo (2017), The "Cambridge" critique of the quantity theory of money: A note on how quantitative easing vindicates it; https://www.tandfonline. com/doi/abs/10.1080/0953825032000121478
14. Political Aspects of Full Employment[1], M Kalecki,https://onlinelibrary.wiley. com/doi/10.1111/j.1467-923X.1943.tb01016.x
15. Tony Aspromourgos (2012) Keynes's *General Theory* After 75 Years: Chapter 24 and the Character of 'Keynesian' **Policy***,https://onlinelibrary.wiley.com /doi/abs/ 10.1111/j.1475-4932.2012.00807.x
16. Avi J. Cohen and G. C. Harcourt (2003) 'Retrospectives: Whatever Happened to the Cambridge Capital Theory Controversies? ON THE SECOND STAGE OF THE CAMBRIDGE CAPITAL CONTROVERSY
17. Saverio M. Fratini, On the second stage of combridge capital controversy, First published: 28 January 2019

18. Matthew Smith Demand-led Growth Theory: A Historical Approach**;** Demand-led Growth Theory: A Historical Approach: Review of Political Economy: Vol 24 , No 4 - Get Access
19. Nancy Fraser , Contradictions of Capital and Care; https://newleftreview.org/issues/ii100/articles/nancy-fraser-contradictions-of-capital-and-care
20. Antonella Picchio - Social Reproduction- The Political Economy of the Labour Market; https://www.cambridge.org/us/universitypress/subjects/economics/labour-economics/social-reproduction-political-economy-labour-market?format=HB &isbn= 9780521418720

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
III	**UCEC010304**	**Environmental Economics**	**Core**	**4**	**90**

Course Objectives

This course examines the economics behind environmental issues and problems and policies designed to address them. Topics are focused on the valuation of non-market goods, costbenefit analysis, correcting market failures especially in the provision of public goods, the tragedy of the commons, and climate change. The economic assessment of environmental impacts and the economics of policies and institutions which have a significant bearing on the environment are also covered in the course. This course will provide students with the tools to understand how market inefficiencies might arise in the presence of externalities like pollution and how market solutions can correct market failures. The main objective of the course is to illustrate how the study of mainstream economics needs to be reoriented in the light of the following premises: the natural environment is the core of any economy and economic sustainability cannot be attained without environmental sustainability. Thus, the course is intended to equip students with analytical skills that would enable the evaluation of environmental and economic policy issues. It is expected to enable students to understand the economics of the relationship between economic activities and environmental impacts. This course builds on the knowledge of students in micro-economics and public economics.

Unit- 1: Basic Environmental issues: Environment and Economy (15 Hours)

1.1 Environment and Economy- Environmental Economics, Ecological Economics and Resource Economics- Interlinkages between the Economy and the Environment

1.2 .Material Balance Approach- criteria of Natural Resource Use-Principles of uncertainty and irreversibility – Inter generational equity- intra generational equity

1.3 .Environment-Development Trade-offs: Environmental Cost of Economic Growth- The Environmental Kuznets Curve. Theory of Krutilla-Fisher Equation for Preservation or Development.

1.4 Different Perspectives on Development and Growth: The First and Second Laws of Thermodynamics Pessimist and Optimistic Models Limits to Growth- Beyond the Limits - Simon Julian's thesis of "Ultimate Resource"-The Skeptical Environmentalist.

1.5 Global environment issues – climate change: positive and normative analysis of climate change- Economics of Global Warming and Climate Change: Nordaus' Dice Model.

Unit- 2: Welfare Economics, Social Sector and Environment (20 Hours)

2.1 Individual preference regarding environmental protection-Pareto optimality

2.2 Market Failure and Externalities: Non-exclusion and the Commons Tragedy of Commons Nonrivalry and Public Goods -Non-convexities- Asymmetric Information

2.3 Hardin's Thesis, Olson Theory of Collective Action, Externalities and Property Rights: Coase theorem -Pigouvian Solution, Ostrom's Co-operative Solutions to Common Pool Resources (CPR) -Optimal Provision of Public Goods- Pollution Prevention, Control and Abetment – Command, Control and Market Based Instruments -Taxes Vs Tradable Permits -CPRS

2.4 Land use - Deforestation- urbanization and their impact on environment - Air and water pollution

Unit- 3: Environmental Valuation (20 Hours)

3.1 Valuing the Environment: The Economic Concept of Value-Types of Value: Use-Value, Option Value and Non-use or Passive Use Values- The standard model-divergence in value measures-challenges to neo-classical theory of environmental valuation -Development of Nonmarket Valuation—Anthropocentric versus Biocentric Viewpoints - Valuation techniquesmarket and non-market- direct and indirect - Environment impact assessment-LCA

3.2 Valuation Methods: Compensating and Equivalent Welfare Compensating and Equivalent Variations and Willingness to Pay and Willingness to Accept.

3.3 lternative Approaches and Methods of Environmental Valuation – Revealed Preference Methods—Travel Cost Method—Random Utility Site Choice Model—Problems of Travel Cost Method—Hedonic Pricing Method and the Problems—Hedonic Wage Values—Dose Response Function—Averting Expenditure and Avoided Cost Methods—Challenges—Aggregation and Partial Values

3.4 Stated Preference Methods—Contingent Valuation—Steps in Conducting a Contingent Valuation—Reliability and Validity—Attribute Based Models—Conjoint Analysis—Choice Experiments—Contingent Ranking—Production Function Methods—General Methodology and Measurement Issues

3.5 Economic Incentives: Emission taxes, tradable pollution permits, Pigouvian fee; Emission standards and Environmental Protection

Unit- 4: Sustainable Development (15 Hours)

4.1 Sustainable Development: Sustainability Criteria: Hicksian Sustainability Possible- Sustainability Rules -The Hartwick-Solow Approach

4.2 Non-Declining Natural Capital Stock Approach -Safe Minimum Standards Approach -Daly's Co-operational Principles - Sustainability versus Efficiency

4.3 Indicators of Sustainability ENP/AENP (Environmentally Adjusted or Approximate Environmentally Adjusted National Product) and Green GNP Indicator on the Basis of Natural Capital Stock and SMS Approaches

4.4 Weak, Strong and Very Strong Sustainability- Pearce-Atkinson Measure of Weak Sustainability Daly-Cobb's Index of Sustainable Economic Welfare- Common-Perring's Model of Sustainable Development.

4.5 Course of Inter-Generational Welfare- Environmental Sustainability- Ecological Sustainability- Protecting Forest Products and Services

4.6 Eco Economy and its Shape—Solar Hydrogen Economy—New Materials Economy Feeding Everyone Well—Protecting Forest Products and Services

Unit- 5: Environmental Governance and Management (20 Hours)

5.1 Integrated environmental and economic accounting and the measurement- Environmentally corrected GDP

5.2 Ecological Footprint Analysis-Global Environmental Governance- the Montreal and Kyoto Protocol -International Environmental Treaties and Institutions- WTO and TRIPS as related to environmental issues- Subsidies and taxes, Product standards and Exceptions clause; International environmental externalities.

5.3 Environmental regulations and assessment in Indian context.

Essential Reading:

1. Kolstad, Charles D (2014): Environmental Economics, 2nd Ed, Oxford University Press, Indian Edition.
2. Nick Hanley, Jason F. Shogren and Ben White (2010): Environmental Economics in Theory and Practice,2nd Ed, Palgrave MacMillan.
3. Ahmed M. Hussen (2014): Principles of Environmental Economics. 4th Ed, Routledge. 4.Horst Siebert (2010): Economics of the Environment: Theory and Policy, 7th Ed, Springer.

Supplementary Reading:

5. Anthony C. Fisher (1981): Resource and Environmental Economics, Cambridge University Press
6. Barry C. Field and Martha K. Field (2016): Environmental Economics: An Introduction, 7th Ed, McGraw Hill.
7. Baumol, William J and Wallace E Oates: The theory of environmental policy, Cambridge University press, 1988.
8. Charles S. P. (2000): Economics and Global Environment, Cambridge University Press
9. David A. Anderson (2010): Environmental Economics and Natural Resource Management, Routledge, London
10. Hans Wiesmeth (2012): Environmental Economics: Theory and Policy in Equilibrium, Springer.
11. Henk. F, H. L. Gabel, Shelby G. and Adam Rose, (2001) "Frontiers of Environmental Economics" Edward Elgar, Cheltenham UK
12. James Crustave Speth and Peter Maas (2009). Global Environmental Governance – Foundation of Contemporary Environmental Studies-Island press.
13. Jonathan M. Harris and Brian Roach (2018): Environmental and Natural Resource Economics: A Contemporary Approach,4th Ed, Routledge.
14. Katar Singh, Anil Shishodia (2007): Environmental Economics; Theory and Applications, Sage publications, New Delhi.
15. Kavi Kumar, in Kanchan Chopra and Vikram Dayal (2009), (Ed). Hand book of Environmental Economics; Oxford University Press.
16. Kimio Uno and Peter Bartelmus (1998): Environmental Accounting in Theory and Practice, Springer
17. Krutilla John V. (1967). "Conservation Reconsidered", American Economic Review, Vol. 57, 1067.
18. Lee G. Anderson and Juan Carlos Seijo (2010): Bioeconomic of Fisheries Management, Wiley-Blackwell, Iowa
19. Lester R. Brown (2001): Eco Economy: Building an Economy for the Earth, W.W Norton and Company, London
20. Lester R. Brown (2015): The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy, W.W Norton and Company, London

21. Mohan Munasinghe and James Gustave Speth, Sustainable Development in Practice Cambridge University Press.
22. Nicholas Stern(2007): The Economics of Climate Change: Stern review, Cambridge University Press.
23. Oates W.E. (1994) (ed.), The Economics of the Environment, An Elgar Critical Writings Reader, Edward Elgar.
24. Olson, Jr., Mancur (1971), The Logic of Collective action: Public Goods and the theory of Groups, Cambridge, Harvard University Press.
25. Ostrom, E. (1990), Governing the Commons: The Evaluation of Institutions for Collective Actions, Cambridge University Press, Cambridge.
26. Pearce, D.W. and R. Turner (1991): Economics of Natural Resource Use and Environment, John Hopkins University Press, Baltimore.
27. Pearce D.W. and Jeremy J. Warford (1996), World without End: Economics, Environment and Sustainable Development, OUP.
28. Peter G. Brown and Geoffry Garner (2009), Right Relationship, Building a whole Earth Economy, Berrett-Koehler publishers, Sanfransisco.
29. Rabindra N Bhattacharya (2002), Environmental Economics-an Indian perspective, OUP, New Delhi.
30. Roger Perman, Yue Ma, James McGilvray and Michael Common: Natural Resource and Environmental Economics, 3rd Ed, Pearson Learning.
31. Steven C. Hackett (2006): Environmental and Natural Resources Economics: Theory, Policy, and the Sustainable Society, M.E.Sharpe, New York
32. Sugatha Margit (2007): India Macroeconomics Annual 2007, Centre for Studies in Social Sciences, Kolkata, Sage Publishers
33. Tietenberg, T. (1994): Environmental Economics and Policy, Harper Collins, New York.
34. Tony Prato (1998): Natural Resource and Environment Economics, Iowa State University Press.
35. Trond Bjorndal and Gordon Munro (2012): The Economics and Management of World Fisheries, OUP, London
36. Ulaganathan Sankar (2004) Environmental Economics OUP, New Delhi.
37. United Nations (2014): System of Environmental Economic Accounting Central Framework, New York.

Semester	Course Code	Course Title	Type of Course	Credit	Teaching Hours
III	**UCEC010305**	**Kerala Economy**	**Core - 15**	**3**	**90**

Course Objectives

The basic objective of the course is to introduce students to the current and critical issues, challenges and problems of the Kerala economy and thereby enhance their analytical ability to understand the dynamics of a regional economy.The aim of the course is to teach the students about Kerala's development experiences in historical perspective. It will enable them to understand the current economic scenario and their routes in historical and global perspective.The contents of the course are structured to make students aware of burning issues in agriculture, industrial and social sectors of Kerala economy. Keeping in view the scope for alternative approaches, such an analysis is essential because the Kerala economy is a unique amalgam of alternative competing and often conflicting theories and a proper understanding of its working is a sine qua-non-if the student is to comprehend the ramification that underlines most of the observed phenomena in the Kerala economic set-up.

Unit- 1: Introduction to Kerala Economy (20 Hours)

1.1 Kerala economy at the time of state formation- Broad Features – Sectoral Contribution.
1.2 Growth and Development since 1956- Trends and Pattern of GSDP
1.3 Trend, Pattern and Sectoral Contribution—Re-distributive policies (Health, Education, PDS, Land reforms)

Unit- 2: Agriculture and Allied Sectors (15 Hours)

2.1 Agriculture Growth and Performance-Trends in production and productivity
2.2 Land Reforms and Land use pattern
2.3 Changes in Cropping Pattern
2.4 Agricultural Wages
2.5 Collective farming Initiatives—green army
2.6 Crop Insurance Schemes
2.7 Special Agricultural Zone
2.8 Finance to Agriculture
2.9 .Livestock-Fisheries-Water Resources and-Forestry
2.10 Agricultural Crisis - Food Security

Unit- 3: Industrial Sector and Business **(15 Hours)**

3.1 Industry-Growth and Performance-Industrial Backwardness
3.2 Mining, Manufacturing and Construction Sector- Issues and Challenges
3.3 Central Sector Investment
3.4 State Public Sector Undertakings
3.5 Industrial Financing
3.6 MSMEs—Traditional Industries—Electronic industry- KELTRON and Electronic Parks

Unit- 4: Service Sector **(25 Hours)**

4.1 Growth and performance of Service Sector-Income Generation and Employment Issues
4.2 Performance of service Sub-Sectors- Economic Infrastructure—Transport—Energy--Communication
4.3 Social Infrastructure- Health and Education – Tendencies of Exclusion
4.4 Kerala Disability Census 2015—Economic and Community Services
4.5 Demographic Profile of the State—Demographic Transition in Kerala—Sex Ratio—Nutrition, Morbidity and Ageing.
4.6 Trends, Pattern and Problems of Migration—Rehabilitation Issues of Return Migrants 4.7.In Migration-- Interstate Migration—Issues of Marginalisation

Unit- 5: Local Governments, Decentralised development and Environmental Issues

(15 hours)

5.1 Kerala's development experience: From lopsided to virtuous phase of development Sustainability Issues
5.2 Role of remittances – Regional Imbalances
5.3 Gender Equality- Unemployment, Poverty and Inequality—Social Security—Human Development
5.4 Decentralised Planning—Financing of Local Government Plans
5.5 State Finance Commissions
5.6 Performance of Local Government—Scheduled Caste Sub Plan, Tribal Sub Plan and Women Component Plan under Decentralization
5.7 Rural Development Programmes— Kudumbasree
5.8 Development and Utilisation of Natural Resource—Issues of Reclamation
5.9 Tourism and Environmental impact—Waste management—Policies and programmes—Impact of Flood 2018 and Rebuilding initiatives.

Select Readings:

1. Ajith Kumar and KK George, "Kerala's Education System: From Inclusion to Exclusion?", Economic and Political Weekly, Vol. 44, No. 41/42 (OCTOBER 10-23, 2009), pp. 55-61

2. BA Prakash and Jerry Alwin (Edited), Kerala's Economic Development: Emerging Issues and Challenges, Sage Publications
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4. C.U. Thresia (2014): Social Inequities and Exclusions in Kerala's: Egalitarian Development, Monthly Review, 2014.
5. Centre for Development Studies, Poverty, Unemployment and Development Policy : A Case Study of Selected Issues with reference to Kerala, Orient Longman, Bombay.
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8. Economic Reviews- State Planning Board-Various Issues
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20. K. K. Subramanian and P. Mohanan Pillai, "Kerala's Industrial Backwardness: Exploration of Alternative Hypotheses", Economic and Political Weekly, Vol. 21, No. 14 (Apr. 5, 1986)
21. K. K. Subramanian, "Development Paradox in Kerala: Analysis of Industrial Stagnation", Economic and Political Weekly, Vol. 25, No. 37 (Sep. 15, 1990)
22. K. K. Subramanian, "Economic Growth in the Regime of Reforms: Kerala's Experience", Economic and Political Weekly, Vol. 41, No. 10 (Mar. 11-17, 2006),

23. K. K. Subramanian, "Economic Growth in the Regime of Reforms: Kerala's Experience", Economic and Political Weekly, Vol. 41, No. 10 (Mar. 11-17, 2006), pp. 885-890
24. K. N. Harilal and K. J. Joseph, "Stagnation and Revival of Kerala Economy: An Open Economy Perspective", Economic and Political Weekly, Vol. 38, No. 23 (Jun. 7-13, 2003), pp. 2286-2294
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26. K. P. Kannan, "Kerala's Turnaround in Growth: Role of Social Development, Remittances and Reform", Economic and Political Weekly, Vol. 40, No. 6 (Feb. 5-11, 2005), pp. 548-554
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54. P. S. George, "Dilemma of Cost of Cultivation in Kerala", Economic and Political Weekly, Vol. 23, No. 39 (Sep. 24, 1988)
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63. Robin Jeffrey, "Politics, Women and Well Being: How Kerala Became A Model, Cambridge University Press
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74. Zachariah KC, Mathew E T and S Irudaya Rajan: Dynamics of Migration in Kerala, Orient Black Swan Books, New Delhi

FOURTH SEMESTER

Course Code	Title of the Course	Type of the Course	Hours per week	Credits
UCEC010401	International Finance	Core	**05**	**04**
UCEC010402	Econometrics-II	Core	**05**	**04**
Elective- Group-A				
UCEC800401	Agricultural Economics	Elective	**05**	**03**
UCEC800402	Industrial Economics	Elective	**05**	**03**
UCEC800403	Labour Economics	Elective	**05**	**03**
Elective- Group-B				
EC810401	Mathematical Economics	Elective	**05**	**03**
EC810402	Operations Research	Elective	**05**	**03**
EC810403	Multivariate Data Analysis for Social Sciences	Elective	**05**	**03**
Elective- Group-C				
EC820401	Financial Economics	Elective	**05**	**03**
EC820402	Game Theory and its Economics Applications	Elective	**05**	**03**
EC820403	Economics of Business Strategy	Elective	**05**	**03**
EC010403	Project/Dissertation	Core		**02**
EC010404	Comprehensive Viva -Voce	Core		**02**

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**UCEC010401**	**International Finance**	**Core**	**4**	**90**

Course Objectives

The course will address the following main topics: the balance of payments; foreign exchange market and exchange rate determination; foreign currency derivative instruments; arbitrage and international parity conditions; risks in global finance, the management of foreign exchange risk with forwards and options; basic characteristics of trade finance and investment instruments; and international capital flows and markets. The intent is to investigate how various financial instruments are used for hedging and speculating in the currency markets and how economic theories are applied to determine the equilibrium exchange rates. Some policy issues concerning the recent world financial market turbulence will also be discussed. This course aims at providing a theoretical exposition of different aspects of international finance and financial institutions in a historic cum emerging geopolitical context particularly in that of globalization. It will equip students with both fundamental knowledge in international finance, financial institutions and their application in real life. This course seeks to provide a working knowledge of these issues. It will prepare students to become policy-makers and key strategists on issues related to international finance and related institutions. The stress will be on an understanding of the intuition behind the theories.

Unit-1: Foreign Exchange Rates and Markets (30 Hours)

1.1 Foreign exchange market- structure and functions-the demand for and supply of foreign exchange – fixed and flexible exchange rate-nominal, real and effective exchange rates- Case studies on REER and NEER in India.

1.2 Types of foreign exchange transactions-arbitrage, spot and forward markets and rates, currency swaps, futures and options-foreign exchange risks, hedging and speculation

1.3 Theory of optimum currency area- Euro currency markets and international bond markets - Currency Board determination of exchange rate

1.4 Theories of exchange rate- mint parity theory-purchasing power parity theory-Balance of payments Approach- monetary approach-asset market (Portfolio Balance) approach- Exchange rate over shooting- Exchange control–objectives and methods of exchange control.

Unit-2: Balance of Payments (18 Hours)

2.1 Balance of payments: concepts-structure-disequilibrium in balance of payments

2.2 Adjustment Mechanisms-devaluation-elasticity and absorption approaches-Marshall-Lerner condition- J- Curve- Monetary approach to balance of payment adjustment

2.3 Foreign Trade Multiplier

2.4 Case Study on 1991 BOP Crisis in India

Unit-3: Open Economy Macro Economic Policy (15 Hours)

3.1. Open Economy Adjustment Policies-Internal and External Balance

3.2. Swan Diagram

3.3. Assignment Problem

3.4. Mundell-Fleming Model-combining monetary and fiscal policies

3.5. Implications of Impossible Trinity in the Indian context.

Unit-4: Resource Movements, Currency Crisis and International Financial Institutions

(26 **Hours)**

4.1 International labour movements and remittances
4.2 ILO- Outsourcing- challenges and Issues
4.3 multi-national organizations (MNCs)
4.4 International capital movements-FDI and portfolio investments – Indian experience
4.5 Currency Crisis- East Asian Financial Crisis-Sub- prime lending crisis-Greece crisis-Euro zone (debt) crisis
4.6 Breton Woods system: International Liquidity and IMF-World bank- international debt problem-external debt of India using international statistics

Reference:

1. Appleyard D. R and Field A J (2014) -International Economics (8th Edition) McGraw Hill, New Delhi
2. Keith Pilbeam (2013) – International Finance, 4th edition, Palgrave
3. Krugman Paul, R and Obstfeld, Maurice and Melitz,Marc.J (2018) - International Finance- Theory and Policy, 11th Ed, Pearson (India) Pvt. Ltd, New Delhi
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5. MacDonald, Ronald (2007): Exchange Rate Economics: Theories and Evidence, Routledge.
6. Salvatore, D (2008) - International Economics, (8th Edition). Wiley India, New Delhi
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Supplementary Readings:

1. Asbjorn Rodseth (2000): Open Economy Macroeconomics, Cambridge University Press.
2. Bhagwati, Jagdish, Arvind Panagariya, and T.N Srinivasan, (2004):The muddles over outsourcing". Journal of economic perspectives, 18(4): 93-104
3. Carbaugh, R. J (2008): International Economics, (11th Edition). Thomson South Western, New Delhi
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7. Gerber, James (2014): International Economics, 6th Ed, Pearson Education Inc.
8. Husted, Steven and Melvin, Michael (2016) : International Economics, 9th Ed, Pearson.
9. Kenen Peter B. (2000): The International Economy, Cambridge University Press, New York.
10. Mundell, R A (1962): The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability, International Monetary Fund Staff Papers 9, pp. 70 - 79.
11. Pugel, Thomas A (2016): International Economics, 16th Ed, McGraw Gill Education.
12. Radlett, S, and Sachs J. (1998): The east Asian Financial Crisis: Diagnosis, Remedies, and Prospects', Brookings Papers on Economic Activity. Vol 28, no.1. pp. 1- 74.
13. Ramsaran Ramesh (1998): An Introduction to International Money and Finance Palgrave
14. Reinert K A (2012): An Introduction to International Economics, Cambridge university Press, New York:
15. Stern, R.M. (2007): Balance of Payments: Theory and Economic Policy, Aldine Transaction

16. Thirlwal, A.P (1999): Balance of Payments Theory, 6th edition, Oxford University Press, New York
17. Ugur Mehmet (2002): (Edited), An Open Economy Macroeconomics Reader, Routledge, London.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**UCEC010402**	**Econometrics—II**	**Core**	**4**	**90**

Course Objectives

The aim of the course is to provide the theoretical background that is useful for research in applied economics. Applications of economic theory need a reasonable understanding of economic relationships and relevant statistical methods. This course provides an introduction to time series methods in econometrics covering aspects of the trend behavior, detrending mechanisms, and their properties, unit root theory, cointegrated system approaches, realized volatility and, model selection. This course accordingly is devoted to equipping the students with advanced theory of econometrics and relevant applications of the methods. It is designed to equip students for analyzing real-life data, related to economics in particular and social science in general. It will acquaint the students with advanced techniques in time-series and panel-data analysis as well as implementation of theory through software applications to gear them towards execution of independent research projects. The emphasis is on learning to use methods and to developing an understanding of how specific empirical questions determine the empirical approach to be used.The aims of this course are threefold: to introduce students to basic modelling techniques in the analysis of cross-section, panel and time series economic data; to provide students with sufficient econometric training to read the applied literature in core journals which use these standard techniques; to prepare students for a dissertation topic that analyses either cross-section, panel or time series data using basic econometric techniques.

At the end of the course, students should be able to perform the following tasks: Interpret the results from regression models involving panel data and instrumental variables; understand how to use instrumental variables to account for endogenous regressors; understand how to estimate binary response models; understand how to set up, estimate and analyze panel data regression models; understand the basic concepts of stationary and nonstationary time series; understand and apply basic linear models for univariate and multivariate time series; understand the concepts of integration and cointegration and how to test for these phenomena in time series.

Unit- 1: Dynamic Econometric Models (15 Hours)

1.1 Estimation of Distributed Lag Models—Koyck Model and its rationalization—Partial Adjustment and Adaptive Expectations Model—Almon Approach

1.2 Estimation of Auto Regressive Models—Instrumental Variables—Method of Instrumental Variables—Problems—SARG Test and Durbin h Statistic—Causality- The Granger Causality

1.3 Test and Sims Test

1.4 Practical sessions of estimation using relevant software

Unit- 2: Stochastic Process and Stationarity (15 Hours)

2.1 Stochastic Process, Ergodicity and Stationary—White Noise Processes

2.2 Non-Stationarity and Random Walk Models—Deterministic and Stochastic Trends / Trend and Difference Stationary Processes-Integrated Stochastic Process

2.3 Non-Stationary Time Series and the problem of Spurious Regression—Solutions

2.4 Transforming the Non-Stationary Time Series—Tests of Stationarity — Correlogram (ACF, PACF), and Unit Root Test—Augmented Dicky-Fuller test—Non-parametric PP test—Structural Change

Unit- 3: ARIMA Modelling and Cointegration (20 Hours)

3.1 The Wold Decomposition Theorem—AR and MA processes—ARMA and ARMAX—ARIMA Modelling

3.2 Linear combination of non-stationary series and Cointegration—Difference between Unit Root and Cointegration Tests– Augmented Engle-Granger test and Johansen –Juselius tests— Granger Representation Theorem

3.3 Cointegration and Error Correction Mechanism— VECM (Vector Error Correction Model) – Granger Causality

3.4 Practical sessions of estimation using relevant software

Unit- 4: Time Series Forecasting and VAR Models (20 Hours)

4.1 Time Series Forecasting— Single Equation and Simultaneous Equation Regression Modelling and the Lucas Critique

4.2 Vector Auto regressions (VAR)— Structural VAR (SVAR) and Bayesian VAR (BVAR)— In sample & out of sample (VAR)—Impulse Response Functions— The issues of optimal lag length

4.3 Volatility Measurement—Measurement of Volatility ARCH and GARCH Models and Estimation—GARCH Forecasting

4.4 Practical sessions of estimation using relevant software

Unit- 5: Panel Data Models (20 Hours)

5.1 Panel Data Models—Nature and Data Sources—Constant Coefficients Model— Error Components Models—Fixed Effect (Lest Squares Dummy Variable LSDV) Model—Fixed Effect (Within Groups WG) Estimator—Random Effects Model (REM)—REM and Hausman Test—Breusch-Pagan Test—Consistency Property of Estimators.

5.2 Dynamic Panel Data Analysis—Panel Data Unit Root—Cointegration Tests and Sims test

5.3 Practical Sessions

Reference:

1. Badi H. Baltagi (2013): Econometric Analysis of Panel Data,5th Ed, John Wiley & Sons.
2. Cheng Hsiao (2013): Analysis of Panel Data,3rd Ed, Cambridge University Press
3. Chris Brooks (2014): Introductory Econometrics for Finance,3rd Ed, Cambridge University Press.
4. Chris Chatfield (2003): The Analysis of Time Series: An Introduction,6th Ed, Chapman and Hall.
5. Douglas C Montgomery, Cherlyl L. Jennings and Murat Kulahci (2015): Introduction to Time Series Analysis and Forecasting,2nd Ed, Wiley. Econometric Modelling by Dr. Rudra P. Pradhan, Department of Management, IIT Kharagpur. For more details on NPTEL visit http://nptel.iitm.ac.in
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7. Franses, P. H. (1998), Time Series Models for Business and Economic Forecasting, Cambridge University press, New York.
8. G. S. Maddala and In-Moo Kim (1999): Unit roots, cointegration, and structural change, Cambridge University Press.
9. Gebhard Kirchgassner, Jurgen Wolters, Uwe Hassler, Introduction to Modern Time Series Analysis, Springer.
10. Gujarati Damodar & Dawn C Porter (2017): Basic Econometrics,5th Ed, McGraw Hill. Gusti Ngurah Agung (2014): Panel Data Analysis Using EViews, Wiley.
11. H. Stock James and Watson Mark (2017): Introduction to Econometrics,3rd Ed, Pearson Education (Indian Edition)
12. James D Hamilton (2012): Time Series Analysis, Princeton University Press.
13. Jeffrey M. Wooldridge (2010): Econometric Analysis of Cross Section and Panel Data, 2nd Ed, The MIT Press.
14. M.HashemPesaran (2015): Time Series and Panel Data Econometrics, Oxford.
15. Marc S. Paolella (2019): Linear Models and Time-Series Analysis, Wiley.

16. Orley Ashenfelter, Phillip B. Levine, David J. Zimmerman, Statistics and Econometrics: Methods and Applications, John Wiley & Sons.
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22. Spyros Makridakis, Steven C. Wheelwright, Rob J. Hyndman (2008): Forecasting: Methods and Applications,3rd Ed, John Wiley & Sons.
23. Svetlozar T. Rachev, Stefan Mittnik, Frank J. Fabozzi, Sergio M. Focardi, Teo Jaic, Financial Econometrics: From Basics to Advanced Modelling Techniques, John Wiley Sons.
24. Terence C. Mills (2015): Time Series Econometrics: A Concise Introduction, Palgrave.
25. Walter Enders (2018): Applied Econometric Time Series, 4th Ed, John Wiley & Sons (Indian Edition)

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**UCEC800401**	**Agricultural Economics**	**ElectiveA-1**	**3**	**90**

Course Objectives

This course is directed toward understanding the performance of the agricultural sector in the process of economic development. In this course, the role of the agricultural sector in aggregated (macro) growth and development theories, including the recent endogenous growth theories is reviewed. The course also deals with the production and diffusion of improved agricultural technology, institutions, infrastructure, markets, food security policy and international markets. This course is intended to provide an overview of the economics of agriculture. It is designed for providing adequate knowledge about the relevant concepts and principles of Agricultural Economics. The students having awareness in agricultural economics can assess the problems of the farm sector and can make contributions to the prosperity of villages. This course can improve the analytical skills of the students. It also tries to address real situations and the concrete problems of agriculture and economic development.

Unit- 1: Nature and scope of Agricultural Economics (10 Hours)

1.1 Nature and Scope of Agricultural Economics

1.2 Role of Agriculture in Economic Development

1.3 Risk and Uncertainty in Agriculture

1.4 Instability of Agriculture.

1.5 Terms of Trade between Agriculture and Industry -Ranis-Fei Model

1.6 Role and Need for Agro-Based Industries

Unit- 2: Models of Agricultural Development (20 Hours)

2.1 Schultz's Transformation of Traditional Agriculture

2.2 K.N. RAJ's theory of agricultural development

2.3 Krishna Bharadwaj's theory of agricultural development

2.4 Mellor's Model of Agricultural Development

2.5 Boserup Model of Agricultural Development.

2.6 Cobweb model of Agricultural supply response

Unit- 3: Indian Agriculture- Facets, Issues and Recent Developments 40 Hours

3.1 Basic statistics on cropping pattern in India

3.2 Food Security and Public Distribution System in India.

3.3 Agricultural Finance - Rural Indebtedness

3.4 Agricultural Marketing -E-NAM-Agricultural Price Policy- MSP-Arguments for and against legalising it- Crisis in Indian agriculture – Contract Farming in India

3.5 WTO and Agreement on Agriculture (AOA)-WTO and India's Agricultural Sector-

3.6 Review of Recent Debates. Recent global trade developments, including changes in tariffs and its implications for Indian agriculture

3.7 Latest Budget and its implications for Indian agriculture

Unit- 4: Agricultural transformation in India (20 Hours)

4.1 Agricultural transformation in India- growth, inclusiveness and sustainability

4.2 Agricultural technologies in India

4.3 National Commission on Farmers report, 2004

4.4 Reforming Indian Agriculture- Two stand points- Ashok Gulati and Mihir Shah Possibilities of rural transformation, diversification, improving nutrition, reducing ecological risks

4.5 Climate change and Indian agriculture

References:

1. Acharya, S.S and Aggrawal, N.L 'Agricultural Prices –Analysis and Policy', Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi
2. Andrew Barkley and Paul W. Barkley (2013): Principles of Agricultural Economics, Routledge.
3. Basu, K. 'Agrarian Structure and Economic Underdevelopment ', Harwood Academic, London, 1980
4. Bilgrami, SAR. 'An Introduction to Agricultural Economics', Himalaya Pub. House, Mumbai
5. David Colman and Trevor Young (997): Principles of Agricultural Economics:Markets and Prices in Less Developed Countries, Cambridge University Press.
6. Gulati, Ashok (2020) *Reforming Indian Agriculture, Economic and Political Weekly,* Vol. 55, Issue No. 11, 14 Mar, 2020
7. Johl, S.S. and Kapur, T.R. 'Fundamentals of Farm Business Management', Kalyani Publishers, Ludhiana
8. John B Penson, Jr, Oral Capps, C Parr Rosson and Richard Woodward (2015): Introduction to Agricultural Economics, 6th Ed, Pearson.

9. JoydebSasmal (2016): Resources, Technology and Sustainability: An Analytical Perspective on Indian Agriculture, Springer.
10. Kohlon, A.S. and Tyagi, D.S. 'Agricultural Price Policy in India', Allied Pub. New Delhi ,1983
11. Lekhi, R.K. and Sing Joginder, 'Agricultural Economics', Kalyani Publishers, Ludhiana
12. Mellor, J.W. 'The Economics of Agricultural Development' Vora and Co, Mumbai, 1966
13. NABARD Research and Policy Series No. 5/2022 *Agricultural technologies in India*
14. Indian Agricultural Research Institute working paper, 2019, Climate change and Indian agriculture.
15. R.N. Sony and Sangeeta Malhotra (2015): Leading issues in Agricultural Economics, 12th Ed, Vishal Publishing Co.
16. Reddy S. Subha et al. 'Agri cultural Economics', Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi
17. Rudra Ashok, 'Indian Agricultural Economics: Myth and Realities' Allied Pub. New Delhi, 1982
18. Sankhayan, P.L. 'Introduction to Economics of Agricultural Production', Prentice Hall of India Pvt. Limited., New Delhi
19. Schultz, T.Z. 'Transforming Traditional Agriculture', Yale University Press, 1964
20. Shah, Mihir, Vijayashankar, Harriss, F (2021) Water and Agricultural Transformation in India, *Economic and Political Weekly, Vol. 56, Issue No. 30, 24 Jul, 2021*
21. Drummond, H. E and Goodwin, J W (2004), Agricultural Economics, Pearson Delhi

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**UCEC800402**	**Industrial Economics**	**ElectiveA-3**	**3**	**90**

Course Objectives

In the globalized era, industrial development is a sine qua-non for rapid economic development. Keeping this in view, the objectives are to provide thorough knowledge about the economics of industry and issues related to market structure, firms' motivations and conducts, productivity, and efficiency in a cogent and analytical manner. Its aim is to familiarize students with a broad range of the methods and models applied by economists in the analysis of firms and industries. It also provides a detailed understanding of policy debates involved in industrial development in India. By learning this course, the students can obtain a glimpse of the recent developments in this field and enhance their analytical skill. This course offers a rich and diverse platform to explore the core of the economic theory, using real-world examples and encouraging unique and innovative problem-solving techniques. Upon completion of the course students should: understand basic models of the thebehavior of firms and industrial organization and how they can be applied to policy issues; be able to manipulate these models and be able to solve analytically problems relating to industrial economics; be familiar with the history of competition policy and be familiar with the functioning of different experimental market institutions and the key results of these experiments

Unit- 1: Industrial Economics and Theory of Firm (15 Hours)

1.1 Meaning and scope of industrial economics.

1.2 Industrial organisation: Different forms of Industrial Organization, Proprietorship, partnership, Joint Stock Companies, Holding Companies, and Industrial Co-Operative Organizations – Corporation – Public Sector Companies: departmental, govt. companies, joint-sector, internal organisation: unitary (U)form and multi-divisional (M)form-Choice of Organizational form.

1.3 Size of the firm: Optimum firm, Representative firm, Equilibrium firm, factors determining optimum size.

1.4 Theories of the growth of the firm: Downie's theory Penrose's theory and Morris's theory of the growth of the firm.

Unit- 2: Market Structure & Industrial Location (20 Hours)

2.1 Market Structure: Meaning of the market structure, Sellers concentration and its measurement: the concentration ratio, the Lorenz curve, product differentiations – its sources and its implications, entry conditions, economies of scale, market structure & innovation – the process of innovation – concepts & relationships – its measurement.

2.2 Concept of Industrial Location, Determinants of Location, Dynamics of industrial Location – Theories of Industrial Location (Weber's Theory, August Losch and Sargent Florence's Theory) – Industrial Location Policy.

2.3 Theories of Industrialisation-Hoffman, Chenery and Gershenkron.

Unit- 3: Market Conduct (20 Hours)

3.1 The structural conduct performance approach relationships between structure, conduct & performance, neoclassical developments of the SCP approach.

3.2 Pricing Decisions: Pricing goals: maximisation of profit, sales, rate of return, sales and market shares—Pricing policies: marginal cost and full-cost pricing-Pricing procedures: Penetrating, skimming, price discriminations and transfer pricing.

3.3 Pricing in practice – cost plus pricing, incremental cost pricing, the target rate of return pricing, acceptance pricing, the going rate pricing, pricing in public enterprises.

3.4 Diversification and Vertical Integration, Merger – Definitions, Types & Motives, Implication for Public Policies.

Unit- 4: Market Performance & Project Appraisal (20 Hours)

4.1 Industrial productivity – its importance, distinction between production and productivity, factors influencing industrial productivity.

4.2 Industrial efficiency – meaning of the concept, the determinants of economic efficiency, measurement of the efficiency levels- efficiency conditions in the theory of production: constrained output maximisation, constrained cost minimisation, profit and revenue maximisation- efficiency and decision-making process.

4.3 Investment decisions: – profile of the project, methods of project evaluation; - the payback method, the average of accounting rate of return method, the net present value method, the internal rate of return method, ranking of projects; NPV VS IRR. Risk & uncertainties in project appraisal

Unit- 5: India's Industrial Growth: (Self-study) (15 Hours)

5.1 Pattern of industrialization since independence-Changing structure of industries.

5.2 Evolution of industrial policy - Liberalization of Industrial sector in India- Industrial Policy-1991, Trends in Industrial Growth after NEP - Public sector industries in India-policy on privatization -competition policy.

5.3 Industrial sickness- Exit policy- Role of BIFR – Role of MNC s in India.

5.4 Issues in industrial development in the context of globalization.

5.5 Industrial Finance- Nature and types of Industrial Finance - Sources of Institutional Finance – Specialized institutions – IDBI, IFCI, SFCs, SIDC etc.- Commercial banks - Capital structure in India.

Essential Reading:

1) Divine, P.J. and R.M. Jones et. al. (1976), An Introduction to Industrial Economics, George Allen and Unwin Ltd., London
2) Hay, D A and Morris D J (1979), Industrial Economics: Theory and Evidence, Oxford University Press, New Delhi.
3) Paul R Ferguson & Glenys J Ferguson, Industrial Economics: Issues and Perspectives 2nd Ed, New York University Press, Washington square, New York 1994.

Supplementary Reading:

1. Ahluvalia, I.J. 'Industrial Growth in India', Oxford University Press, New Delhi
2. Balakrishnan, P and Pushpangadan, K. 'Total Factor Productivity Growth in Indian Manufacturing-A Fresh Out Look', Working Paper No.259,CDS, Thiruvananthapuram, 1994
3. Barathwal, R.R. 'Industrial Economics: An Introductory Text Book', Wiley Eastern Ltd. New Delhi, 2016.
4. Brahmananda, P.R. and Panchamukhi, V.R. (Eds), 'The Development Process of the Indian Economy', Himalaya Publishing House, Mumbai, 1987
5. Cherunilam, Francis, 'Industrial Economics: Indian Perspective', (3rd Edition), Himalaya Publishing House, Mumbai, 1994
6. Deepak Nayyar, Industrial Growth and Stagnation. Oxford University Press, 1994 7.Deepak Nayyar, Trade and Industrialisation, Oxford University Press, New Delhi, 1977
8. Desai, B (1999), Industrial economy of India, Himalaya Publishing House, Mumbai.
9. Isher Judge Alhuwalia, Industrial Growth in India, Oxford University Press, New Delhi,1985
10. Kuchhal, S.C. 'Industrial Economy of India', (5th Edition), Chaitanya Publishing House, Allahabad, 1980
11. Mishra and Puri (latest edition): Indian economy, Himalaya publisher, Mumbai.
12. Renjana Seth, Industrial Economics, Ane Books Pvt. Ltd, New Delhi ,2010
13. Rogor Clarke, 'Industrial Economics', Basil Blackwell, New York
14. Shy, Oz., Industrial Organization: Theory and Applications, MIT Press, 1995

15. Singh, A and A.N. Sandhu (1988), Industrial Economics, Himalaya Publishing House, Mumbai.
16. Smith, D.M. 'Industrial Location-An Economic and Geographic Analysis', John Wiley, New York, 1971
17. Stephen Martin, Advanced Industrial Economics, Basic Blackwell, 1993.
18. Tirole, J., The Theory of Industrial Organization, MIT Press, 1988

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**UCEC800403**	**Labour Economics**	**ElectiveA-2**	**3**	**90**

Course Objectives

Labor economists study the economic forces that determine wages and employment. The major objective of this course is to impart knowledge about the dynamics of labour market. This course emphasizes the power of microeconomic reasoning to answer important economic questions. Topics covered include: approaches to labor supply and family coordination of time allocation and commodity demand, incorporating gender and generational bargaining; human capital, job tenure, union status, and discrimination as wage determinants; wage inequality as affected by skill supplies, minimum wages, unions, immigration, and interpretation of compensating variations in wages as evidence on employer demands, job and location amenities. Issues pertaining to the labour market, wage theories, employment policies, trade unions and collective bargaining in the globalized economy have become vitally important for developing countries. In a country like India where the bulk of the labour force is in the unorganized sector and the organized sector is witnessing jobless" growth, the importance of issues such as employment and unemployment as well as livelihood and social security for the growing millions continues to assume significance. This course exposes students to theoretical as well as empirical issues relating to the labour market.

Unit- 1: Labour Markets: Supply of Labour **(20 Hours**

1.1 Theory of Individual Labor Supply: The Work–Leisure Decision: Basic Model-Indifference Curves-- Opportunity Cost of Leisure --Budget Constraint--Utility Maximization

1.2 Wage Rate Changes: Income and Substitution Effects--Rationale for the Backward-Bending Supply Curve—Wage Elasticity of Labour Supply— Labor Supply of Women—

1.3 Policy Application: Cash Grants and Labor Supply-The Impact of Welfare on Labor Supply--The Earned Income Tax Credit.

1.4 Participation Rates and Hours of Work: Becker's Model: The Allocation of Time--Commodity Characteristics--Household Choices--Becker Income Effect--Becker Substitution Effect--Participation Rates--Cyclic Changes in Participation Rates--Added-Worker EffectDiscouraged-Worker Effect-- Life Cycle Aspects of Labor Supply -The Choice of Retirement Age--Policy Application: Child Care and Labor Supply.

Unit- 2: Labour Markets: Demand for Labour: (20 Hours)

2.1 The Production Function--The Employment Decision in the Short Run-- The Short-Run Labor Demand Curve for a Firm and Industry

2.2 The Employment Decision in the Long Run: Iso-quant and Iso-cost Approach: The LongRun Demand Curve for Labor--Substitution and Scale Effects.

2.3 Labor Demand Elasticity--Elasticity of Substitution---- The Hicks–Marshall Laws of Derived Demand---The Cross-Wage Elasticity of Demand.

2.4 Labor Market Equilibrium: Equilibrium in a Single Competitive Labor Market-Competitive Equilibrium across Labor Markets. Policy Application: Payroll Taxes and Subsidies--Deadweight Loss--Employment Subsidies-- Effects of Minimum Wage Laws --The Labor Market Impact of Immigration. The Cobweb Model.

Unit- 3: Wage Determination and the Allocation of Labor (10 Hours)

3.1 Theory of A Perfectly Competitive Labor Market--Wage and Employment Determination: Monopoly in The Product Market---Monopsony-Wage Determination within the Firm.

3.2 The Employment Contract--Motivating Workers--Motivating the Individual in a Group-Productivity and the Basis of Yearly Pay--Productivity and the Level of Pay --Productivity and the Sequencing of Pay.

3.3 Incentive Pay: Piece Rates and Time Rates—Tournament— Economics of Fringe Benefits--Theory of Optimal Fringe Benefits---Profit Sharing-Equity Compensation---Tournament Pay-Efficiency Wage Payments- Hedonic Wage Theory and Employee Benefits (10 Hours)

Unit- 4: Labour Union and Wage Bargaining (25 Hours)

4.1 Determinants of Union Membership--The Demand for and Supply of Union Jobs-- The Structural Change Hypothesis---Managerial Opposition Hypothesis--The Substitution Hypothesis--Monopoly Union Model--Efficient Contracts Model.

4.2 Strikes and The Bargaining Process--The Activities and Tools of Collective Bargaining-Bargaining and the Threat of Strikes-- Accident Model--Asymmetric Information Models— Union Wage Effects--Threat and Spill-over Effects--Unions and Wage Dispersion--Unions and Fringe Benefits--Nonwage Effects of Unions.

4.3 The Economic Impact of Unions: The Union Wage Advantage--Spill over Effect--Threat Effect-- Other Effects --The Effects of Unions on Employment, Productivity and Profits

4.4 State and social security of labour - Concept of social security and its evolution; Social assistance and social insurance; Labour market reforms - Exit policy, need for safety nets, measures imparting flexibility in labour markets; National Commission on Labour; Globalization and labour markets.

Unit- 5 Unemployment (15 Hours)

5.1 Unemployment Types— A Stock-Flow Model of the Labor Market.

5.2 The Theory of Job Search--Effects of Unemployment Insurance Benefits

5.3 Structural Unemployment--Downward Wage Rigidity and Union, Specific Human Capital, Asymmetric Information, Worker Status and Social Norms-- Implicit Contracts---Insider–Outsider Theories- Efficiency Wages and Unemployment

Reference:

1. Campbell R. McConnell, Stanley L. Brue and David A. Macpherson (2017): Contemporary Labor Economics, 11th Edition, McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121.
2. George J. Borjas (2016): Labor Economics 7th Edition, McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121.
3. J.E. King (2000): Labour Economics.2nd Ed, Macmillan Education.
4. Pierre Cahuc, Stéphane Carcillo, André Zylberberg (2014): Labor Economics,2nd Ed, MIT Press.
5. Ronald G. Ehrenberg and Robert S. Smith (2012): Modern Labor Economics: Theory and Public Policy, 11th Edition, Prentice Hall.
6. Stephen Smith (2003): Labour Economics, 2nd Ed, Routledge.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC810401**	**Mathematical Economics**	**ElectiveB-1**	**3**	**90**

Course Objectives

The main objective of the course is to train the students to use the techniques of mathematical and, which are commonly applied to understand and analyze economic problems. The emphasis of the course is on understanding economic concepts with the help of mathematical methods rather than learning mathematics itself. Hence in this course, a student will be initiated into various economic concepts, which are amenable to mathematical treatment. The objectives of this course are: (1) to help the students to study the nature and extent of relationships among economic variables by using mathematical tools, and (2) to apply these tools in solving the economic and business problems.

Unit- 1: The theory of consumer behaviour (20 Hours)

1.1 Utility function-Indifference Curves-commodity substitution-maximisation of utility.

1.2 Demand function-compensated demand function-demand curves- price, income and cross elasticities of demand-the Slutsky equation: substitution and income effects.

1.3 Linear expenditure system-separable and additive utility functions-homogeneous and homothetic utility functions- indirect utility function and duality in consumption.

1.4 Theory of revealed preference-strong axiom – substitution effect-composite commodities consumer surplus.

Unit- 2: The theory of the firm (20 Hours)

2.1 Production function-product curve- Isoquants -elasticity of substitution-optimizing behaviour-constrained output maximisation-constrained cost minimisation-profit maximisation

2.2 Cost function-short run cost function-long run cost function-joint products-constrained revenue maximisation-profit maximisation-

2.3 Homogeneous Function –Definition and properties – Properties of Linearly Homogeneous Function – Cobb – Doubles Production Function – Expansion Path for Cobb-Douglas Function. Elasticity of Substitution -elasticity of linearly Homogenous Functions – C.E.S. and VES production functions—Translog forms-Euler's Theorem—-Derivation of cost function from production function-Modern Approach to the Theory of Cost, Shephard's Lemma Adding Up Theorem- Production analysis of multi-product firm.

Unit- 3: Market Equilibrium (30 Hours)

3.1 Demand function-market demand -producer demand-Supply functions: very short runshort run and long run.

3.2 Commodity-market equilibrium: short run equilibrium-long run equilibrium-factor market equilibrium: demand functions, supply functions and market equilibrium- the existence and uniqueness of equilibrium- the stability of equilibrium: static and dynamic-dynamic equilibrium with lagged adjustment: cob-web theorem

3.3 Monopoly-AR and MR- Profit maximisation: cost function, profit maximisation; production function- price discrimination: market and perfect discrimination- the multi-plant monopolist-the multi-product monopolist-revenue maximizing monopolist-monopsony

3.4 Duopoly and oligopoly: homogeneous product: the Cournot and the Stackelberg solutionsduopoly and oligopoly: differentiated products-market -shares solution and kinked demand curve solutions.

3.5 Theory of games: Two-person zero-sum game, pure and mixed strategy, game with and without saddle point, Nash equilibrium- Game theory and duopoly problems-solution to games with mixed strategy: the algebraic method and graphical solution to obtain value of the game.

Unit- 4: Multi-market equilibrium and Welfare economics (20 Hours)

4.1 Equilibrium of the i^{th} consumer, two commodity exchange using Edgeworth box, production and exchange: equilibrium of i^{th} consumer and i^{th} firm.

4.2 Walras law and multi-market equilibrium

4.3 Pareto optimality: pareto optimality for consumption and production-the efficiency of perfect competition- the efficiency of imperfect competition in consumption, commodity and markets.

4.4 Social welfare functions- the Arrow impossibility theorem-the theory of second best.

Essential Reading

1. Henderson, J. M. and R.E. Quandt (1980), Microeconomic Theory: A Mathematical Approach, McGraw Hill, New Delhi.
2. Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics, Mc Graw Hill, New York.
3. R.G.D. Allen, Mathematical Economics, MacMillan, London

4. Lancaster, V. (1965): Mathematical Economics, Rand McNally College Pub
5. Silberberg, E. (1990): The Structure of Economics – A Mathematical Analysis, McGraw Hill.

Supplementary Reading

6. Brajesh Kumar (2010): Modern Microeconomics, Global Professional Publishing.
7. Thomas J. Nechyba (2017): Microeconomics: An Intuitive Approach with Calculus
8. Hugh Gravelle and Ray Rees (2010): Microeconomics, 4th Edition, Pearson Education Limited 2nd Edition, Cengage Learning.
9. Dowling.T.E., Introduction to Mathematical Economics, McGraw Hill.
10. Koutsoyiannis, A. (2011), Modern Microeconomics, Macmillan Press, London.
11. Hal R. Varian (2014): Intermediate Microeconomics with Calculus,1st Edition, W. W. Norton & Company
12. Jeffrey M. Perloff (2014): Microeconomics with Calculus, 3rd Edition, Pearson Education Limited.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC810402**	**Operations Research**	**ElectiveB-2**	**3**	**90**

Course Objectives

Operations research helps in solving problems in different environments that need decisions. The module covers topics that include: linear programming, Transportation, Assignment, and CPM/ MSPT techniques. Analytic techniques and computer packages will be used to solve problems facing business managers in decision environments. Course Objectives: This module aims to introduce students to use quantitative methods and techniques for effective decisions–making; model formulation and applications that are used in solving business decision problems.

Module-1: Introduction to Linear Programming (20 Hours)

1.1 The Linear Programming Model --Assumptions of Linear Programming --Solving Linear Programming Problems: The Graphical Method—extreme one-point solution method—minimisation, maximisation and mixed constraints.

1.2 The Simplex Method --The Essence of the Simplex Method --- Simplex Algorithm – maximisation and minimization cases—Two Phase Method—Big-M Method.

1.3 Duality Theory: The Essence of Duality Theory - Primal–Dual Relationships -- Optimal Dual Solution----Economic Interpretation of Duality ---Economic Interpretation of Dual Variables -Economic Interpretation of Dual Constraints.

Module-2: Transportation and Assignment Problem (15 Hours)

2.1. Transportation Model: The Transportation Algorithm –types of transportation problem—balanced and unbalanced

2.2. Methods to solve: Initial Basic Solution and U-V Method.

2.3. The Assignment Model: Zero-one Programming—Types of assignment problem—Hungerian Method—Branch and Bound Technique.

Module-3: Inventory Theory (15 Hours)

3.1 Components of Inventory Models --Deterministic Continuous-Review Models ---A Deterministic Periodic-Review Model

3.2 Deterministic Multiechelon Inventory Models for Supply--Chain Management --A Stochastic Continuous-Review Model

3.3 A Stochastic Single-Period Model for Perishable Products --Revenue Management

Module-4: Decision Theory (10 Hours)

4.1 Decision under certainty, Decision under risk

4.2 Decision under uncertainty: Laplace criterion, Maximin criterion, Minimax criterion, savage Minimax regret criterion, Hurwitz criterion

4.3 Decision tree.

Module-5: Queueing Theory (15 Hours)

5.1. Basic Structure of Queueing Models--Examples of Real Queueing Systems

5.2. The Role of the Exponential Distribution---The Birth-and-Death Process

5.3. Queueing Models Based on the Birth-and-Death Process

5.4. Queueing Models Involving Nonexponential Distributions --Priority-Discipline Queueing Models --The Application of Queueing Theory

Module-6: Project Management **(15 Hours)**

6.1 Introduction to PERT and CPM, critical Path calculation, float calculation and its importance. Cost reduction by Crashing of activity.

Reference:

1) F. S. Hiller and G. J. Liberman (2016). *Introduction to Operations Research*, Mc Graw Hill. 2) H. A. Taha (2017): *Operations Research*: *An Introduction*, Pearson, 2010.

3) J. K. Sharma (2016): *Operations Research: Theory and Applications*, 6th Ed, Trinity Press,

4) R. Pannerselvam (2014): Operations Research, PHI, New Delhi.

5). Stepheng. Powell and Kenneth. Baker (2010): Management Science, 3rd Ed, Wiley.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC810403**	**Multivariate Data Analysis for Social Sciences**	**ElectiveB-3**	**3**	**90**

Course Objectives

This course covers the statistical foundations of data analysis in social sciences. Large and complex data sets are becoming prevalent in the social sciences and statistical methods are crucial for the analysis and interpretation of such data. This course aims to capture new developments in statistical methodology with particular relevance to applications in economics. It seeks to promote the appropriate use of statistical and econometric methods in this applied economics. The specific objective of this course is as follows: • To provide an understanding of the basic concepts and methods of Statistics, for application in data analysis. • To get statistical skill required for the analysis of socio-economic data. • Emphasis is on application (including analysis and interpretation) rather than theoretical derivations. The idea is to impart training on how to make an argument with data.

1. Principal Components and Factor Analysis
2. Multivariate analysis of variance and covariance
3. Multiple discriminant analysis and logistic regression
4. Canonical correlation analysis

5. Cluster Analysis
6. Multidimensional Scaling
7. Correspondence Analysis
8. Structural Equation Modelling

Essential Readings:

1. Joseph F. Hair, William C. Black, Barry J Babin, Rolph E Anderson (2017): Multivariate Data Analysis,7th Edition, Person.
2. Craig A. Mertler and Rachel Vannatta Reinhart (2017): Advanced and Multivariate Statistical Methods: Practical Application and Interpretation,6th Edition, Routledge

Supplementary Reading:

1. Brian S. Everitt (2010): Multivariable Modelling and Multivariate Analysis, CRC-Taylor and Francis
2. Daniel J. Denis (2019): SPSS Data Analysis for Univariate, Bivariate, and Multivariate Statistics, John Wiley & Sons, Inc.
3. Darren George and Paul Mallery (2016): IBM SPSS Statistics 23 Step by Step, 14th Ed, Routledge.
4. David J. Bartholomew, Fiona Steele, Irini Moustaki, Jane I. Galbraith (2008): Analysis of Multivariate Social Science Data,2nd Ed. CRC- Taylor and Francis
5. Everitt, Brian S and Dunn, Graham. (2001). Applied Multivariate Data Analysis. 2nd Ed. Arnold.
6. James P. Stevens (2009): Applied Multivariate Statistics for the Social Sciences,5th Ed, Routledge.
7. Johnson RA and DW Wichern., Applied Multivariate Statistical Analysis, Upper Saddle River, NJ, Prentice Hall
8. K.V.S. Sarma and R. Vishnu Vardhan (2019): Multivariate Statistics Made Simple: A Practical Approach, CRC Press. Taylor & Francis Group
9. Neil H. Spencer (2014): Essentials of Multivariate Data Analysis, CRC Press Taylor & Francis Group
10. Robert Ho (2014): Handbook of Univariate and Multivariate Data Analysis with IBM SPSS, CRC Press.Taylor& Francis Group

11. Robert Ho (2014): Univariate and Multivariate Data Analysis with IBM SPSS,2nd Ed, Taylor and Francis Group.
12. T. W. Anderson (2003): An Introduction to Multivariate Statistical Analysis,3rd Ed, John Wiley & Sons.
13. Wolfgang Karl Härdle Léopold Simar (2012): Applied Multivariate Statistical Analysis. 3rd Edition, Springer.
14. S. P. Mukherjee • Bikas K. Sinha, Asis Kumar Chattopadhyay (2018): Statistical Methods in Social Science Research, Springer.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC820401**	**Financial Economics**	**ElectiveC-1**	**3**	**90**

Course Objectives

Financial economics is a very active field of applied economics research. The purpose of this course is to provide the foundations for the study of modern financial economics. Concentrating on individual's consumption and portfolio decisions under uncertainty, we will explore the implications of these decisions on the valuation of securities. The focus will be on single period models, although some dynamics, discrete-time models will be considered. The course will include Topics: present value and discounting, interest rates and yield to maturity, various financial instruments including financial futures, the efficient market theory, basic asset pricing theory, the capital asset pricing model, and models for pricing options use of derivatives for hedging. The course on Financial Economics is designed with the following objectives in mind. Firstly, to familiarize students with the financial system and its components viz. financial instruments, financial institutions, financial markets, and financial regulations. Secondly, to familiarize them with contemporary theories about the workings of different financial markets. Thirdly, to provide conceptual insights into the valuation of securities. • To provide insight about the relationship of the risk and return and how risk should be measured to bring about a return according to the expectations of the investors; and finally, to familiarize the students with the fundamental and technical analysis of the diverse investment avenues.

Unit-1: Time and Resource Allocation (20 Hours)

1.1 Time Value of Money: Why the time value of Money; Simple Interest and Compounded Interest; Nominal and Real Rates of Interest; Future Value.

1.2 Compounding—present value and discounting—discounted cash flow decision rules— Annuities—Loan Amortization—exchange rate and time value of money—inflation and DCF analysis— Perpetuity and Growing Perpetuity -taxes and investment decision.

1.3 Household saving and investment decisions--- A life cycle model of saving—social security—deferring taxes through voluntary retirement plans.

1.4 Analysis of investment project—Project analysis- NPV – cost of capital—project with different lives—ranking mutually exclusive project and inflation and capital budgeting

Unit-2: Valuation Models: Valuation of Securities (10 Hours)

2.1 Asset's value and its price---- law of one price and arbitrage---arbitrage and prices of financial assets—interest rates and law of one price

2.2 Valuation models: valuing real estate and shares of stock

2.3 Valuation of Bonds and stocks, Pure Discount Bonds, Coupon Paying Bonds, Bond Yield, Yield to Maturity

2.4 Valuation of Preference and Common stocks: Discounted-Dividend Model

Unit-3: Security analysis (15 Hours)

3.1. Economic/Market Analysis

3.2. Industry Analysis

3.3. Company Analysis

3.4. Technical Analysis.

Unit-4: Risk Management and Portfolio Theory (20 Hours)

4.1 Risk and Return Concepts: Concept of Risk, Types of Risk- Systematic risk, Unsystematic risk, Risk and Return: Concepts; Relationship Between Risk and Return; Calculation of Risk and returns: Variance and Standard Deviation- Trade-off between risk and return (the Markowitz model) -Risk Diversification

4.2 Portfolio Risk and Return: Expected returns of a portfolio, Calculation of Portfolio Risk and Return, Portfolio with 2 assets, Portfolio with more than 2 assets.

4.3 Risk management process—risk transfer: hedging, insuring and diversifying

4.4 Portfolio theory—process of personal portfolio selection—trade-off between expected return and risk—efficient diversification with many risk assets

4.5 Modern Portfolio Theory: Markowitz Model -Portfolio Selection, Opportunity set, Efficient Frontier. Beta Measurement and Sharpe Single Index Model

4.6 Capital Asset pricing model: Basic Assumptions, CAPM Equation, Security Market line, Extension of Capital Asset pricing Model - Capital market line, SML VS CML

4.7 Arbitrage Pricing Theory: Arbitrage, Equation, Assumption, Equilibrium. of Treynor, Sharpe and Lintner

4.8 Efficiency Management Hypothesis (EMH) – The weak, semi-strong and the strong form of EMH.

Unit-5: Derivative Markets (25 Hours)

5.1 Markets for derivatives, Types, uses and pricing of derivatives; Future Contracts and Forward Contracts; Future and forward Markets, Origin of Future Trading; Future Prices Relation between Spot and Future Prices, Commodity Future; Financial Future; Hedging in Futures.

5.2 Options. The Put Option and Call Option; Option Pricing, the Pay-Offs. From Buying and Selling Options. Option Pricing Models: The Black-Scholes formula -The Binomial Model.

5.3 Swaps Currency and Interest Rate Swaps; Equity and Commodity Swaps.

Reference:

1. Zvi Bodie, Alex Kane and Alan J. Marcus: Financial Economics, 2nd Ed. McGrawHill
2. Chris Jones (2008): Financial Economics, Routledge.
3. Stephen F. LeRoy and Jan Werner (2003): Principles of Financial Economics
4. Chandra, Prasanna (2016), Investment Analysis and Portfolio Management, Tata McGraw Hills.
5. Charles P. Jones (2013): Investments: Analysis and Management, 12th Ed, Wiley.
6. David G. Luenberger (1997): Investment Science, Oxford University Press, USA.
7. Elton, E.J and et.al, (2014): Modern Portfolio Theory & Investment Analysis, 9th Ed John Wiley & Sons.
8. Frank K. Reilly and Keith C. Brown (2012): Investment Analysis and Portfolio Management,10th Ed, South-Wester, Cengage Learning.
9. John C. Hull, (2005), Options Futures and other Derivatives, Prentice Hall, New Delhi
10. Zvi Bodie, Alex Kane and Alan J. Marcus (2011), Investments, 9th Ed, ISBN: 0-07-338237-X, McGraw-Hill
11. Bradford D. Jordan, Thomas W. Miller Jr. and Steven D. Dolvin (2012): Fundamentals of Investments: Valuation and Management, 7th Ed, McGraw Hill publication.
12. David G.Luenberg (2000): Investment Science, OUP.
13. Haugen Robert (2017): Modern Investment Theory, Pearson Education

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC820402**	**Game Theory and Its Economic Applications**	**Elective-C**-2	**3**	**90**

Course Objectives

The study of economics is an attempt to understand the ways in which people behave and make decisions, as individuals and in group settings. The goal is to apply our understanding to the analysis of questions pertinent to the functioning of societies and their institutions. Social scientists have developed frameworks and rigorous models that abstract from reality with the intent of focusing attention on the crux of the issues at hand. We use these models not only to shed light on what we observe but also to help us predict what we cannot yet see.This programme covers the main ideas of the field and shows how they have been applied to many situations drawn from economics. Game theory provides a framework based on the construction of rigorous models that describe situations of conflict and cooperation between rational decision makers. Following the tradition of mainstream decision theory and economics, rational behaviour is defined as choosing actions that maximize one's payoff subject to the constraints that one faces. This is clearly a caricature of reality, but it is a useful benchmark that in many cases works surprisingly well.Topics include strategic games, extensive games, repeated games, Non-cooperative static games, dynamic games with perfect and imperfect information.Game theory has been successfully applied to many relevant situations, such as business competition, the functioning of markets, political campaigning, jury voting, auctions and procurement contracts, and union negotiations, to name just a few. This module is designed to equip students with a solid understanding of modern game theory. The aim of the module is to help students to conduct research in game theory and/or apply game theory in economic models.

Unit- 1: Introduction to Game Theory (10 Hours)

1.1.Strategic behaviour

1.2.Belief, strategy and expected payoff

1.3.Normal and extensive forms

1.4.Prisoner's dilemma

1.5.Nash equilibrium

Unit- 2: Non-cooperative Static Games: Complete information (25 Hours)

2.1 One-time games- Dominant strategies and equilibrium

2.2 Three player games—Non-dominant strategies—Multiple Nash equilibrium—Focal point equilibrium

2.3 Evolutionary game theory-Infinitely and Finitely repeated games—Collusion—Trigger strategies—Cheating and threats—End of game problem—Folk theorem—Certain and uncertain end—Common enforcement mechanisms—N-person games—Simplifying assumptions—Proportional games

2.4 Mixing pure strategies—Zero sum games—Minimax theorem—Mixed strategies—Optimal mixing rules—Randomising pure strategies—Bluffing

2.5 Static games with continuous strategies—Reaction functions—Shifting reaction functions

Unit- 3: Dynamic Games with Perfect Information (20 Hours)

3.1. Game trees—Sub game perfect equilibrium—Backward induction—First mover advantage—Credible threats—Dynamic games with continuous strategies

3.2. Pure strategies with uncertain payoffs—Static and dynamic games with uncertain payoffs—Harsanyi transformation

3.3. Static Bayesian game—Bayesian Nash equilibrium

3.4. Risk and uncertainty—Attitudes towards risk—Risk averse behaviour of consumer and firm

Unit- 4: Dynamic Games with Imperfect Information (10 Hours)

4.1. Dynamic games with imperfect information—Information sets—Bayesian updating 4.2. Separating strategy—Pooling—Strategy screening

Unit- 5: Application of Games (25 Hours)

5.1 Mechanism design—Game design and revelation principle

5.2 Social mechanism design—Liability—Paradox of benevolent authority

5.3 Voting games—Strategic voting—Voting problems and criteria—Alternative voting schemes

5.4 Auctions—Auction types—Auctions with complete and perfect information, independent private values—Common value auctions and winner's curse—Efficiency of auctions—Design of Optimal Auctions—Revenue equivalence theorem

Essential Reading:

1) Martin J. Osborne (2012): An Introduction to Game Theory, Oxford University Press
2) Thomas J Webster (2009): Introduction to Game Theory in Business and Economics, Segment Books
3) H. Scott Bierman, Luis Fernandez (2011): Game Theory with Economic Applications, Addison Wesley.
4) Robert Gibbons (2005): Game Theory for Applied Economists, Princeton University Press.

Supplementary Reading:

1. Å. N. Barron (2008): Game Theory: An Introduction, John Wiley & Sons, Inc., Publication
2. Akio Matsumoto • Ferenc Szidarovszky (2016) : Game Theory and Its Applications, Springer.
3. Andrew M. Colman (2003): Game Theory and its Applications in the Social and Biological Science, 2nd Ed, Routledge.
4. Aviad Heifetz (2012): Game Theory: Interactive Strategies in Economics and Management, Cambridge University Press.
5. Avinash Dixit and Susan Skeath (2004): Games of Strategy, W. W. Norton & Company.
6. Benoit Chevalier-Roignant and Lenos Trigeorgis (2016): Competitive Strategy: Options and Games, The MIT Press.
7. Charles A Holt (2007): Markets, Games and Strategic Behaviour, Pearson.
8. Drew Fudenberg and Jean Tirole: Game Theory, The MIT Press.
9. Eric Rasmussen (2010): Games and Information: An Introduction to Game Theory,4th Ed. Wiley-Blackwell
10. Fiona Carmichael (2005): A Guide to Game Theory, PHI.
11. Game Theory and Economics by Dr. Debarshi Das, Department of Humanities and Social Sciences, IIT Guwahati. For more details on NPTEL visit http://nptel.iitm.ac.in.
12. 12.Graham Romp (1997): Game Theory: Introduction and Applications, OUP.
13. Joel Watson (2013): Strategy: An Introduction to Game Theory,3rd Ed. WW Norton & Company.
14. Robert Gibbons (2000): A Primer in Game Theory, PHI.
15. Roger A. McCain (2010): Game Theory: A Non-Technical Introduction to the Analysis of Strategy, World Scientific Publishing Co Pte Ltd.
16. Saul Stahl (2016): A Gentle Introduction to Game Theory, AMS.
17. Steven Tadelis (2013): Game Theory: An Introduction, Princeton University Press.

Semester	Course code	Course Title	Type of course	Credit	Teaching Hours
IV	**EC820403**	**Economics of Business Strategy**	**ElectiveC-3**	**3**	**90**

Course Objectives

This course in applied microeconomics is concerned with the behavior and performance of firms in markets, with a focus on strategic interactions. It goes beyond the perfectly competitive model by considering the nature of firms, market power and how it affects their behavior and subsequently consumers? The broad goal of Business Strategy is to cut across the whole spectrum of business and management. The purpose of the course is to help support the creation of a holistic understanding of the firm - about the industry and the competitive environment in which it operates. Furthermore, the purpose is also to enable an understanding of the long-term direction and strategy of a firm, its resources and competitive capabilities as well as its prospects for success. The learning objectives of the Business Strategy course are:

**To develop your capacity to think strategically about a firm as a whole; about its present business position, its long-term direction, its resources and competitive capabilities, the nature of its strategy and its opportunities for gaining sustainable competitive advantage.*

**To develop your skills in conducting strategic analysis in a variety of industries and competitive situations and, especially, to provide you with a strong understanding of the competitive challenges of a global market.*

**To get you acquainted with managerial tasks associated with implementing and executing firm strategies, to drill you in the range of actions managers can take to promote competent strategy execution*

Unit- 1: Approaches to Competitive Market Analysis (10 Hours)

1.1 The Structure Conduct Performance Paradigm of Joe S. Bain
1.2 Alternative Approaches to Competitive Analysis--Austrian and Schumpeterian views—Baumol's Contestable markets
1.3 Managerial approach
1.4 Transaction cost analysis
1.5 Porter's "Five Forces" model of competition.
1.6 Organization Ecology

Unit- 2: Analysis of Firm Strategy-I (25 Hours)

2.1 Product Differentiation: Forms of product differentiation--Horizontal and vertical product differentiation- Theoretical analysis of product differentiations—The Bertrand model with product differentiation—product differentiation with asymmetric information-- The Lemons Model --Adverse Selection- Lancaster's product characteristics model --- Location Models: Hotelling's location model -- Salop's location model

2.2 Pricing strategy: Cost-oriented methods: Mark-up, cost-plus, Break-even, target return pricing. --Market-oriented Methods: Going-rate pricing, Premium pricing, Discount pricing, Sealed-bid Pricing--Peak-Load Pricing-Multi-Product Pricing-Predatory pricing --Pricing of a new product: Skimming and Penetration pricings--- Non-Linear Pricing Practices: Price Discrimination -Conditions and Types of Price Discrimination -Perfect, Individual and Group (Second Degree) and multimarket (Third-Degree) Price Discrimination- Block-Declining Tariff-Two-Part Tariff-Bundling-Tying- Quantity discounts- Ramsey pricing- Quality differentiation- Priority pricing and efficient rationing

2.3 The Advertising Decision of the Firm: Marginalistic, Profit-Maximising Models of The Advertising Decision--Buchanan's Advertising-Price Model--Schmalensee's Model of Oligopoly Advertising--A Managerialist Model of Advertising: The Baumol-Hawkins-Bushnell-Kafoglis Static Model-- A Model of Advertising Barriers: Williamson's--Model of Advertising as an Entry -Prevention Strategy- Effects of Advertising.

Unit- 3: Analysis of Firm Strategy-II (20 Hours)

3.1 Entry and Exist: Barriers to entry --- Structural, Legal barriers and Geographic barriers -Taxonomy of entry-related strategies---Entry-deterring strategies --Entry accommodation --- Product Proliferation-- Natural monopoly and contestability--sunk costs and barriers to entry- the Stackelberg-Spence_Dixit model-The Milgrom-Roberts Model of Limit Pricing - The theory of contestable markets.

3.2 Cartels and collusion: Cartels Form -- Creating and Enforcing the Cartel - Factors That Facilitate the Formation of Cartels: Simultaneous and Sequential cartel formation-Network of market-sharing -- tacit collusion-- multimarket contact- cyclical demand---detecting and fighting collusion-The difficulty in detecting collusion -Leniency and whistleblowing programs.

Unit- 4: Corporate Strategy:*Integration-Diversification-Merger and Acquisitions*

(20 ours)

4.1 Diversification ---Corporate focus and De-conglomeration-- The multinational enterprise --Concentric-horizontal and conglomerate diversification.

4.2 Mergers and Acquisitions (Takeover): Difference between Merger and Takeover-Mergers and the Profit-maximisation Hypothesis-Mergers and the Valuation-Discrepancies Hypothesis-Mueller's Model of Conglomerate Mergers

4.3 Vertical Integration and Vertical Restraints-motives and forms of vertical restraints, Measures and determinants—Franchising.

4.4 Foreign Direct Investment (FDI): Types and Causes of Horizontal and Vertical FDI-Economic Effects of Foreign Direct Investment

Unit- 5: Government and Business :Regulation and Deregulation (15 Hours)

5.1 Market Failure and Government Policy: Market Failure and The Case for Government Intervention - Regulating to Correct A Market Failure-Applying the Cost-Benefit Principle to Regulation

5.2 Antitrust Law and Competition -The Inefficiency of Competition with Externalities - Reducing Externalities

5.3 Governmental Protection of Business -- Protection of Intellectual Property --Licensing and Permitting -Patents -Copyright Protection -Competition Policy.

Essential Reading:

1. John Lipczynski and John Wilson (2010): The Economics of Business Strategy, Prentice Hall.
2. A. Koutsoyiannis (1982): Non-Price Decisions: The Firm in a Modern Context, The Macmillan Press Ltd.
3. Dennis W. Carlton and Jeffrey M. Perloff (2015): Modern Industrial Organization 4th Ed, Pearson.
4. Besanko, Dranove, Shaley and Schaefer (2013): Economics of Strategy,6th Ed, Wiley.
5. Don E. Waldman Colgate and Elizabeth J. Jenson (2013): Industrial Organization Theory and practice 4th Ed, Pearson.
6. Jay B.Barney (2014): Gaining and Sustaining Corporate Strategy, 6th Ed, Pearson.
7. Paul Belleflamme and Martin Peitz(2010): Industrial Organization: Markets and Strategies, Cambridge University Press.
8. Luis M.B.Cabral(2002): Introduction to Industrial Organization, The MIT Press.
9. John Lipczynski , Johan O.S. Wilson and John Goddard(2017): Industrial Organisation: Competition, Strategy and Policy, 5th Ed, Pearson.

Additional Reference:

10. Jean Tirole (2007): Theory of Industrial Organisation, PHI.
11. Maria Moschandreas (2002): Business Economics, 2nd Ed, Thomson.
12. Jeffrey Church and Roger Ware (2001): Industrial Organisation: A Strategic Approach, Irwin Mc Graw-Hill.
13. Kenneth D. George, Caroline Joll and E.L.Lynk(2001): Industrial organisation Competition, Growth and Structural Change, 5th Ed, Routledge.
14. Lynne Pepall, Dan Richards and George Norman (2014): Industrial Organisation; Contemporary Theory and Empirical Application, 5th Ed, Wiley.

15. Malcolm C. Sawyer (1991): The Economics of Industries and Firms: Theories, Evidence and Policy,2nd Ed, Routledge.
16. Martin Ricketts (2002): The Economics of Business Enterprise: An Introduction to Economic Organisation and the Theory of Firm, 3rd Ed, Edward Elgar.
17. Oz Shy (1995): Industrial Organisation: Theory and Applications, The MIT Press.
18. Stephen Martin (2010): Industrial Organisation in Context, OUP.
19. Stephen Martin, Advanced Industrial Economics; Blackwell, 2003.
20. • Handbook of Industrial Organization, Vol. I, II, and III.
21. Ian M. Dobbs (2010): Managerial Economics: Firms, Markets and Business Decisions, OUP.
22. Paul G. Kear, Philip K.Y. Young and Stephen E. Erfle (2011): Managerial Economics: Economic Tools for Today's Decision Makers, Pearson.William F. Samuelson and Stephen G. Marks (2012): Managerial Economics,7th Ed, John Wiley & Sons, Inc.
23. Michael R.Baye (2012): Managerial Economics and Business Strategy, 7th Ed, McGraw-Hill.
24. Luke M.Froeb and Brian McCann(2008): Managerial Economics: A Problem Solving Approach, Thomson.
25. Christopher R Thomas and Charles Maurice (2013): Managerial Economics: Foundations of Business Analysis and Strategy, Mc Graw Hill.
26. Thomas J.Webster (2010): Managerial Economics: Theory and Practice, Academic Press.
27. Majes R. McGuigan, Charles Moyer and Frederick M deB. Harris (2012): Managerial Economics: Application, Strategy and Tactics, South-Western.
28. Jeffrey M. Perloff and James A. Brander (2018): Managerial Economics and Strategy, Pearson