COURSE CURRICULUM
(2021-22 Academic Year Onwards)

M.A. in Economics
(Affiliated Colleges)

PONDICHERRY UNIVERSITY
RV Nagar, Kalapet, Pondicherry - 605014

ELIGIBILITY CRITERIA:

"Bachelor's degree in Economics (with Quantitative Techniques / Statistics) or any Bachelor's degree in Social Sciences with Economics as a subject, mathematics as a subject at +2/Higher Secondary level or Bachelor's degree in Commerce or Bachelor's Degree in Engineering/Mathematics/Statistics/ Operations Research/ Cooperation and Banking with a minimum of 50% of marks, as recognized by Pondicherry University or as recognized by the UGC."

Course Structure

CODE	FIRST SEMESTER	CREDITS	HARD / SOFT
ECON 411	Microeconomic Analysis – I	4	H
ECON 412	Macroeconomics – I	4	H
ECON 413	Statistical Methods	4	H
ECON 414	Mathematical Methods for Economics	4	H
ECON 415	Comprehensive viva	2	H

CODE	SECOND SEMESTER	CREDITS	HARD / SOFT
ECON 421	Microeconomic Analysis – II	4	H
ECON 422	Macroeconomics – II	4	H
ECON 423	Basic Econometrics	4	H
ECON 424	Comprehensive viva	2	H
	Elective Paper	3 / 4	S

CODE	THIRD SEMESTER	CREDITS	HARD / SOFT
ECON 511	Economic Growth and Development	4	H
ECON 512	Public Finance	4	H
ECON 513	Environmental Economics	4	H
ECON 514	Comprehensive viva	2	H
	Elective Paper	3 / 4	S
	Elective Paper	3 / 4	S

CODE	FOURTH SEMESTER	CREDITS	HARD / SOFT
ECON 521	Indian Economy	4	H
ECON 522	International Economics	4	H
ECON 523	Comprehensive viva	2	H
	Elective Paper	3 / 4	S
	Elective Paper	3 / 4	S

List of Electives (Softcore - S)

Code	Course Title	Credits
ECONS 01	Behavioural Economics	4
ECONS 02	Development Economics	4
ECONS 03	Economics of Education	3
ECONS 04	Economics of Financial Markets	4
ECONS 05	Economics of Indian Social Institutions - I	4
ECONS 06	Economics of Indian Social Institutions - II	4
ECONS 07	Economics of Microfinance	4
ECONS 08	Financial Econometrics	4
ECONS 09	Game Theory	4
ECONS 10	Gender Studies	4
ECONS 11	Health Economics	3
ECONS 12	Indian Financial Institutions and Markets	4
ECONS 13	Industrial Economics	4
ECONS 14	International Finance	4
ECONS 15	Labour Economics	4
ECONS 16	Money and Banking	4
ECONS 17	Optimization Techniques	4
ECONS 18	Population Studies	4
ECONS 19	Time Series Econometrics	3

Total Number of Credits in M.A. Economics Program

No. of Courses	Number	Credits
Hardcore Papers (compulsory)	(12*4)+(4*2)	56
Softcore Papers	19	73
Total Credits		129
Minimum Total Credits*		**72**

Note: * - One credit requires one hour of teaching per week.

FIRST SEMESTER

ECON 411: MICROECONOMIC ANALYSIS - I

Module I: Demand Theory
Revision of Demand theory by Hicks - Revealed Preference Theory and derivation of demand and indifference curve - Recent developments in demand theory-Pragmatic Approach (The Constant Elasticity of Demand function, The Dynamic Demand function, Lagged Adjustment in interrelated markets) - The Linear Expenditure systems, the Indirect utility function - Modern utility analysis of Choices involving risk or uncertainty- Neumann-Morgenstern, Friedman-Savage and Markowitz Hypotheses - Cobweb theorem.

Module II: Production Theory
Relation between returns to scale and returns to a factor - production function: Cobb Douglas, CES, VES and Translog production function - Production function Vs production process - Technical progress and production function – Multi-product firm.

Module III: Theory of Costs and Optimization
Traditional and modern theories of Costs - Derivation of cost curve from production function - Economies of Scale and Long Run Average Cost Curves.

Module IV: Price and Output Determination
Marginal analysis as an approach to price and output determination - Perfect competition - short run and long run equilibrium of the firm and industry - Monopoly – Short run and long run equilibrium, price discrimination – Degree of monopoly power- monopoly control and regulation - Bilateral monopoly - Monopolistic competition - General and Chamberlain approaches to equilibrium, equilibrium of the firm and group with product differentiation - Oligopoly-non collusive (Cournot, Kinked demand curve and Stackelberg's solution) and collusive (cartels and mergers, price leadership and basic point price system) models - Workable competition.

Module V: Alternative methods of Pricing and Optimization
Pricing principle – Average or full cost pricing- Mark up pricing- Limit pricing theory- Bains version- Sylos-Labini model of limit pricing- Public Utility Pricing.

Readings
1. Koutsoyiannis, A. (2000) Modern Microeconomics, (2nd Edition), Macmillan press, London
2. Layard, P.R.G. and Walters, A.W. (1978), Microeconomic Theory, McGraw Hill, London.
3. Sen A. (1999), Microeconomics: Theory and Application, Oxford University Press, New Delhi
4. Stigler,G. (1996), Theory of Price, PHI, New Delhi
5. Varian, H.R. (2000), Microeconomic Analysis, W.W.Norton, NewYork
6. Mankiw, N.G. (2009), Economics: Principles and Applications, Cengage Learning, India edition

ECON 412 – MACROECONOMICS - I

Module 1: Measuring Key Macroeconomic Variables

Various Concepts and Measurements of Aggregate Income – Income, Expenditure and the Circular Flow – Rules for Computing GDP – Real vs. Nominal GDP – Measuring the Cost of Living (consumer and whole sale price indices) – Measuring the Unemployment Rate – Unemployment, GDP and the Okun's Law.

Module 2: Theories of Consumption

The Classical Views on Consumption – The Psychological Law of Consumption – Kuznets's Consumption Puzzle – Fisher's Inter-temporal Choice Model – Permanent Income Hypothesis – Life Cycle Hypothesis

Module 3: Theories of Investment

The Neoclassical Theory of Investment – Capital Theory and Theory of the Firm – Finance and the Cost of Capital – The Accelerator Theory of Investment – The Stock Market and Tobin's Q Theory – Inflation and Investment – Policies affecting Investment.

Module 4: IS-LM model (closed economy)

The Neoclassical and Keynesian macroeconomic models-The interaction of real and monetary models-the Neoclassical and Keynesian version of IS-LM model-fiscal and monetary analysis in IS-LM model-fiscal policy and crowding out effect-Ricardian equivalence- the relative efficacy of fiscal and monetary policy-the Aggregate supply in the short and long run-Aggregate demand and price determination-Pigou effect and Real Balance effect in the IS-LM model.

Module 5: IS-LM model (open economy)

The Mundell-Flemming Model – The Fiscal and Monetary Policy Operation under Fixed and Floating Exchange Rate Regime – Trade Policy in IS-LM Models.

Readings:

1. Rosalind Levacic and Alexander Rebmann (1982), Macroeconomics: An Introduction to Keynesian – Neoclassical Controversies, Macmillan.
2. Errol D'Souza (2008), Macroeconomics, Pearson.
3. David Romer (2018), Advanced Macroeconomics, McGraw-Hill.
4. David, G Pierce and Peter J Tysome (1985), Monetary Economics: theories, evidence and policy, Butter worths.

ECON 413 – STATISTICAL METHODS

Module 1: Mathematical Expectation

Random variable-Discrete and continuous- Probability function of discrete Random Variable (Probability Mass Function)- Probability function of Continuous Random Variable (Probability Density Function) - Cumulative Distribution function; Mathematical Expectation- Theorems on Mathematical Expectation-Variance- Theorems on Variance

Module 2: Theoretical Distribution

Definition-types of theoretical distribution-Discrete theoretical distribution-Binomial Distribution-Poisson distribution; Continuous theoretical Distribution-Normal Distribution-Standard Normal Variate -Z distribution; Other Theoretical Distribution-Students "t" Distribution-Chi-Square (χ^2) Distribution- F-Distribution

Module 3: Sampling Theory

Population and sample- Parameter and statistic-(Census method and sampling method of Data collection); Objects of Sampling- Methods of Sampling- Random and Non- Random; Techniques of sampling under each method- Sampling error and Non-Sampling error-Sampling distribution of a Statistic-Law of Statistical Regularity-Law of Inertia of Large Numbers-Central limit theorem.

Module 4: Theory of Estimation

Meaning and concept of an Estimation-Concept of Estimator-Types of Estimation-Point and Interval Estimation - Desirable properties of an Estimator-Standard error of Estimator-Confidence limits for a population parameter

Module 5: Statistical Inference

Formulation of Statistical Hypothesis; Testing of Hypothesis-Null Hypothesis and Alternative Hypothesis-Stages in Hypothesis testing-Types of Error in Hypothesis testing- Type I error and Type II error-Level of Significance and confidence coefficient-Critical region or rejection region; Two tailed test and one-Tailed Test; Computation of Test statistic and significance Test-small sample test-'t' Test- χ^2 test- F test; Large sample test- Z test; Test of Significance concerning correlation coefficient; Power of Test; Analysis of Variance

Readings:

1. Speigal.M. R. (1992): *Theory and Problems of Statistics*, McGraw Hill, London.
2. Monga,G.S. (1972): *Mathematics and Statistics for Economists*, Vikas Publications, New Delhi.
3. Gupta.S.C. (1993): *Fundamentals of Applied Statistics*, S.Chand, New Delhi.
4. Gupta, S.C. and V.K. Kapoor (2014): *Fundamentals of Mathematical Statistics*, Sultan Chand and Sons.

ECON 414 – MATHEMATICAL METHODS FOR ECONOMICS

Module 1: Linear Algebra

Determinants and their basic properties – Concept of vector – its properties – Matrices and vectors – types of matrices – simple operations on matrices – transposes – matrix inversion and rank of a matrix — Solution of simultaneous equations through Cramer's rule – Application of matrix algebra in Economics: Market equilibrium, national income models and input-output analysis.

Module 2: Comparative Static Analysis - I

Nature of comparative statics – Function and types of functions – Rate of change, slope of a curve and derivative - Concept of limit, continuity and derivative – Rules of differentiation – Rules of partial differentiation and interpretation of partial derivatives –Applications to Comparative Static Analysis –Concept of integration – Simple rules of integration and its application to consumer's surplus and producer's surplus – Growth rates and simple properties of time path of continuous variables.

Module 3: Comparative Static Analysis - II

Differentials and Total Differentials – Rules of Differentials – Total derivatives – Derivatives of implicit functions – Comparative Statics of general Function models – Limitations of Comparative Statics

Module 4: Dynamic Analysis

Integration – Indefinite and Definite integrals – Improper integrals – Economic applications of Integrals – Continuous Time: First order Differential equations – Dynamics of market price – Exact Differential equations – Non-linear Differential equations of first order and first degree – Higher order differential equations – Discrete Time: First order Difference equations – Dynamic stability of equilibrium – Applications – Higher order Difference equations – Accelerator-Multiplier Interaction Model

Module 5: Optimisation Techniques

Problems of maxima and minima in single and multivariable functions – Unconstrained optimization: Optimum values and extreme values – First and second derivative tests - Optimization with equality constraints – Linear Programming: Basic concept and formulation of Linear programs – Convex sets and Linear programming – Simplex method – Duality and economic interpretation of a dual – Economic Applications of Linear Programing – Elements of Game Theory

Readings:

1 Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics, McGraw Hill, New York.
2 Sydsaeter, Knut and Peter Hammond (2006), Essential Mathematics for Economic Analysis, 2nd Ed. Financial Times, Prentice Hall: Harlow, England.
3 Handry, A.T. (1999), Operations Research, PHI, New Delhi.

SECOND SEMESTER

ECON 421: MICROECONOMIC ANALYSIS - II

Module I: Alternative Theories of the Firm
Critical evaluation of marginal analysis - Baumol's sales revenue maximization model - Williamson's model of managerial discretion - Marris model of managerial enterprise - Behavioural model of Cyert and March.

Module II: Advances in Distribution Theory
Macro theories of distribution - Ricardian, Marxian, Kalecki and Kaldor's -Sraffa model-Neo-classical approach - Marginal productivity theory - Product exhaustion theorem - Elasticity of technical substitution, Technical progress and factor shares - Theory of distribution in imperfect product and factor markets.

Module III: Welfare Economics
Pigouvian welfare economics - Welfare Criteria - Pareto optimal conditions - Social welfare Maximization - Inability to obtain optimum welfare – Imperfections, market failure, decreasing costs, uncertainty and non-existent and incomplete markets - Theory of Second Best - Arrow's impossibility theorem.

Module IV: General Equilibrium Theories
Partial and general equilibrium - Walrasian general equilibrium – existence, stability and uniqueness of equilibrium – New-Walrasian general equilibrium models – Two-sector model – Stopler-Samuelson theorem - Rybczynski theorem.

Module V: Economics of Uncertainty
Individual behaviour towards risk, expected utility and certainty equivalence approaches, risk and risk aversion - Economics of insurance - Risk pooling and risk spreading - Mean-variance analysis - Economics of search - Adaptive search - the efficient market hypothesis, stochastic models of inventory demand - search and transaction cost - Economics of information – Principles of information asymmetry, adverse selection and moral hazard.

Readings
1. Koutsoyiannis, A. (2005) - Modern Microeconomics, Macmillan press, London
2. Layard, P.R.G. and Walters, A.W. (2001) - Microeconomic Theory, McGraw Hill, London.
3. Sen A. (2005). - Microeconomics: Theory and Application, Oxford University Press, New Delhi
4. Stigler, G. (2008). - Theory of Price, PHI, New Delhi
5. Varian, H.R.(2005) - Microeconomic Analysis, W.W. Norton, New York
6. Baumol, W.J (1998). - Economic Theory and Operations Analysis, Prentice Hall, New York
7. Pindyck and D. Rubinfield (2005) - Microeconomics, East West Press, London
8. Nicholson Walter (2007)- Microeconomic Theory, The Drydon Press, London
9. E.K .Browning and J.M. Browning (2003) - Microeconomics; Theory and Applications, Kalyani Publisher, New Delhi.

ECON 422 – MACROECONOMICS - II

Module 1: Labour Market
Profit Maximization and Labour Demand – Utility maximization and Labour Supply – Aggregate Supply with/without Money Illusion – Neoclassical Labour Market Equilibrium – Introducing Unemployment – Principles of Effective Demand - The Keynesian Underemployment Equilibrium.

Module 2: Inflation and Unemployment
The Phillip's Relationship – Theoretical Underpinnings of Phillip's Curve –Natural Rate Hypothesis – Theory of Adaptive Expectation – Expectation Augmented Phillip's Curve – The Rational Expectation and Lucas Supply function – Policy Ineffective Theorem – The Lucas Critique – Rational Expectation and Implications of Monetary Policy.

Module 3: Theories of Business Cycles
Multiplier-Accelerator Interaction Model – Monetarists Interpretation of Business Cycles – Real Business Cycle Theory.

Module 4: Post Keynesian Macroeconomics
Micro Theoretic foundations for Wage and Price Rigidity – Small Menu Cost – Efficient Wage Theory – Staggered Wage Setting – Insider-Outsider Model.

Module 5: Recent Advancements in Macroeconomic Policies
The Debate over Rules vs. Discretion – Taylor's Rule and Monetary Policy – Inflation Targeting – Issues Relating to Inflation Targeting – Country Experiences with Inflation Targeting.

Readings:
1. Rosalind Levacic and Alexander Rebmann (1982), Macroeconomics: An Introduction to Keynesian – Neoclassical Controversies, Macmillan.
2. Errol D'Souza (2008), Macroeconomics, Pearson.
3. David Romer (2018), Advanced Macroeconomics, McGraw-Hill.
4. David, G Pierce and Peter J Tysome (1985), Monetary Economics: theories, evidence and policy, Butter worths.

ECON 423 – BASIC ECONOMETRICS

Module I: Basic Regression Analysis

Nature and Scope of Econometrics – Simple Regression Model: Specification, OLS Method, Assumptions of CLRM and Gauss Markov Theorem, Hypothesis Testing and Goodness of Fit – Extensions of Simple Regression Model: Regression through Origin, Scaling and Units of Measurement, Functional Forms of Regression Model – Maximum Likelihood Estimation

Module II: Multiple Regression Models

Model Specification – A model with 2-explanatory variables, Interpretation Multiple Regression Equation, Testing Hypothesis: Individual Partial Regression Coefficient and Overall Significance, Goodness of Fit – F-tests, R^2 and Adjusted R^2 – Multiple Regression Model with N-explanatory variables and Matrices Approach

Module III: Relaxing Select CLRM Assumptions

Multicollinearity, Heteroscedasticity and Autocorrelation- Nature, Consequences, Detection and Remedial Measures. General Criteria for Model Selection, Types of Specification Errors and Testing Model Specification, Errors of Measurement

Module IV: Simultaneous Equations Model

Simultaneous equations models (SEM): Specification and Rationale – Endogeneity in Regression Model and its implications for OLS estimators – Problem of Identification in SEMs: Order and Rank Conditions – Estimation of SEM: ILS, 2SLS and 3 SLS

Module V: Dummy Variable Models

Qualitative Independent Variable Models: Qualitative Variables with Two Categories and Many Categories – More than one qualitative explanatory variables – Uses of Models with qualitative explanatory variables: Estimating Seasonal Effects, Testing for Structural Change, Piecewise Linear Regression - Qualitative Dependent Variable Models: Binary Choice Models - LPM, Probit Model, Logit Model – Limited Dependent Variable: Tobit Model

Readings

1. Gujarati, D (1998): *Basic Econometrics*, 4th Edition, New York: McGraw Hill
2. Johnston, J (1995): *Econometric Methods*, 3rd edition, New York: McGraw Hill.
3. Pindyck, Robert S. and Daniel L. Rubinfeld (1995): *Econometric Models and Economic Forecasts*, 4th Edition, Irwin McGraw-Hill, New York
4. Ramanathan, Ramu (2000): *Introductory Econometrics with Applications*, 5th Edition, Cengage Learning India Pvt. Ltd., New Delhi

THIRD SEMESTER

ECON 511: ECONOMIC GROWTH AND DEVELOPMENT

Module I: Introduction
Economic Growth and Development: Conceptual issues and indicators, Classical theories of economic growth: Ideas of Adam Smith and David Ricardo – Harrod-Domar Model.

Module II: Neo-classical Theories of Growth
Steady-state equilibrium and transitional dynamics in basic Solow model of economic growth, Solow model with technological change and Ramsay-Cass-Koopmans model of growth - Role of public policy; Growth with overlapping generations – baseline and canonical models.

Module III: Endogenous Growth Theories
First-generation models of endogenous growth: AK Model with physical and human capital, Two-sector AK model, growth with externalities, Endogenous Technological Change in Romer's model of endogenous growth - Models of Schumpeterian growth.

Module IV: Economic Development and Economic Growth
Broad overview of theories of development – Structural Change and Economic Growth: Non-balanced growth-demand side, Non-balanced growth-supply side, Structural transformation, Agricultural productivity and industrialization.

Module V: Political Economy of Growth
Institutions, Political Economy and Growth: Impact of Institutions on Long-run development, Distributional conflict and economic growth in a simple society, Canonical Cobb-Douglas model of distributional conflict, Distributional conflict and competition, Inefficient economic institutions: A First Pass. Political Institutions and Economic Growth: Political regimes and economic growth, Political institutions and growth-enhancing policies, dynamic trade-offs, Understanding endogenous political change.

Readings:
1. Acemoglu, Daron (2009): *Introduction to Modern Economic Growth*, Princeton University Press.
2. Barro, Robert J. and Xavier Sala-i-Martin (2004): *Economic Growth,* Prentice-Hall of India Pvt. Ltd. New Delhi.
3. Sen, Amartya (1970): *Growth Economics*, Penguin Harmondsworth
4. Gerald Meir, (2003), *Leading Issues in Economic Development*, Oxford University Press.

ECON 512: PUBLIC FINANCE

Module 1: Role of Government and importance of public Finance
Nature and scope of Public Finance – Rationale for Government intervention- Musgrave's three functions of Government- Types of government intervention- Public Revenue- sources of public revenue.

Module 2: Public Goods and Public Expenditure
Pure Public good, efficient output of a pure public good The Theory of Public Expenditure- Wagner's Law- Peacock-Wiseman hypothesis- Samuelson theory.

Module 3: Taxation and Public Debt
Theories of Taxation – ability and benefit principles of taxation (Lindhal)-Tax Neutrality, Direct versus Indirect Taxes and Equity, Canon of Taxation- incidence and effect of Taxation- The impact of taxes on Market prices and Efficiency. Theory of measurement of dead weight losses- the problem of double taxation - Views of Public Debt; Burden of Public Debt; Public debt management and implication on growth

Module 4: Fiscal Policies
Program Budgeting: It's Application, Zero-Based Budgeting, and Budgeting Policies; Budgetary deficits and its implications; Fiscal Responsibility and Budget Management Act (FRBMA); Theory of Fiscal Policy: Fiscal Policy with Special Reference to Under-developed Countries.

Module 5: Fiscal Federalism
Fiscal Federalism – Theory and Problems of Centre State Financial Relations in India, Criteria for Resource Transfer from Centre to State, Finance Commission and Devolution of Resources to States, Recommendations of Raja J. Chelliah Committee and Kelkar Committee; Recent Tax Reforms in India, Direct Tax and Goods and Service Tax (GST); Union Budget, State Finance of Puducherry- Trend and composition of Revenue and Expenditure.

Readings:
1. Atkinson, A.B. and J.E. Stiglitz (1980), Lectures on Public Economics, TMH, New York.
2. Ganguly S (1999), Public Finance, The World Press Private Ltd. Calcutta.
3. Goode, R. (1986), Government Finance in Developing Countries, TMH, New Delhi.
4. Herber, B.P. (1967), Modern Public Finance, Richard D. Irwin, Homewood.
5. Jha. R. (1998), Modern Public Economics, Routledge, London.
6. Musgrave, R.A. and P.B. Musgrave (1976), Public Finance in Theory and Practice, McGraw Hill, Kogakusha, Tokyo.
7. Mithani, D. M.; (1998), Modern Public Finance, Himalaya Publishing House, Mumbai.
8. Stiglitz, J.E (2000), Economics of the Public Sector.
9. GoI, Report of Finance Commission, various issues.

ECON 513: ENVIRONMENTAL ECONOMICS

Module I: Theory and Concept
Nature and significance of environmental economics; definitions and scope of environmental economics; concepts and basic theory; natural resources and economic activities, Common Property Resources, market system and the environment – welfare and environment.

Module II: Environment and Economics
Environment – economy linkage, Property rights, Public and Private Good, environment as a necessity and luxury, population and environment linkage, environmental use as an allocative problem – environment as a public good – valuation of environmental damages: land, water, air and forest.

Module III: Environmental Problems and Pollution Control
Economic development and environmental problems, Economics of externalities, Air, Water, Sound and Soil pollution, Prevention, control and abatement of pollution, Renewable and Non-Renewable Sources of Energy and Environment.

Module IV: Contemporary Environmental Issues
Urbanization, development of transportation, concentration of economic activities and its impact on environment; global warming and greenhouse effect, Environmental degradation and its impact on health, emergence of organic farming, and sustainable development.

Module V: Policy measures
Basic approach – design of environmental policy, Overview of Environmental Policies in India, National Green Tribunal and its functions, pollution control boards and their functions, Economy, Market and efficacy of Environmental policies relating to Mining, Fishing, Forests, and use / sale of natural resources, policies relating to renewable energy resources.

Readings:
1. Charles Kolstad (2010), *Environmental Economics,* Oxford University Press.
2. Hanley, Nick, Shogren, Jason, White, Ben (2007): *Environmental Economics in Theory & Practice*, Pearson.
3. M. Karpagam (1993), *Environmental Economics*, Sterling Publishers, New Delhi.

FOURTH SEMESTER

ECON 521– INDIAN ECONOMY

Module I: Overview of India's Economic Policy since Independence

Broad Outline of Economic Policy in India since Independence: Intellectual roots – Gandhian village centric approach *versus* Neheruvian emphasis on Social Planning and Rapid industrialization - Mixed economy set up – Achievements and deficiencies of overall economic policies during the Pre-reform Period in India – Economic Reforms since early 1990s: Liberalization, Privatization and Globalization

Module II: Overall Economic Performance

India's Growth Story: Stagnation, Crisis and takeoff: transition from Hindu growth rate to rapid economic growth of post-reform period – issues and debates – A Story of Sustained savings and Investment – India's Dream Run during 2003-08: Understanding the Boom and its aftermath – Dynamics of Inflation in India – Emperor of Economic Maladies – Relating changes in policy paradigm and economic performance – Unfinished agenda: Poverty and Economic Inequality

Module III: Understanding Indian Macroeconomy

Plan Strategy, Development Experience and Payments Crisis: Some Disquieting Features – Conventional Hypothesis on the Roots of the Crisis – Macro(mis)management – Some Dissenting Notes – Theory and Evidence – Alternative View on Macroeconomic Linkages and the Crisis – Macroeconomics of India's Reforms Experience – Balance Sheet of the Indian Economy – Economic Interpretation of Developments in the Post-reform Period – India's Macroeconomic Puzzles – Projections and Reflections on future economic growth prospects

Module IV: Sectoral Issues – Post-reform Period

Agricultural sector: Economic liberalization and Indian agriculture – Current challenges for Indian agriculture: Growth crisis, its severity and options – 'Contract farming' and its implications for Indian agriculture and agro-processing industries – Industrial Sector: Industrial productivity, investment, FDI and growth – Manufacturing – Large corporates and MSMEs - labour reforms - Services sector: Indian experience of Services-led growth – Services growth- Output, Employment and Exports – Understanding 'Services Revolution' in India - Some Causal links – Sustainability and Optimality

Module V: Current Economic Issues in India

Current macroeconomic performance: Current economic deceleration – Supply side and demand side explanations - Jobless growth and unemployment – Government's initiatives: Make in India, GST, Demonetisation, Deregulation of petroleum prices – Current issues as highlighted in latest Economic Survey, Union Budget, monetary policy – other contemporary issues on Indian economy having important ramifications .

Readings

1. Frankel, Francie R. (2005): *India's Political Economy 1947-2004*, OUP.
2. Basu, Kaushik (2016): *An Economist in the Real World*, Penguin-Viking.
3. Subramanian, Arvind (2008): *India's Turn: Understanding the Economic Transformation,* OUP.
4. Rakshit, Mihir (2009): *Macroeconomics of Post-reform India*, OUP
5. Government of India: *Economic Survey,* Recent issues.
6. Reserve Bank of India: Annual Report, Recent issues
7. Relevant research articles on various aspects of the Indian economy published in the *Economic and Political Weekly* and other leading professional journals in economics.

ECON 522– INTERNATIONAL ECONOMICS

Module I: Theories of International Trade

The basis of international trade, Mercantilism, The pure theory of international trade; Adam Smith and the Theory of Absolute Advantage, the Ricardian model of comparative advantage; the Heckscer-Ohlin mode of international trade; empirical evidence of H-O model; factor price equalization theory; Leontief paradox; theory of immiserizing growth; imitation gap and product cycle theory.

Module II: The theory of Customs union

Customs union; concept and definition; trade creating and diverting customs union; partial equilibrium analysis of customs union; pre-customs union equilibrium, post-customs customs union equilibrium; general effects of customs union; net welfare effect of customs union; further consideration; general equilibrium analysis of a customs union; The Lipesy mode; The Venek model; empirical findings and dynamic consideration.

Module III: Policies in Open-Economy

Instruments of trade policy; The Political Economy of Trade Policy; Trade problems of the developing nations; Trade Policy in Developing Countries; Controversies in Trade Policy; Trade barriers-tariff and nontariff trade barriers; effects of tariff and nontariff barriers; unfair trading practices: dumping and subsidies; some dynamic aspects of trade policy.

Module IV: Balance of Payments

Concept and definition of balance of payments; Balance of trade and balance of payments: overall balance of payments; equilibrium and disequilibrium in the balance of payments; balance of payments adjustment mechanism- automatic BoP adjustment; expenditure switching policy; expenditure changing policy; other methods of BoP adjustment mechanism; recent trend of balance of payments in developing countries-with special reference to India – theories of foreign exchange rate determination

Module V: Indian perspective of International trade

Trend of international trade of India, direction and composition of India's international trade, trade deficit scenario of India, new economic policy and Indian trade, recent trade policies, problem of Indian trade, suitable solutions, state of India's export in the international market, Goods and Services tax and its impact on India's trade.

Readings

1. Krugman. P.R, and Obstfeld (2006): *International Economics*, Addison Wesley, USA.
2. Carbaugh.R.J (2014), International Economics, 12th Edition, South-Western, USA.
3. Barbara Ingham (2015), International Economics, Prentice Hall, England.
4. Dominic Salvatore, (2016), International Economics, Wiley.
5. GoI, Annual Reports, Ministry of Commerce and Industries, Various issues
6. Katsioloudes. M.I and Hadjidakis. S (2007) International Business: A Global Perspective, Elsevier, UK.
7. Cherunilam.F (2016) International Economics, The McGraw-Hill, New Delhi.

LIST OF ELECTIVES

(SOFTCORE PAPERS)

ECONS 01: BEHAVIOURAL ECONOMICS   4-Credits

Module I: Introduction

Introduction to behavioural economics – Behavioural economics and the standard economic models – History and evolution: the neoclassical approach, resurgence of psychology and birth of behavioural economics

Module II: Experimental Method

Reasons to run experiments in economics – Building an experimental sample – Methodological standpoints – Transferring experimental results into reality – statistical analysis

Module III: Models of Decision Making and Anomalies in Preferences

Rationality issue: assumptions and axioms under standard economic models – Weaknesses of standard economic model: Failure of transitivity, reference dependence, failure of invariance and failure of dominance and invariance – Reason based choices –Biases in judgements – Heuristics

Module IV: Decision Making under Risk and Uncertainty

Expected Utility Theory – Anomalies in Expected Utility Theory: Common consequence effect, common ratio/certainty effect – Conventional alternatives to Expected Utility Theory: Disappointment theory, Decision-weighting theories, Rank dependent theory – Non-conventional alternatives to Expected Utility Theory: Regret Theory, Prospect Theory – Decisions from Description *versus* Decisions from Experience

Module V: Inter-temporal Decision Making

Discounted Utility Model, Time Discounting, Time Preferences – Origins of Discounted Utility – Discounted Utility Anomalies – Alternatives to Discounted Utility Model: Model of Hyperbolic Discount, Modifying the Instantaneous Utility Function, More Radical Models

References:

1. Wilkinson, Nick and Matthias Klaes (2012): *An Introduction to Behavioural Economics*, Palgrave Macmillan.
2. Camerer, Colin F. and George Loewenstein, & Matthew Rabin: (2003): Advances in Behavioral Economics, Princeton University Press.

ECONS 02: DEVELOPMENT ECONOMICS   4-Credits

Module I: Introduction
Growth and development- conceptual issues. Welfare state and the emergence of development indicators, and its universality, issues in measurement- national income and per capita income – income indicators, development and welfare – distribution of income – economic inequality, its measurement, poverty measures and underdevelopment - construction of poverty weighted index of social welfare. Alternative measures of development – human development index- gender based development index, gender empowerment measure- international poverty index, global hunger index- social sector and development - Education and health.

Module II: Theories of Development
Broad overview of theories of growth and development – Rosenstein Rodan's Big-push theory, Theory of Backwash and Spread effect. Stage theories of development: Marx and Rostow – Differentiating *ex-Ante* and *ex-post* theories - Experiences of Asian and African countries and mainstream theories, assumptions, limitations and universal applicability.

Module III: Dualism
Emergence of Evidence based theories – Models of Dualism - Social, technical and financial dualism. Lewis model of economic development, Ranis and Fei model, Jorgenson's model, Criticism. Balanced and unbalanced growth, Linkage effect Hirschman and Nurkse.- Structuralist and post-structuralist perspectives

Module IV: Role of State, Political Economy, Corruption and Development
Economic Effects of constitutions – policy and economic consequences of different forms of government and electoral rules, empirical strategies of comparative political economy; role of state in provision of public goods – allocation of property rights for decision-making across different governance modes and their implications for economic efficiency & equity, political economy aspects of such property rights; corruption - sources of corruption, channels through which it impacts economic development directly and indirectly, critical analysis of potential strategies to tackle corruption.

Module V: Indian Experience – an Alternative Perspective
Relevance of mainstream theories of development in the Indian context – Indian social structure and development - Distribution of wealth and common property resources – Access to land, agriculture and labour – Access to education, formal and informal employment, urbanisation – Distribution of judicial and political power and property rights – Alternative perspectives and emerging paradigms in development thinking

Readings:
Simon Kuznets, (1966), *Economic Growth, Rate structure and Spread*, Yale University Press.
Ray, D., Development Economics, Princeton University Press, 1998
Basu, K., Analytical Development Economics, MIT Press, 2003
Adam Szirmai, (2005), *Dynamics of socio economic development-An introduction*, Cambridge University Press.
Amartya Kumar Sen, *Growth Economics*, Penguin Harmondsworth
Gerald Meir, (2003), *Leading Issues in Economic Development*, Oxford University Press.
A.P. Thirwall, (1994), *Growth and Development ELBS*.
Richard Peet and Elaine Hartwick, (1999), *Theories of Development*, New York: Guilford Press,
Polanyi, Karl. (1944). *The great transformation.* Sussex: Beacon Press.
Harriss – White, Barabara (2003), *India Working: Essays on Society and Economy*, Cambridge University Press, Cambridge.
Brian Fray *Critical Social Science*, Critical Quest
Arjan de Haan & Naila Kabeer, *Social Exclusion (Two Essays)*, Critical Quest
Harriss – White, Barabara, *India's Socially Regulated Economy*, Critical Quest.
Harriss – White, Barabara , Dalits and Adivasis in India's Business Economy.

Rudra, Ashok, *Intelligentsia as a Ruling Class*, Critical Quest
Aloysius, G, *Interpreting Kerala's Social Development,* Critical Quest
Hilary Silver, *The Process of Social Exclusion*, Critical Quest
Pulin Nayak, *Economic Development & Social Exclusion in India,* Critical Quest
Arjan de Haan & Naila Kabeer, *Social Exclusion (Two Essays)*, Critical Quest
Amartya Sen (2004), *Social Exclusion,* Critical Quest.

ECONS 03: ECONOMICS OF EDUCATION   3-Credits

Module 1: Theory of Human Capital Education and Human Capital Formation

Concept of human capital forms of human capital – human capital and economics growth – measures of human capital – limitations of human capital approach - Education as an economic good. consumption and investment aspects of education- private and social benefit of education – contribution of education to economic development – the methods of schults and education and human values.

Module 2: Demand For and Supply of Education

Education and productivity – private and social demand for education- investment in education – rate of return analysis – private and social rates of return – limitations of rate of return approach – rate of return and earnings distribution – equity aspects - Components of educational supply – private and public facilities – pattern of organization and operation of education industry – organization and operation of different limitations of production function analysis.

Module 3: Financing of Education

Private resources in education and their limitations – rationale behind public involvement in education – forms of public financing subsidization, secondary, and post – secondary education in India – trends and issues – The New Education Policy.

Module 4: Education and Manpower Planning

Importance of educational and manpower planning in development and less – development countries – the operation of markets for unskilled and skilled labour – approaches to educational and manpower planning cost benefit approach – O.E.C,D. approach – M.R.P. approach – educational planning in E.D.C's – educational planning in India.

Module 5: Migration and On-the-Job Training

Migration and human capital formation – labour market and migration in India – on-the-job training and skill formation.

Readings

1. Mark Blaug,(2000) Economics of Education
2. K.Venkatasubramanian,(1998) Education and Economic Development of Tn.
3. G.S.Parnes, Planning Education for Economic Social Development.
4. Cohn,(2005) Economics of Education.
5. Tilak(2006), Economics of Inequality in Education
6. Sudha V.Rao (2003), Education and Rural Development
7. Theodore W. Schultz (1999) , Investment in Human Capital
8. Nalla Gounden A.M.(1998), Education And Economic Development

ECONS 04 – ECONOMICS OF FINANCIAL MARKETS   4-Credits

Module 1: Introduction to Financial Markets

Financial markets and instruments – Basic concepts of Accounting: Balance sheets – Cash flow statements – Income statement – Financial markets and the Economy: Real Assets and the Financial Claims – Framework for macroeconomic analysis of Flows – Supply and Demand for Securities - Ethics of Finance and the Economic Function of Financial Markets – Purpose of Regulation of Financial markets

Module 2: Efficiency of Securities Markets

Central Trading Places – Financial markets with central trading places – Operational efficiency and Efficient Market Hypothesis: Weak form of EMH – Semi-strong firm of EMH – Strong form of EMH

Module 3: Determination of Asset Prices

Determination of Equity Prices: Shares as claim to future dividends and Corporate Net worth – CAPM: Simplest form – extending CAPM – estimating betas – implications for portfolio management – Arbitrage Pricing Theory

Module 4: Financial Derivatives - I

Introduction to Financial Derivatives: Forward, Future, Options – Exchange traded Stock options – Payoffs from Buying and Selling Options – Combinations of Options – Put-Call Parity theorem – Valuation of Stock Options: Application of CAPM to Options – Black-Scholes Formula – Options and Portfolio Management

Module 5: Financial Derivatives - II

Forward Contracts – Basic Elements of Future Contacts – Organization of Future markets – Future Prices: Profits and Losses on Various Transactions – Spot and Future Prices – Hedgers, Speculators and Market Equilibrium – Futures and Portfolio Management

Readings

1. Houthakker, Hendrik S. and Peter J. Williamson (1996): *The Economics of Financial Markets,* Oxford University Press
2. E. J. Elton and M.J. Gruber (****): *Modern Portfolio Theory and Investment Analysis*, Wiley, London.
3. J. C. Hull (2004): *Futures and Option Markets*, Prentice- Hall, New Jersey
4. R. A. Haugen (2001): *Modern Investment Theory*, Fifth Edition, Prentice Hall, New Jersey.

ECONS 05 - ECONOMICS OF INDIAN SOCIAL INSTITUTIONS – I   4-Credits

Module 1: Village as a Production Unit
Economic Geography, , Productive Resources – land and water, nature of its availability, People, Spatial organisation of village, hierarchy of resources, Resources and allocation, production organization, structures and processes.

Module 2: Caste as a Productive Organisation
People, caste as a System of Human and Natural Resource Administration, structure and functions of different social groups, Hereditary nature of Rights and Access to Productive Resources, System of privileges and denials and its socio-economic implications.

Module 3: Conceptual Foundations of Exclusion
Notions of purity, pollution, ritual merit and discard, notions relating to morality, family, legal heir, occupation as a religious / spiritual duty, the idea of work and its value, and remuneration.

Module 4: Family as a Fundamental Economic Unit
Caste and vitality of family, notions of rights, kinship network, joint and nuclear families, marriage, gender, sexuality, engendering labour, politics of hereditary occupation.

Module 5: The Indian Development Experiences and Social Outcomes
Development of transport, education and employment opportunities, urbanisation and its impact on traditional social structure, emergence of duality - rural and urban spaces and hierarchies of facilities, Productive resources and hierarchies of access and reconfiguration of caste into socio-economic inequalities.

Readings:

Cohn, Bernard S (1969), "Structural Change in Indian Rural Society 1596-1885", in Frykenberg, Robert Eric edited *Land Control and Social Structure in Indian History,* The University of Wisconsin Press, Madison.

Cohn, Bernard S, "The Pasts of an Indian Village", *Comparative Studies in Society and History*, Vol. 3, No. 3 (Apr., 1961), pp. 241-249

Gupta, Dipankar, "Whither the Indian Village: Culture and Agriculture in 'Rural' India", *Economic and Political Weekly*, Vol. 40, No. 8 (Feb. 19-25, 2005), pp. 751-758

M. N. Srinivas (2003), "An Obituary on Caste as a System", *Economic and Political Weekly*, Vol. 38, No. 5 (Feb. 1-7, 2003), pp. 455-459

Ahuja, Ravi (1998), "Labour Unsettled: Mobility and Protest in Madras region, 1750-1800", *The Indian Economic and Social Histoy Review*, Vol. 35, No. 4.

Hjejle, Benedicte (1967), "Slavery and Agricultural Bondage in South India in the Nineteenth Century", *The Scandinavian Economic History Review*, Vol. XV, Nos. 1&2.

Ludden, David E (1978a), "Ecological Zones and the Cultural Economy of Irrigation in Southern Tamilnadu", Journal of South Asian Studies, New Series Vol. I, No. 1,

Mosse, David, "Ecological Zones and the Culture of Collective Action: The History and Social Organisation of A Tank Irrigation System in Tamil Nadu", South Indian Studies 3, Jan-June 1997.

Mosse, David, *The Rule of Water: Statecraft, Ecology and Collective Action in South India*, Oxford University Press, New Delhi, 2003

Max Weber (1904), The Protestant Ethic and the Spirit of Capitalism

Max Weber (1916), The Religion of India: The Sociology of Hinduism and Buddhism,

Ambedkar, B.R, "Castes in India", and "Annihilation of Caste", in V. Moon edited *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. I.*

Ambedar, B.R., "Hindu Social order: Its Essential Principles", and "Hindu Social Order: Its Unique Features", in V. Moon edited *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. 3.*

Ambedar, B.R., "Book I—Untouchables Or The Children Of India's Ghetto, in V. Moon edited *Dr. Babasaheb Ambedkar Writings and Speeches, Vol.* 5. http://drambedkarwritings.gov.in/content/writings-and-speeches/

E.V. Ramasamy periyar http://www.criticalquest.info/moreofbooks.html#book_2_2013

Barbara Harriss-White, *India Working: Essays on Economy and Society,* Cambridge University Press, 2003.

Barbara Harriss-White, India's Socially Regulated Economy, http://www.criticalquest.info/moreofbooks.html#book_10_2007

Module 1: Labour Market and Social Institutions

Traditional society, division of labour or division of labourers, socio-cultural governance of people and their productive resources

Module 2: Land and Asset Markets and Social Institutions

Lands – Dry and Wet and its significance in Traditional agrarian organization, collective control of land, land as a private property, land market, people and their abilities to participate in the land market.

Module 3: Market for Marriages – Caste, religion, education, employment and regions as mediating forces

Traditional notion of family, agrarian society and joint families, emergence modern occupations and emergence of nuclear families, education, employment and urbanization mediating ideal marriage arrangements.

Module 4: Education, Skill formation, Labour Market, and Need for Social Justice Mechanisms

Traditional caste based occupations, remuneration, and access to education, inequality in education system, factors determining ability of people to participate in the labour market, employment during the post-reform period.

Module 5: Political Economy of Market: Culture, Product differentiation, Consumerism and its Collective politics

Society and the nature of market, people's ability to participate in market, changes in culture during the post-reform period, consumerism, and the politics of market mechanism.

Readings:

Ambedkar, B.R., "Small Holdings in India", in V. Moon edited *Dr. Babasaheb Ambedkar Writings and Speeches, Vol. I*, p. 453

Baker, Christopher John (1984), *An Indian Rural Economy 1880-1955: The Tamilnad Countryside*, Oxford.

Harris, John (1982), *Capitalism and Peasant Farming: Agrarian Structure and Ideology in Northern Tamil Nadu*, Delhi.

Jan Breman, Footloose Labour: Working in India's Informal Economy, Cambridge University Press.

Kundu, Amitabh "Making Indian Cities Slum-Free Vision and Operationalisation", EPW, april 27, 2013 vol xlviII no 17

Kundu, Amitabh, "Exclusionary Urbanisation in Asia: A Macro Overview" EPW, November 28, 2009 vol xliv no 48.

Kundu, Amitabh , "Politics and Economics of Urban Growth, EPW, May 14, 2011 vol xlv I no 20

Chris Fuller and Haripriya Narasimhan, *Tamil Brahmans: The Making of a Middle-Class Caste*. Chicago: The University of Chicago Press. (New Delhi: Social Science Press).

Chris Fuller and *Haripriya Narasimhan* (2013), Marriage, education, and employment among Tamil Brahman women in south India, 1891-2010. Modern Asian Studies 47, 53-84.

Chris Fuller and *Haripriya Narasimhan* (2011) "Caste, race, and hierarchy in the American South". Journal of the Royal Anthropological Institute (n.s.) 17, 604-21.

Chris Fuller and *Haripriya Narasimhan* (2008), "From landlords to software engineers: migration and urbanization among Tamil Brahmans", Comparative Studies in Society and History 50: 170-96.

Chris Fuller and *Haripriya Narasimhan* (2008), "Companionate marriage in India: the changing marriage system in a middle-class Brahman subcaste. Journal of the Royal Anthropological Institute (N.S.) 14: 736-54.

Vijayabaskar, M. (2010). Saving Agricultural Labour from Agriculture: SEZs and Politics of Silence in Tamil Nadu. *Economic and Political Weekly*, Vol 45, No 6, (Feb 2-8) pp. 36-43.

Souza, V. S. (1975). Social Inequalities and Development in India. *Economic and Political Weekly*, May 10, pp. 770-773.

Maria Saleth, R. (1997). Occupational Diversification among Rural Groups. *Economic and Political weekly*, Vol. 32, No 30, (July 26), pp. 1908-1917.

Palanithurai G, R. Ramesh. (2010). *Globalisation and Rural Development.* New Delhi: Concept Publishing Company.

Module I: Microfinance Revolution

Rethinking Banking - Why Doesn't Capital Naturally Flow to the Poor -The Grameen Bank and the Beginnings of Microfinance -A Microfinance Revolution - From "Microcredit" to "Microfinance"- Why Intervene in Credit Markets - Rationales for Intervention - Rotating savings and credit associations (ROSCAs) - Limits to ROSCAs - Impact of Micro Finance on Poverty eradication

Module II: Development of Microfinance Products

Concept of Micro Finance – Financial Collateral - The Grameen Bank - Targeting Women - Neoclassical Approaches to Household Decision Making - How Microfinance Affects Households - Contributions of Md. Yunus - Growth of Micro Finance in India – Micro Finance for poverty reduction in India – Micro Finance and the Millennium Development Goals – Pros and cons of Micro Credit Programme – Micro Finance Models in India – Microfinance crisis in India in late 2000s

Module III: Microfinance as an Instrument for Women Empowerment

Concept of empowerment of women– Components of women empowerment – Constraints faced by women for empowerment – Role of Micro Finance in economic development of women – Empowerment of women and Micro-business

Module IV: An Assessment of Innovative Initiatives of NGOs in Entrepreneurship

Role and strategy of NGO – Functions of NGOs – NGOs and their role in poverty alleviation – NGOs in Entrepreneurship Development - Strengths and weakness of NGOs – Women and Micro Finance – Gender issue in micro finance – Rationale behind SHG and need to institutionalization – Genesis of rural credit system – Genesis of SHG.

Module V: Self Help Group and Rural Development Approach

The Concept, Why Self Help Groups? – Objectives – Functions of SHGs Promotion– Formation of SHG - Constraints of Women SHGs - What are the Important Steps for Sustainable Development of SHGs? What are the Skills needed for Managing Successful SHGs? - The Group-Lending - Group Lending beyond Villages- Linking of Self Help Group to Bank, Stepwise process of Operating of SHG – SHG Federation.

Readings

1. Beatriz Armendariz & Jonathan Morduch (June 28, 2002), Economics of Microfinance, PHI Learning Publications, New Delhi.
2. Rais Ahmad (2009) Micro Finance and Women Empowerment, Mittal Publication New Delhi.
3. Cernea, Michael M.(1988), NGOs and Local Development, The World Bank, Washington, Discussion Paper.
4. Desai Vasant. (2005) Rural Development in India , Himalaya Publishing House.
5. Vijayakumar . A, (2009) Banking , Micro Finance and Self Help Group in India, New Century Publications, New Delhi.
6. Farrington, John, Leiws, D.J.,(1993), NGOs and the State in Asia, Routledge, London.

ECONS 08: FINANCIAL ECONOMETRICS   4-Credits

Module I: Introduction and Overview of CLRM

Financial econometrics and Economic econometrics – Stylized characteristics of Financial Data – Returns in financial modelling – Overview of Classical Linear Regression Model (CLRM): Multiple Regression Model – Specification, Estimation and Inferences – Assumptions of CLRM and remedies for violations of assumptions

Module II: Time Series Modelling, Forecasting and Modelling Long-run Relations

AR & MA processes – ARMA models: Box-Jenkins approach – Forecasting using ARMA models – Simultaneous equations approach in finance – VAR models – Cointegration and ECM – Applications: Purchasing power parity – term structure of interest rates

Module III: Modelling Volatility

Models for volatility – Implied volatility models – Exponentially weighted moving average models – Autoregressive volatility models – Autoregressive conditionally heteroscedastic (ARCH) models – Generalised ARCH (GARCH) models – GJR model – EGARCH model – Tests for asymmetries in volatility – GARCH-in mean – Use of GARCH type models including volatility forecasting.

Module IV: Switching Models

Seasonality in financial markets – Modelling seasonality in financial data – Simple piecewise linear functions – Markov switching models – Threshold autoregressive models Regime switching models and forecasting accuracy - Applications

Module V: Simulation Methods

Monte Carlo simulations – Variance reduction techniques – Bootstrapping – Random number generation – Disadvantages of the simulation approach to economic or financial problem solving – Examples: Simulating the price of a financial option – Use of bootstrapping to calculate capital risk requirements

Readings

1. Brooks, Chris (2002): *Introductory Econometrics for Finance*, Cambridge University Press.
2. Pattersan Kerry (2000): *An Introduction to Applied Econometrics: A Time Series Approach*, Palgrave Macmillan
3. Pindyck, Robert S. and Daniel L. Rubinfeld (1997): *Econometric Models and Economic Forecasts*, 4th Edition, Irwin McGraw-Hill, New York
4. Tsay, Ruey S (2001), *Analysis of Financial Time Series*, John Wiley and Sons, Macmillan Press.

ECONS 09: GAME THOERY   4-Credits

Module I: Introduction
What is game theory? – History of game theory: an outline – Theory of rational choice – Use of game theory in economics

Module II: Nash-equilibrium
Strategic games – Examples: Prisoner's dilemma, Matching pennies – Nash equilibrium – Best response functions – Dominated actions – Illustrations: Cournot's model of oligopoly, Bertand's model of oligopoly, War of attrition, auctions

Module III: Mixed Strategy Equilibrium
Introduction – Mixed strategy Nash equilibrium – Dominated actions – Pure equilibria when randomization is allowed – equilibrium in a single population – Formation of the players' beliefs – Extension: Finding all mixed strategy Nash equilibria

Module IV: Extensive Games with Perfect Information
Introduction – Strategies and outcomes – Nash equilibrium – Subgame perfect equilibrium – Finding subgame perfect equilibrium of finite horizon games: backward induction – Stackelberg's model of duopoly – Allowing for simultaneous moves – Allowing for exogenous uncertainty

Module V: Games with Imperfect Information
Bayesian games: General definitions, Cournot's duopoly game with imperfect information, auctions under imperfect information – Extensive games with imperfect information: Strategies, Nash equilibrium, Beliefs and sequential equilibrium, Signaling games

References:
1. Osborne, Martin.J (2004): *An Introduction to Game Theory*, Oxford University Press.
2. Mas-Colell,A., M.D. Whinston and J.R. Green (1995): *Microeconomic Theory*, Oxford University Press.
3. Gibbons, R.A (1992): *Primer in Game Theory*, Pearson Education.

ECONS 10: GENDER STUDIES   4-Credits

Module I: Introduction to Gender Studies and Demographic Aspects

Importance and concepts of women studies – Women in patriarchal and matriarchal societies and structures, patrilineal and matrilineal systems and relevance to present day society in India - Economic basis and functioning of patriarchy in developed - particularly India- Gender bias in the theories of value- distribution- and population - Decision making, Economic Activity and Women - Factors affecting decision making by women - property rights - access to and control over economic resources - assets, power of decision making at household, class, community level- Women and their access to nutrition- health, education- and social and community resources- and their impact on female mortality and fertility- economic status- and in work participation rate

Module II: Conceptualization of Women's Work

Economic status of women and its effect, income level - Women in pre-industrial and industrial-societies, female contribution to national income- Concept and analysis of women's work- Valuation of productive and unproductive work- visible and invisible work- paid and unpaid work- economically productive and socially productive work – Economic status- private property- and participation of women in pre-industrial and industrial societies – Female contribution to National Income

Module III: Women and Labour Markets

Factors affecting female entry in labour market - Supply and demand for female labour in developed and developing countries- particularly India- Factors affecting female entry in labor market - supply and demand for female labor in developed and developing countries Studies of female work participation in agriculture- non-agricultural rural activities- informal sector- cottage and small-scale industries- organized industry- and services sector- Wage differentials in female activities- Determinants of wage differentials- gender- education- skill- productivity- efficiency- opportunity- Structures of wages across regions and economic sectors. Issues of marginalisation and discrimination against women

Module IV: Women- Technology and Environment

Impact of technological development and modernization on women's work participation in general and in various sectors such as agriculture- nonagriculture rural activities- small and cottage industries and organized industry – Female activities and ecological and environmental concerns- the two way relationship – Role of new technologies for helping women – Provision of information and training for simple harvesting of economic services.

Module V: Gender Planning- Development Policies and Governance

Social Security, Gender Planning, Development Policies and Governance - Social security for women: entitlements, economic independence and risk coverage, access to Unit and insurance markets, SHGs & social security- Review of legislations for women's empowerment, social security & property rights – Need for affirmative action on the part of the government- Mainstreaming gender into development policies, gender planning techniques, gender budgeting, gender sensitive governance- Democratic decentralization and women's empowerment. Gender and development indices- Gender Development Index (GDI) and Gender Empowerment Measure (GEM)- Mainstreaming gender into development policies- Gender-planning techniques- Gender sensitive governance- Paradigm shifts from women's well being to women's empowerment- Democratic decentralization (panchayats) and women's empowerment in India

Readings

1. Agarwal, B., Humphries, J. & Robeyns, I. (eds.) (2010). Capabilities, Freedom and Equality – Amartya Sen's Work from a Gender Perspective. OUP., N. Delhi, India.
2. Agarwal, B. (2008). A Field of One's Own – Gender and Land Rights in South Asia. Cambridge University Press, New Delhi, India. Agarwal, B. (2011). Gender and Green Governance – The

Political Economy of Women's Presence Within and Beyond Community Forestry. OUP., New Delhi, India.
3. Boserup, E. (1970), Women's Role in Economic Development, George Allen and Unwin, London
4. Jacobson, J.P. (2007). The Economics of Gender. Blackwell Publishing, USA.
5. Kabeer, N. (1994), Reversed Realities: Gender Hierarchies in Development Thought, Kali for Women, New Delhi.
6. Momsen, J. (2010). Gender and Development. Routledge, USA.
7. Boserup, E. (1970). Women's Role in Economic Development. St. Martin's Press, USA.
8. Goodman, J. (Ed.) (2012). Global Perspectives on Gender and Work. Rowman & Littlefield Publishers, Inc., U.K.
9. Lourdes, B. & S. Feldman (Eds.) (1992). Unequal Burden, Economic Crisis, Household Strategies and Women's Work. Westview Press, Boulder, USA.
10. Papola, T.S. and A.N. Sharma (Eds.) (1999), Gender and Employment in India, Vikas Publishing House, New Delhi. 12.
11. Mazumdar, V. (1979), Symbols of Power: Studies on the Political Status of Women in India, Allied, Delhi. 14.
12. Narasimhan, S. (1999), Empowering Women: An Alternative Strategy from Rural India, Sage Publications, New Delhi. 15.
13. Purushothaman, S. (1998), The Empowerment of Women in India: Grassroots Women's Networks and the State, Sage Publications, New Delhi.
14. Sinha, N., Raju, D. & Morrison, A. (2007). Gender equality, poverty and economic growth. World Bank Policy Research Working Paper, 4349.
15. Winter-Ebmer, R. (2011). Gender wage inequality and economic growth: is there really a puzzle? – a comment. World Development, Vol. 39, No. 8, pp. 1476-1484

ECONS 11: HEALTH ECONOMICS   3-Credits

Module I: Health Economics: An Introduction
Introduction to Health Economics: Definition of economics, Opportunity cost, Causes of Market Failures and Need for Health Economics. Definition of Health Economics, Scope and Importance of Health Economics.

Module II: Application of Economics to Health Issues
Market failure, public policy, equity and efficiency, Health economics and population dynamics – demographic aging, obesity, disability and malnutrition.

Module III: Demand and Supply of Health
Demand for Health Care, Grossman Model, and Disparities in Health Care, Measuring Health Outcomes, Quality Adjusted Life Years (Qalys), Disability Adjusted Life Years (Dalys), Economic burden of disease, Health infrastructure: Private and Public

Module IV: Economic Evaluation of Health Care
Types of analysis: Cost-effectiveness, Cost-utility and Cost-minimization, Cost Benefit Analysis. Willingness to pay thresholds.

Module V: Health Sector in India: An Overview
Health outcomes, Health systems, Health financing, Health policy in India

Readings:
1. Battacharya, Jay, Timothy Hyde, and Peter Tu (2014):,Health Economics, 1st Edition, Palgrave Macmillan.
2. Morris, S., Devlin N., Parkin. D., Spencer, A. (2012): Economic Analysis in Health Care, 2nd Edition. London, Wiley
3. Dreze, Jean and Amartya Sen (1996): *India : Economic Development and Social Opportunity*, Clarendon Paperbacks.

ECONS 12: INDIAN FINANCIAL INSTITUTION AND MARKETS   4-Credits

Module I: Indian Financial System
Role of Finance for an Economy – Financial intermediaries and markets – Overview of Indian financial system – structure and growth – regulation of financial institutions and markets in India
.

Unit II: Indian Banking System
RBI: the Central Bank – Role and Functions of the RBI: Banking regulation and supervision – Conduct of monetary policy – foreign exchange management – Commercial banks in India: Structure and Growth – Role of Commercial banks in India – Generation of Savings and Investments – Banks and monetary policy transmission – Regulation and supervision of Commercial Banks in India – RRBs and Cooperative Banks in India

Module III: Money and Capital markets
Indian money market-instrument-institutions-functioning of Indian money market-changes in the regulatory framework-growth-stocks and bonds-primary and secondary markets- process of initial public offer- offer of Government bonds-stock market functioning-stock indices-evaluation of stocks and bonds-understanding stock market information.

Module IV: Foreign Exchange Market
Exchange rate-types-determinants of exchange rate-nature of forex market-nature of forex inflow and otflow – examples of ECBs and NREs-RBI and exchange rate management

Module V: Financial Derivatives
Need for derivatives-types of derivatives-example of how stock index derivatives could be used to hedge risks in stock market investment-evaluation of financial derivatives.

Readings
1. Bhole, L.M. (2002): *Indian Financial Institutions and Markets*, Tata McGraw Hill Ltd, New   Delhi.
2. Khan M.F. (2006): *Indian Financial Institutions*, Tata McGraw Hill Ltd, New Delhi.
3. Reserve Bank of India: *Report on Currency and Finance,* various issues

ECONS 13: INDUSTRIAL ECONOMICS   4-Credits

Module I: Industries and Development
Basic concepts of industrial economics- rational of industrialization, evolution of industries in India, need, importance and role of industries in economic development, industry and agriculture sector linkages, industrial development-experience of developed and developing countries.

Module II: Industrial Entrepreneurs
Concepts and definition of industrial entrepreneurs, entrepreneurial motivation, types , characteristics and functions of industrial entrepreneurs, role of entrepreneurs in economic development, role of women entrepreneurs in the industrial development, rural entrepreneurship development in India, institutional finance to entrepreneurs development, problems   and remedies of industrial entrepreneurs.

Module III: Location and Dispersion
The general determinants of industrial location- technical factors, economic and infrastructural factors, other factors, theories of industrial location-the central place theory, Renner's theory, Rawstron's principles, Weber's theory, the market area theory of Tord Palander, Central place theory of Losch-trend of industrial location in India.

Module IV: Industrial Finance
Importance of finance to industrial development, Owned, and external funds for industrial development; Role, and types of institutional finance- functions of IFCI, IDBI, SIDBI, MSFC ,ICICI, SFCs, SIDC, commercial banks, etc in industrial development, trend and problems of industrial finance in India.

Module V: Industrial Development and Problems
Recent trends in industrial growth in India- growth of major industries- Cotton textiles, Iron and Steel; Jute; Sugar; Coal; Cement and engineering goods; Development and problems of small-scale industries in India, Role of public and private sectors in India. Effects of liberalization on industrial development in India, role of MNCs in industrial development, Sick industries and remedies, Industrial policy of India.

Readings
1. Ahluwalia, I.J. (1985), Industrial Growth in India, Oxford University Press, New Delhi.
2. Brahmananda, P.R. and V.R. Panchamukhi (Eds) (1987), The Development Process of the Indian Economy, Himalaya Publications
3. Barthwal,R.R.(1992), IndustrialEconomics:An Introductory Text Book, Wiley Eastern Ltd. New Delhi.
4. 4. Cherunilam, F. (1994), Indsutrial Economics : Indian Perspective, (3rd   Edition),   Himalaya Publishing House, Mumbai
5. Kuchhal, S.C. (1980), Industrial Economy of India (5th Edition), Chaitanya Publishing House, Allahabad.
6. Reserve Bank of India, Report on Currency and Finance (Annual). And Government of India, Economic Survey (Annual).

ECONS 14: INTERNATIONAL FINANCE   4-Credits

Module I: Global financial Environment
Unique dimensions of international finance, key issues in the international business finance, growing importance of international finance- features of international finance, international finance and economic development, the financial functions in the global context, the challenges of international finance; an introduction to the recent changes in the global financial markets..

Module II: Balance of Payments
Balance of payments: Collection, reporting and presentation of BoP, History of BoP accounts, An overview of sub-accounts in BoP, BoP of US, China and India, Elasticity and absorption approaches to the BoP; automatic BoP adjustment mechanism-automatic mechanism with flexibility in prices, interest rates and income levels.

Module III: Exchange Rate Determination
Foreign exchange; Foreign exchange market; spot market; forwards and future markets; exchange rate, PPP theory of exchange rate determination and law of one price, Absolute and relative PPP, a generalized version of PPP, Balassa-Samuelson model; Uncovered interest rate parity, Monetary models of exchange rate determination, an introduction to Portfolio balance model.

Module IV: Post-war International Monetary System
Bretton Woods system, Breaking down of Bretton Woods system and the post-Bretton Woods era, Reforms of the international monetary system, Eurocurency and Eurobond markets, Currency derivatives: futures, options and swaps, International macroeconomic policy coordination; introduction to Economic and monetary union in Europe.

Module V: Crises and Lessons drawn
International debt crisis: Background and origin of debt crisis, the Mexican moratorium, overall evaluation of debt crisis management; Currency crisis and the East Asian Financial Crisis: First, Second and Third generation models of currency crisis, macroeconomic foundations, analysis of East Asian crisis, An evaluation of IMF programmes; Global financial crisis: Background, deregulation and innovations in the international financial markets, impact on the global economy, restoring financial regulation and oversight.

Readings
1. Pilbeam, Keith (2006): *International Finance*, Palgrave Macmillan, New York.
2. Salvatore.S(2016), International Economics, Wiley.
3. Grath. A (2008), International Trade and Finance, London.
4. Levi.D.M (2005), International Finance, Routledge, London.
5. Gandolfo(2002), International Finance and Open-Economy Macroeconomics, Springer, Tokyo.
6. Bishop.E(2004) Finance of International Trade, Elsevier, New York.
7. Connolly.M.B (2007) International Business Finance, Routledge, New York.
8. Hansanti. S and Islam. S. M. N(2008)International Finance in Emerging Markets: Issues, Welfare Economics Analyses and Policy Implications, Physica-Verlag Heidelberg

ECONS 15: LABOUR ECONOMICS   4-Credits

Module I: Theoretical Issues in Labour Economics
Labour supply: Measuring the labour force- Workers preferences - Time and budget constraints, Hours of work decision- Labour demand: Production function, Employment decision in the short run and long run, Long run demand for labour- Labour market equilibrium: Equilibrium in a single competitive labour market, Competitive equilibrium across labour markets, Non competitive labour markets, Cobweb model.

Module II: Wages, Alternative Pay Schemes and Labour efficiency
Wages: Perfect Competition – Homogenous workers and Jobs, Wage Differentials –
Heterogeneous Workers and Jobs, The Hedonic Wage Function. Alternative pay schemes and labour efficiency: Economics of fringe benefits, Theory of optimal fringe benefits, Efficiency wage payments, deferred payments schemes, Labour Efficiency: Education in the labour market, Schooling model

Module III: Labour Productivity, Unemployment and Migration
Labour productivity: Concept and measurement, Wages, Prices and Employment.
Unemployment: Measurement, The Stock–Flow model, Frictional, Structural and Demand–Deficient unemployment- reducing unemployment – Public policies. Labour mobility: Types-Migration as an investment in human capital- Determinants of migration- Consequences of migration- The Economic Benefits of Immigration

Module IV: Labour Market Discrimination- Trade Union and Collective Bargaining
Labor market discrimination: Race and gender in the labour market- The Crowding Model-Employer and Employee discrimination- measuring discrimination – The Oaxaca Decomposition. Trade Union – Determinants of union membership- Economic Impact of Unions - Union wage advantage- Efficiency and Productivity of Unionism. Collective bargaining: Economic sanctions of collective bargaining- bargaining power in collective bargains-counteracting pressures – Employer's resistance- Potential impact on union

Module V: Agricultural Labour and Unit Market
Agricultural workers-categories and nature of employment- Problems of agricultural workers and remedial measures- Interlocking of factor markets- Agricultural Unit and Rural co-operatives-Kisan Credit Cards (KCCs) and NABARD- Agricultural price policy- Food Security and Public Distribution System

Readings
1. Butler, A.D. (1972): Labor Economics and Institutions, American Publishing Company, ND.
2. George, J.B. (1996): Labour Economics, McGraw Hill,, NY.
3. Marshall, F.R., V.M. Briggs, and A.G. King (1984): Labour Economics, Richard D. Irwin Inc. Homewood,Illinois.
4. McConnell, C.R., S.L. Brue and D.A. Macpherson (2009): Contemporary Labour Economics, McGraw Hill, NY.
5. Burton, F.J, L.K. Benham, W.W. Vaughn III and R.J. Hanagan (Eds.) (1971): Reading in Labour MarketAnalysis, Holt. Rinehart and Winston, Inc, USA.
6. Rees, A. (1973): Economics of Work and Pay, Harper and Row, NY.
7. Sen, A.K. (1975): Employment, Technology and Development, OUP, ND. 4. Solow, R.M. (1990): Labour Market as an Institution, Harper and Row, NY.

Module I: Basic Concepts

Introduction – Concept of money and its functions – Role of money in a capitalist economy: Advantages over barter – Monetary policy, output stabilization and inflation control – Basic banking and general principles of bank management: Solvency, Liquidity and Profitability – Role of banks for the economy: Financial intermediation and augmenting savings and investment – Productive allocation of resources – Solving size and maturity mismatches – risk diversification

Module II: Demand for and Supply of Money

Demand for Money: Quantity theory of money – Keynesian analysis – Post-Keynesian: Tobin's and Baumol's approach – Monetarist money demand function – Buffer-stock approach –Supply of Money: Central bank, money-multiplier and money supply – Creation of money and role of commercial banks – Empirical analysis of money demand and money supply with special reference to India

Module III: Money and Interest Rates

Money and Interest Rate: Understanding interest rates behavior, real and nominal interest rates – Fisher equation – Term structure of interest rate – Factors influencing changes in equilibrium interest rate and liquidity preference framework – Role of money and interest rates on real economic activity and inflation Applications: Changes in income, money and prices on equilibrium interest rates

Module IV: RBI and Conduct of Monetary Policy in India

Reserve Bank of India and its monetary policy: Overall monetary policy framework –

instruments, targets and objectives – transmission mechanism: Money versus credit view – channels of monetary transmission – operating procedure, liquidity management and OMOs – challenges in the conduct of monetary policy – Adoption of Inflation Targeting by RBI and the Role of MPC

Module V: Banking Regulation and Supervision in India

Banking supervision and regulation in India – Supervisory role of RBI – CAMELS –

Management of credit risk, market risk and operational risk – Basel prudential norms – Lessons from Asian crisis, Global financial crisis (2007) for banking regulation and operations – Incidence of high NPAs of banks in India in recent years – Insolvency and Bankruptcy Code

Readings

1. Mishkin, Frederic (2008): *The Economics of Money, Banking, and Financial Markets*, 7th edition, Pearson Addition Wesley, New York
2. Pierce D.G. and P.J. Tysome (1985): *Monetary Economics: Theories, Evidence and Policy*, 2nd Edition, Butterworths, London
3. Samantaraya, Amaresh (2015): *Conduct of Monetary Policy in India: Changing Dimensions in the Post-reform Period,* TR Publications, Chennai.
4. Enoch, Charles and John H. Green (ed.) (1997): *Banking Soundness and Monetary Policy: Issues and Experiences in the Global Economy*, International Monetary Fund
5. Reserve Bank of India: *Report on Currency and Finance*, various issues.

ECONS 17: OPTIMIZTION TECHNIQUES — 4-Credits

Module I: Unconstrained Optimization

Optimum vales and extreme values – Relative maximum and minimum – First derivative test – Second and higher derivatives – Second derivative test – N^{th} derivative test for Relative Extremum of a Function of One Variable – Derivatives of Exponential and Logarithmic Functions – Case of more than one Choice Variable Extreme values of a Function of Two Variables – Objective Functions with More than Two variables – Second-order Conditions in Relation to Concavity and Convexity – Economic applications

Module II: Constrained Optimization

Effects of a Constraint in Optimization – Second order conditions – Quasiconcavity and Quasiconvexity – Utility maximization and Consumer demand – Homogenous functions – Least-cost combination of inputs

Module III: Linear Programming

Linear programming: Concept and formulation – Convex sets and linear programming – Simplex method – Finding of extreme points and Optimal Extreme – Duality – Economic interpretation of a Dual

Module IV: Non-linear Programming

Non-linear programming – its nature - Kuhn-Tucker conditions - Constrained qualification, Kuhn- Tucker sufficiency theorem –Arrow-Enthoven Sufficiency theorem – Economic applications.

Module V: Game Theory

Introduction to Game Theory – Games with Perfect Information: Nash Equilibrium – Strategic games – Prisoner's dilemma – matching pennies – Best response functions – Dominated actions – Cournot's model of Oligopoly – Bertrand's model of oligopoly – Mixed strategy equilibrium – Games with Imperfect Information

Readings

1. Chiang, A.C (2005)- Fundamental Methods of Mathematical Economics, McGraw Hill, New York
2. Osborne, Martin (2004): *An Introduction to Game Theory*, Oxford University Press.
3. Sydsaeter, Knut and Peter Hammond (2002) - Essential Mathematics for Economic Analysis, Prentice Hall: Harlow, England.

Module I: Introduction to Demography

Meaning and scope of demography; Components of population growth and their inter-dependence; Theories of population — Malthus; Optimum theory of population; Theory of demographic transition

Module II: Population Change: Determinants and Techniques of Analysis

Determinants – Fertility, Nuptiality, Migration and Mortality; Techniques - Crude birth and death rates, age specific birth and death rates, standardized birth and death rates; Fertility - Total fertility rate, gross reproduction rates, net reproduction rate; Factors affecting fertility — Socio-economic factors, economic status, health, education, nutrition, caste, religion, race, region, rural-urban and status of husband and wife; Nuptiality — Concept and analysis of marital status, single mean age at marriage; Mortality — Mortality at birth and infant mortality rate; Sex and age pattern of mortality; Factors for decline in mortality in recent past; Life table — Construction and uses; Migration – Net migration rate

Module III: Population: Structure and projection

Population trends in the twentieth century; Population explosion — Threatened or real, distant or imminent; International aspects of population growth and distribution; Pattern of age and sex structure in more developed and less developed countries; Determinants of age and sex structure; Demographic effects of sex and age structure, economic and social implications, Demographic Dividend and Age pyramids; concept of stationary, stable and quasi - stationary population; Projections — Uses and techniques – Cohort Component Projection technique.

Module IV:Source of Demographic data in India

Study of census in India— History of Census in India; Nature of information collected in 2001 and 2011 census in India; National Family Health Survey (NFHS) I, II and III and District Level Household Survey(DLHS); their relative merits and demerits.

Module V: Population and Development with reference to India

Population policy in India — the shift in policy from population control to family welfare, to women empowerment; Population,   economy and environment linkages – population   and human development issues – Population and Millennium Development Goals (MDG); education and fertility, Migration and urbanization – trends, pattern and consequences; population aging – Causes, trends, issues and consequences; Skewed sex ratio in India.

Readings

1. Jacob S. Siegel and David A. Swanson (2004): The Methods and the materials of Demography, Second Edition, Elsevier Science. USA.
2. John weeks (2005): Population: An introduction to concepts and issues, Wordsworth Learning. Singapore 9th edition.
3. Bogue, D., (1969): Principles of Demography, John Wiley & Sons, New York.
4. Pathak, K.B. and F.Ram, (1998) Techniques of Demographic Analysis, Mumbai: Himalaya Publishing House.
5. Preston, Samuel H., Heuveline, Patrick, and Guillot, Michel (2001) Demography: Measuring and Modeling Population Processes. Oxford: Blackwell Publishers.
6. Bose, A. (1996), India's Basic Demographic Statistics, B.R. Publishing, Delhi.
7. Agarwal, S.N. (1985) India's Population Problem, Tata McGraw Hill, Mumbai.

ECONS 19: TIME SERIES ECONOMETRICS   3-Credits

Module I: Basic Concepts
Stochastic process, white noise process, stationary and non-stationary stochastic process – difference stationary and trend stationary process, concept of unit root, tests for detecting unit root– dickey-fuller test, augmented dickey-fuller test, testing for unit roots in panel data

Module II: Univariate Time Series Models
Autoregressive (AR) model, Moving Average (MA) model, ARMA, ARIMA and SARIMA models, Box Jenkins Methodology – model identification, diagnostics, forecasting – dynamic vs static forecasts

Module III: Cointegration and Error Correction Models
Concept of Spurious regression – problems associated with spurious regression, concept of cointegration and testing for cointegration – Engle Granger and Johansen-Juselius methodologies, multi-cointegration and multiple cointegration, error correction model, Panel cointegration and error correction models, ARDL approach – testing cointegration among mix of $I(0)$ and $I(1)$ variables using bounds test

Module IV: Vector Autoregressive (VAR) Models
Structural equations modelling – VAR models – primitive system, VAR in standard form, identification, lag length selection, factorization – Cholesky decomposition and structural factorization, Causality tests in VAR framework, Innovation accounting – impulse response functions, variance decomposition.

Module V: Modelling high frequency data (ARCH – GARCH Models)
Modelling high frequency data – problems associated with high frequency data – presence of autocorrelation and heteroskedasticity, testing for ARCH effect, estimating ARCH models – ARCH, GARCH, ARCH – M, TARCH, EGARCH, diagnostic checks

Readings
1. Walter Enders (2015), Applied Econometric Time Series, 4th Edition, Wiley.
2. Kerry Patterson (2000), An Introduction to Applied Econometrics, Palgrave Macmillan.
3. James D. Hamilton (1994), Time Series Analysis, Princeton University Press.
4. Chris Brooks (2002), Introductory Econometrics for Finance, Cambridge University Press