

M.A. Economics Syllabus

Semester I (Compulsory Papers)

1. MICRO ECONOMICS

Unit 1: Theory of Consumer Behavior

- Demand Theory: Preference Based Approach under Choice under Certainty
- Revealed Preference Theory
- Welfare Analysis and Aggregate Demand
- Consumer Demand Theory: Choice Under Uncertainty

Unit 2: Theory of Firm Production and Cost

- Theory of Production
- Theory of Cost
- Profit Function
- Homogeneous, Homothetic, CES, Cobb Douglas, Translog Production Function

Unit 3: Market Structure

- Monopoly
- Monopolistic Competition
- Oligopoly – Price Competition
- Oligopoly – Quantity Competition

Reading List:

- Mas-Colell, Andreu, Michael D. Whinston and Jerry R. Green, (1995), Microeconomic Theory, Oup, New York.
- Jehle & Renne, Advanced Microeconomic Theory, Pearson Education, India
- Varian, Hall R., (1992), Microeconomic Analysis (Third Edition), W.W. Norton & Company, New York, London.
- Varian, Hall R. (1990), Intermediate Microeconomics, W.W. Norton & Company, New York, London.
- Kreps, David M. (1998), A Course in Microeconomic Theory, Prentice Hall, India, New Delhi (For Unit V).
- Silberberg E., The Structure of Economics: A Mathematical Analysis, McGraw-Hill

2. MACRO ECONOMICS

Unit 1: Classical Approach, Keynesian Approach and Monetarism

- Determination of Price, Output and Employment
- Is-Lm Analysis-Aggregate Demand and Supply;
- Is-Lm and the Neoclassical Synthesis
- The Short Run and Long Run Phillips Curve;
- Expectation, Interest Rates and Inflation;

- The Trade-off Between Inflation and Unemployment,
- The Natural Rate of Unemployment (NRU),
- NRU and Full Employment,
- Macroeconomic Policy.

Unit 2: New Classical Macroeconomics and New Keynesianism:

- Main Features of the New Classical Macroeconomics,
- Efficient Market Hypothesis,
- Rational Expectation Model,
- Lucas Supply Function,
- Okun's Law and Phillips Curve,
- Reh and its Critique,
- Keynesian Reappraisal School (Clower, Leijonhufvud and Malinvaud)

Unit 3: Imperfect Completion Approach

- Inflation and Employment- Non Accelerating Inflation Rate of Unemployment (NAIRU) and Natural Rate of Unemployment,
- Policy to Shift the Equilibrium Rate of Unemployment;
- Supply Side Fiscal and Income Policies,
- The Effect of Policy on Actual Employment,
- Crowding out Effect

Reading List:

- Wendy Carlin and David Soskice (1996)- Macroeconomics and The Wage Bargain; Oxford University Press
- Branson, W. (1989) – Macroeconomic Theory and Policy; (3rd Ed, Harper & Row)
- Dornbush, R. and S. Fischer (2004) – Macroeconomics (9th Ed, Tata-Mcgraw Hill).
- Jha, R. (1991)– Contemporary Macroeconomic Theory and Policy; (Wiley Eastern)
- Levacic, R and A. Rebman (1986) – Macroeconomics; (2nd Ed, Macmillan).
- Mankiw, N. Gregory (2000) – Macroeconomics (4th Ed, Macmillan-Worth)
- Mankiw, N.G. and D. Romer (Eds.) (1991) – New Keynesian Economics; (Mit, Cambridge)
- Begg, D. K. H. (1982), The Rational Expectation Revolution in Macro-Economics”, Oxford, Allan
- Davidson, Paul (1994), Post Keynesian Macroeconomic Theory, Aldershot, Uk: Edward Elgar.
- Romer, David (1996), Advanced Macroeconomics, New York: Mcgraw-Hill.

3. STATISTICS

Unit 1: Probability and Probability Distributions

- Introduction O Probability–Classical, Empirical and Axiomatic Definitions; Random Experiments – Sample Space, Sigma Field and Probability Measure; Methods of

Counting - Permutations and Combinations; Rules of Probability – Addition, Multiplication, Conditional, Independence, Bayes' Theorem; Numerical Examples.

- Random Variable – Discrete and Continuous; Probability Distribution - Pdf, Pmf and Cdf; Mathematical Expectation of Random Variables and Their Functions; Mean and Variance, Moment Generating Function and Characteristic Function; Numerical Examples.
- Discrete Distributions – Uniform, Bernoulli, Binomial, Poisson, Negative Binomial, Geometric; Hypergeometric, Multinomial; Use of Tables and Numerical Examples.
- Continuous Distributions – Uniform, Exponential, Normal, Lognormal, Gamma, Beta; Use of Tables and Numerical Examples.
- Multivariate Distributions – Bivariate Pdf and Cdf, Covariance, Marginal Distributions, Correlation, Partial and Multiple Correlation, Normal Bivariate, Multivariate Hypergeometric, Numerical Examples.

Unit 2: Sampling and Sampling Distributions

- Population Versus Sample, iid Random Variables, Sampling Errors; Non-Random or Judgement Sampling, Methods of Random Sampling – Simple Random, Cluster, Stratified, Systematic; Sample Statistic – Sample Mean and Sample Variance; Standard Error.
- Methods of Finding Sampling Distributions – Direct Method, Transformation of Variables Method, Mgf Method.
- Z Chi-Square, T and F Distributions.
- Chebyshev's Inequality, Law of Large Numbers, Central Limit Theorem, Sampling Distribution of Sample Mean, Sampling Distribution of Sample Variance.
- Sampling from Finite and Infinite Population, Finite Population Correction Factor, Sampling from Normal Population.

Unit 3: Methods of Statistical inference

- Desirable Properties of An Estimator - Unbiasedness, Consistency, Efficiency and Sufficiency. Robustness, Mean-Squared Error. Consistency and Best Asymptotically Normal Estimator, Cramer-Rao Inequality, Method of Moments, Method of Maximum Likelihood, Interval Estimation - Confidence Intervals For Mean and Variance.
- Types of Hypothesis, Types of Errors, Level of Significance, Power of a Test, Interpretation of P-Value; Most Powerful Test – Neyman-Pearson Lemma. Loss Function and Risk Function. Generalized Likelihood-Ratio Tests. Uniformly Most Powerful Tests. Unbiased Test. Uniformly Most Powerful Unbiased Test. Sequential Probability Ratio Test.
- Testing For Means – One Sample and Two Sample Tests, Testing For Variance – One Sample and Two Sample Tests. Chi-Square Tests – Goodness of Fit Test, Test for Independence, Homogeneity Test.
- Introduction To Linear and Non-Linear Regression.
- Introduction To Nonparametric Methods, Principal Components and Factor Analysis, Analysis of Variance – One Way.

Reading List:

- J. E. Freund (1999), *Mathematical Statistics*, 5th Edition, Prentice-Hall International.
- J. E. Freund and R. E. Walpole (1987), *Mathematical Statistics*, Prentice-Hall inc.
- Hogg, R.V. and Craig, A.T. “Introduction To Mathematical Statistics”, Prentice-Hall International, inc. Engle Wod Cliff, N.J., Fifth Edition, 1995.
- Mood, A.M. Graybill, F.A. and Boes, D.C., “Introduction to the Theory of Statistics”, Mcgraw-Hill Book Company, New York, Third Edition, 1974.
- Hogg, R. V. and A. T. Craig (1970), *Introduction to Mathematical Statistics* (3rd Edition), Macmillan Publishing Co., New York.
- Sukhatme, P. V. and B. V. Sukhatme (1970), *Sampling Theory of Survey With Applications*, Iowa State University Press, Ames.
- J. A. Rice (1995), *Mathematical Statistics and Data Analysis*, 2nd Edition, Duxbury Press.
- Hogg, R.V. and Tanis E.A., “Probability and Statistical inference” Macmillan Publishing Company, New York, Fourth Edition, 1993.
- S. C. Gupta (1993), *Fundamentals of Applied Statistics*, S. Chand and Sons, New Delhi
- D. Gujrati (2002), *Basic Econometrics*, 4th Edition, Mcgraw-Hill/Irwin
- D. G. Rees (1987), *Foundation of Statistics*, Chapman & Hall.
- G. M. Clarke and D. Cooke (1992), *A Basic Course in Statistics*, 3rd Edition, Arnold.
- R. L. Schaeffer (1990), *Introduction to Probability and its Applications*, Pws-Kent.
- F. Daly, D. J. Hand, M. C. Jones, A. D. Lunn, K. J. Mcconway (1995), *Elements of Statistics*, Addison-Wesley.
- S. Ross (1976), *A First Course in Probability*, Macmillan.
- Chou, Y. (1975), *Statistical Analysis*, Holt, Reinhart and Winston, New York.
- Croxton, Crowden and Klein (1971), *Applied General Statistics*, Prentice Hall of India, New Delhi.
- Millar, J. (1996), *Statistics For Advanced Level*, Cambridge University Press, Cambridge.

4. MATHEMATICS FOR ECONOMICS**Unit 1: Functions and Calculus**

- Types of Function; Differentiability; Rules of Differentiation; Derivative Versus Differential, Interpretation of Revenue, Cost, Demand, Supply Functions; Elasticities and Their Types; Higher-order Derivatives. Convex and Concave Functions. Multivariable Functions; Types of Production Functions, Homogeneous and Homothetic Functions.
- Partial Differentiation - Interpretation; Problems of Maxima and Minima in Single and Multivariable Functions; Unconstrained and Constrained Optimization; Simple Problems in Market Equilibrium; the Implicit Function Theorem; the Envelope Theorem (Unconstrained Case).

- Integration; Rules of Integration; Taylor Series Formula, Application to Consumer's Surplus and Producer's Surplus; Growth Rates and Simple Properties of Time Path of Continuous Variables.

Unit 2: Matrix, Determinant and Differential Equations

- Vectors, Matrices, Determinants – Types and Properties. Solution of Simultaneous Equations Through inversion and Cramer's Rule
- Concept of Quadratic Forms – Eigen Roots and Eigen Vectors;
- Difference Equations – Solution of First order and Second order Difference Equations; Applications in Trade Cycle Models; Growth Models and Lagged Market Equilibrium Models.

Unit 3: Linear Programming, Game Theory and Input-Output Analysis

- Linear Programming – Formulation of a Linear Programming Problem, Solution of Linear Programming Through Graphical and Simplex Methods;
- Formulation of The Dual of a Linear Programme and its Interpretation; Shadow Prices and Their uses; Concept of Duality and Statement of Duality Theorems;
- Concept of A Game; Strategies – Simple and Mixed; Value of a Game; Saddle Point Solution; Simple Applications.
- Introduction to input-Output Analysis

Reading List:

- Hoy, M., J. Livernois, C. McKenna, R. Rees and T. Stengos (2001), Mathematics for Economics, 2nd Ed. MIT Press.
- Simon, Carl P. and Blume, Lawrence (1994), Mathematics for Economists, First Edition, 1994, W.W. Norton and Company.
- A.C. Chiang and Kevin Wainwright (2005), Fundamental Methods of Mathematical Economics, McGraw-Hill.
- Chiang, A.C. (1984), Fundamental Methods of Mathematical Economics, 3rd Edition, McGraw Hill.
- Allen, R.G.D. (1974), Mathematical Analysis for Economists, Macmillan Press, London.
- Sydsaeter, Knut, Peter Hammond (2002), Essential Mathematics for Economic Analysis, Prentice Hall.
- Dixit, A.K. (1990), Optimization in Economic Theory, 2nd Edition, Oxford University Press.
- Dowling, Edward T. (2004), Introduction to Mathematical Economics, 3rd Ed. McGraw-Hill.
- Dowling, Edward T. (1992), Schaum's Outline of Theory and Problems of Mathematics for Economists, McGraw-Hill.
- Silberberg, E. (1990), the Structure of Economics - a Mathematical Analysis, McGraw-Hill, 1990.
- M.W. Klein (2002), Mathematical Methods for Economics, 2nd Ed. Addison-Wesley.
- Pemberton M. and N. Rau (2001), Mathematics for Economists, Manchester University Press.

- Mathur, P. N. and R. Bharadwaj (Eds.) (1967), Economic Analysis in Input-Output Research, Input-Output Research Association of India, Pune.
- Hadley, G. (1962), Linear Programming, Addison Wesley Publishing Co., Massachusetts.
- Kothari, C. R. (1992), An Introduction to Operations Research, Vikas Publishing House, New Delhi.
- Yamane, Taro (1975), Mathematics for Economists, Prentice Hall of India, New Delhi.
- Baumol, W. J. (1984), Economic Theory and Operations Analysis, Prentice Hall, Englewood Cliffs, New Jersey.

Semester II (Compulsory Papers)

1. OPEN ECONOMY MACROECONOMICS

Unit 1: The Open Economy

- IS-LM Analysis in Open Economy
- LM Curve and the Balance of Trade: Zero Capital Mobility
- Implication of Capital Mobility for Macro Policy
- Mundell–Fleming Model
- Marshall-Lerner Condition
- Interest-Rate Differentials
- The Mundell–Fleming Model With a Changing Price Level

Unit 2: Inflation and Unemployment in the Open Economy

- Inflation and Unemployment in the open Economy
- Equilibrium Rates of Unemployment and Sustainable Unemployment
- Fiscal Expansion, Exchange Rate and inflation
- Supply Side and Demand side in the Open Economy
- Open Economy Equilibria

Unit 3: Further Open Economy Topics

- Floating Exchange Rates with Zero Capital Mobility
- Floating Exchange Rates and Perfect Capital Mobility: Exchange Rate Expectations
- Rational Exchange Rate Expectations; Dornbusch's Overshooting Model
- Policy Interdependence and The World Equilibrium Rate of Unemployment

Reading List:

- Wendy Carlin and David Soskice (2008) Macroeconomics: Imperfections, Institutions & Policies; Oxford University Press
- Wendy Carlin and David Soskice (1996) Macroeconomics and the Wage Bargain; Oxford University Press
- Mankiw, N. Gregory (2000) – Macroeconomics (4th Ed, Macmillan-Worth))

- Obstfeld, M. and K. Rogoff (1996), Foundations of International Macroeconomics, Cambridge, Ma: Mit Press..
- Frenkel, J. and A. Razin (1996), Fiscal Policies in the World Economy, 3rd Edition, Cambridge, Ma: Mit Press.
- Grossman, G. and K. Rogoff (Eds.) (1996), Handbook of International Economics, Vol. III, Amsterdam: North-Holland.
- Turnovsky, S.(1997), International Macroeconomic Dynamics, Cambridge, Ma: Mit Press.

2. GENERAL EQUILIBRIUM & WELFARE ECONOMICS

Unit 1: Partial Equilibrium and General Equilibrium Analysis

- Pareto Optimality and Competitive Equilibria
- Partial Equilibrium Competitive Analysis
- The Fundamental Welfare Theorems in a Partial Equilibrium Context
- Pure Exchange: Edgeworth Box
- One consumer one producer Economy, 2x2 Production Model
- General versus Partial Equilibrium Theory
- Pareto Optimality with Social Optima
- Existence of Walrasian Equilibrium
- Core and Equilibria in Competitive Economies

Unit 2: Social Choice & Welfare

- The Nature of the Problem
- Social Preference Relation
- Social Choice and Arrows Impossibility Theorem
- Measurability, Comparability of Social Welfare Function –
- Rawlsian Social Welfare Functions, Utilitarian Social Welfare Function

Unit 3: Market Failure

- Public Goods
- Private Provision of Public Goods
- Comparison with Private Goods
- Free Rider Problem
- Demand Revelation
- A Simple Bilateral Externalities
- Multilateral Externalities
- Coase Theorem
- Private Information and Second Best Solutions

Readings List:

- Henderson & Quandt, *Microeconomic Theory: A Mathematical Approach*, 3rd Edition, McGraw-Hill International Edition.
- Jehle & Renne, *Advanced Microeconomic Theory*, Pearson Education, India
- Mas-Colell, Andreu, Michael D. Whinston and Jerry R. Green, (1995), *Microeconomic Theory*, OUP, New York.
- Varian, Hall R., (1992), *Microeconomic Analysis (Third Edition)*, W.W. Norton & Company, New York, London.

Additional Readings:

- Arrow, K.J. (1974). 'General Economic Equilibrium, Purpose, Analytic Techniques, Collective Choice'. *American Economic Review*, Vol. 64, pp. 253 - 273.
- Arrow, K.J. (1968). 'Economic Equilibrium' in *International Encyclopaedia of the Social Sciences*, (ed.) David Sills, Vol. 4, pp. 376 - 386, Reprinted in *Collected Papers of K.J. Arrow*, Vol. 2, Chapter 6.
- Arrow, K.J. "An Extension of the Basic Theorems of Classical Welfare Economics" in Peter Newman (ed.) *Readings in Mathematical Economics*, Vol. I
- Arrow, K J (1963): *Social Choice and Individual Values* , Cowles Foundation (Yale University Press: New Haven).
- Mukherji, A. (1990), *Walrasian and Non- Walrasian Equilibria*
- Quirk J.P., & Saposnik, R. (1968), *Introduction to General Equilibrium Theory and Welfare Economics*.
- Hildenbrand, W., and Kirman A.P. (1976), *Introduction to Equilibrium Analysis*.

Semester III (Compulsory Papers)**1. INDIAN ECONOMIC POLICY****Unit 1: Development Concept and Issues in Governance**

- Development Concept, State and Market, Institutions,
- Panchayati Raj Institutions – (PRIs) Non Government Organizations (NGOs),
- Sustainable Development,
- Governance
- Economic Reforms, Plans After Reforms

Unit 2: Sectoral Development and Policy Reforms

- Financing of Infrastructure Development, Education Sector,
- Migration,
- Poverty, Inequality and Growth
- Current Status of Agriculture Input Pricing , Subsidies and Land Reforms
- Industrial Policy and Development after 1991, Public Sector Under-Takings (PSUs), Privatization and Disinvestment,

Unit 3: Policy Approaches in Fiscal, Financial and External Sector

- Fiscal and Monetary Policy Approaches, Fiscal Federalism,
- Tax Reforms, Central Government Finances
- Financial Sector Reforms, Money and Capital Market.
- Foreign Trade Liberalization, Balance of Payments, Exchange Rate Policy,
- World Trade organization (WTO) and Indian Competition Policy.

Readings List:

- Ahluwalia. I.J. and I.M.D Little (Eds.), India's Economic Reforms and Development (Essays in Honour of Manmohan Singh) Oxford University Press, New Delhi – 1999.
- Bardhan. P.K. (9th Edition), the Political Economy of Development in India, Oxford University Press, New Delhi – 1999.
- Bawa. R.S. and P.S. Rainkhy (Edi) Structural Changes in Indian Economy, Gurunanak Dev University Press, Amritsar.
- Brahmananda, P.R. and V.R. Panchmukhi (Edi) Development Experience in Indian Economy, Interstate Perspectives, Bookwell, Delhi – 2001.
- Dutt. R.(Edi), Second Generation Economic Reforms in India, Deep and Deep Publications, New Delhi – 2001.
- Dutt. R.(Edi), Second Generation Economic Reforms in India, Deep and Deep Publications, New Delhi – 2001.
- Joshi, V. and Imd Little; India: Macro Economics and Political Economy, 1964-1991, Oxford University Press, New Delhi – 1999.
- Ahluwalia. I.J.; Industrial Growth in India, Oxford University Press, New Delhi – 1985.
- Appu. P.S.; Land Reforms in India, Vikas, New Delhi – 1996.
- Bhargawa, P.K.; India's Fiscal Crises, Ashish Publishing House, New Delhi – 1991.
- Brahmananda, P.R. and V.R Panchmukhi (Edi.), the Development Process of Indian Economy, Himalayas Publishing House, New Delhi – 1987.
- Byers. T.J. (Edi); the Indian Economy: Major Debutes Since Independence, Oxford University Press, New Delhi – 1998.
- Chelliah, Raja J: Towards Sustainable Growth, Essays in Fiscal and Financial Sector Reforms in India – Oxford University Press, New Delhi – 1996.
- Chelliah. Raja J. and R. Sudarshan: Income, Poverty and Beyond Human Development in India Social Science Press, New Delhi – 1999.
- Debroy. B.:Foreign Trade Policy Changes and Devaluation - B.R. Publishing Corporation, Delhi – 1993.
- Dhameeja, N. and K.S. Sastry: Privatisation: Theory and Practice, A.H. Wheeler – New Delhi – 1998.
- Dubey. M: Anllnequal Treaty: World Trading order After Gait, New Age International Ltd., New Delhi
- Gupta. S.P.: Post Reform in India: Emerging Trends Allied Publishers.
- Kabra. K.N.: Development Planning in India, Sage Publication, New Delhi – 1997.
- Mookherjee. D. (Edi); Indian Industry, Policies and Performance – Oxford University Press, New Delhi – 1997.

- Mundle. S: Public Finance; Policy Issues for India – Oxford University Press, New Delhi – 1999.
- Srinivasan. T.N. (Edi.) Measurement of inequality and Poverty, Oxford University Press, Calcutta, 1997.
- Myrdal. Gunnar. Asian Drama: an inquiry Into Poverty of Nations, New York, Twentieth Century Fund.
- Williamson, Oliver E: The Economic institutions of Capitalism, Firms, Markets, Relational Contracting, New York: Free Press.
- Bardhan, Pranab; Poverty Agrarian Structure and Political Economy in India. Selected Essays – Oxford University Press, New Delhi – 2003.
- World Bank; Re-Energising the Agriculture Sector to Sustain Growth and Reduce Poverty – Oxford University Press, New Delhi – 2005.
- Rao Hunumanta, C.H.; Agriculture, Food Security Poverty and Environment, Essays on Post Reform in India, Oxford University Press, New Delhi – 2005.

2. DEVELOPMENT AND GROWTH THEORY

Unit 1: Economic of Growth and Development

- Evolution of Development of Economics;
- Concept, Measurement and Methodology;
- Historical Experiences –Gdp Per-Capita To Sustainable Development;
- Theories of Under-Development, Hirschman, Rostow, Lewis, Gunder Frank, Myrdal, Harris-Tadaro.

Unit 2: Economic Growth- Theory and Practice

- Historical Trends and Patterns;
- Growth Theories-- Classical, Neo-Classical, Keynesian, Post-Keynesian and New Growth-Theories;
- State, Market and Institutions;
- Role of Natural Resource-from Classical Economists To Thermodynamics School.

Unit 3: Poverty, Income Distribution and Justice

- Commodities, Characteristics, Functioning and Well- Being;
- Poverty- Concept, Measurement and incidence;
- Justice- Concept, Measurement and Approaches, (Lock To Sen);
- Food, Famine and Entitlements;
- Ecology- Economy and Poverty;
- Migration, Demographic Transition and Poverty.

Readings List:

- Aggarwal and Singh (1958): The Economics of Underdevelopment. Oxford University Press, New Delhi

- Chakarvarti, S (1981): Development Planning: the Indian Experience. Oxford University Press, New Delhi.
- Chakarvarti, S. (1982): Alternative Approaches to A Theory of Economic Growth, Oxford University Press, New Delhi.
- Chenery et al(1987): Handbook of Development Economic V 01.1 and II. North-Holland.
- Haq, M.: Reflection on Human Development, Oxford University Press. New Delhi.
- Harris. John: (1982), Rural Development - Theories of Peasant Economy and Agrarian Change
- Meier, G.M. (1971): Leading Issues in Economic Development Oxford University Press, New Delhi.
- Myrdal. G (1968): Asian-Drama: an Enquiry Into The Poverty of Nations, Pelican, London.
- Sen, A.K. (1970): Growth Economics, Penguin.
- Sen, A.K. (1981): Poverty and Famines, Allied Publishers, New Delhi.
- Sen, S.K. (1984): Resources, Values & Development, Basil Blackwell. London.
- Thirwall, A. (1978): Growth and Development, Macmillan, London.

Semester IV (Compulsory Papers)

1. INTERNATIONAL TRADE

Unit 1: Trade Theories 1 (Classical and Neo-Classical)

- Notion of Comparative Advantage (Static Versus Dynamic, Natural Versus Acquired, Theoretical Versus Empirical, Etc); Sources of Comparative Advantage (Technology, Resource Endowments, Demand Patterns, Economies of Scale, Government Policies Etc).
- Classical Model (Smith, Ricardo, and Haberler): Assumptions, Implications and Limitations; Extension of Ricardian Model: The Specific Factor Model.
- Standard Model: Analysis of Gains from Free Trade.
- Neo-Classical Model: Assumptions and Their Implications, Factor Substitution, One-to-One Relationship Between Factor-Prices, Commodity-Prices and Factor-Intensities; Heckscher-Ohlin, Stolper-Samuelson, Rybczynski and Factor Price Equalization Theorems; Empirical Evidence - the Leontief Paradox.

Unit 2: Trade Theories 2 (Modern Theories and Trade Policy)

- Intra-Industry Trade - Trade Under The Assumptions of Imperfect Competition and Economies of Scale, Linder's Hypothesis; Dynamic Explanations (Change of Technologies) - Product-Cycle and Technology-Gap Models; Strategic Trade Policy (Management) - The Diamond Model (Michael Porter).
- Free Trade Versus Protection - Need For Protection, Tariff and Non-Tariff instruments of Trade Policy, Comparison of Tariff and Quota, Learner's Symmetry, Aggregate Measures of Protection, Nominal and Effective Rate of Protection.

- Effects of Tariff for Small and Large Countries (Partial Equilibrium Analysis), Effects of Tariff on Distribution of Gains from Trade (General Equilibrium Analysis), the Optimum Tariff, Metzler's Paradox, Domestic Distortions, Trade Distorting Tariffs.

Unit 3: India and the World Economy

- Patterns (Structure) of India's Foreign Trade - Volume, Trends, Composition, Direction, etc., Export Performance and Export Competitiveness.
- India's Trade Policy: Review of Pre- and Post-Liberalization - Exim Policies, Export Promotion Policies, SEZs; Tariff Structure, RTAs and FTAs.
- India and WTO: Uruguay Round, Highlights of Ministerial Meetings: Singapore to Hong Kong, Concerns of Advanced Countries (Acs) and Developing Countries (Dcs), the Doha Development Agenda (DDA) and Concerns of India.
- Effects of Trade (Liberalization and Globalization) on Poverty, Inequality, Environment, Gender, Labour Standards, Technological Transfers Etc.

Readings List:

- Salvatore, Dominick, International Economics, 6th Edition (1998) Prentice Hall, 7th and 8th Editions (2001 and 2004) John Wiley & Sons.
- Sodersten, Bo and Reed, G. (1994), International Economics, Macmillan Press Ltd., London
- Sawyer, W.C. and Sprinkle R.L. (2003), International Economics, Prentice-Hall of India, New Delhi.
- Krugman P.R. and Obstfeld D. (1994), International Economics: Theory and Policy. Third Edition. Harper Collins. New York
- Caves, Jones and Frankel (1999), World Trade and Payments, 8th Edition, Addison-Wesley.

Additional Readings:

- Suranovic Steven M. (2005), International Trade Theory & Policy Analysis, [Http://internationalecon.Com](http://internationalecon.com)
- Hoekman, Mattoo and English (Ed.) (2002), Development, Trade and the Wto – a Handbook, The World Bank, Washington, D.C.
- Bowen Harry P., Hollander A., Viaene J. (1998), Applied International Trade Analysis, The University of Michigan Press, and Macmillan Press Ltd.
- Human Development Report 2005, Undp & Oxford, Chapter-4 (For Trade & Development)
- Bhagwati, J. (2002), Free Trade Today, Oxford University Press
- Bhagwati, J. (2004), in Defense of Globalization, Oxford University Press
- Bhagwati, Srinivasan and Panagariya (1998), Lectures On International Trade, 2nd Edition, Mit Press
- Bimal Jalan (Ed).(1992). The Indian Economy: Problems and Prospects. N. Delhi.
- Cherunilam, Francis (2006), International Economics, 4th Edition, Tata McGraw-Hill, New Delhi

- Wadhwa, Charan.D. 1994. Economic Reforms in India and The Market Economy. Allied Publishers Ltd. New Delhi.
- Srinivasan, T. N. (2000), Eight Lectures on India's Economic Reforms, Oxford University Press.

Articles:

- Baldwin, R. (1952), "The New Welfare Economics and Gains in International Trade", Quarterly Journal of Economics, 91-101.
- Baldwin, R.E. (1960), "The Effects of Tariffs on International and Domestic Prices", Quarterly Journal of Economics, 74(1) 65-70.
- Bhagwati, J. (1958), "Immiserizing Growth: A Geometric Note", Review of Economic Studies, 25, 201-205.
- Krugman P .R. (1980), "Scale Economics, Product Differentiation and Pattern of Trade." American Economic Review. PP 950-175.
- Lancaster, K (1980) "Intra-Industry Trade Under Perfect Monopolistic Competition, Journal of International Economics PP. 151-175.
- Posner, M. V. (1961) "International Trade and Technical Change: Oxford Economic Paper PP. 323-341.
- Vernon. R. (1966) "International Investment and International Trade in the Product Cycle'. Quarterly Journal of Economics. Pp. 197-207.
- Metzler L.A. (1949)'Tariff: the Terms of Trade and the Distribution of National Income', Journal of Political Economy, Pp. 1-29.
- De Graft V.J. (1949) ".On Optimum Tariff Structure: Review of Economic Studies No. I Pp. 47 -59
- Samuelson, P .A. (1948), "International Trade and the Equalization of Factor Prices, "Economic Journal, Pp 165-184.
- Johnson H.G. (1985), "The Gains from Free Trade With Europe: An Estimate". Manchester School of Economics and Social Studies. Pp. 247-255.

2. ENVIRONMENTAL ECONOMICS - I

Unit 1: Environmental Economics: Setting and Scope

- Meaning and Central Themes of Environmental Economics;
- Ecology- Environment and Economy Perspectives;
- Environment and Economy Linkages;
- Different Perspectives on Development - Limits to Growth, Thermodynamics School and Simon Julian's Thesis of "Ultimate Resource";
- Current State of Environment;
- Sustainable Development: Basic Issues, Concepts, Definitions Approaches, Rules and Indicators.

Unit 2: Eco-System and Natural Resources

- Definition, Functions of Ecosystem, Food-Chains, Food Webs and Ecological Succession, Net Productivity of an Eco-System;

- Geo-Ecological Cycles;
- Ecosystem Productivity and Relevance of Different Kinds of Eco-Systems;
- Natural Resources and the Economy, Natural Resource Scarcity-a Historical Perspective, Classification of Natural Resources,
- Economics of Natural Resource Exploitation: Economic Analysis of Non-Renewable Renewable Natural Resources;

Unit 3: Environmental Capital—Theory, Practice and Evaluation

- Taxonomy of Individual and Public Choices,
- Externality, Market Failures and Missing Markets.
- Theory of Environmental Valuation, and Introduction to Methods of Valuation.
- Theory of Regulation and instruments of Regulation.
- Application of Cost and Benefits Analysis to Environmental Analysis.

Reading List:

- Baumol, William J. and Wallace E. Oates, (1988) the Theory of Environmental Policy, 2nd Edition, Cambridge University Press, (Ch.3,4,5)
- Bhattacharya, R.N. Edt. (2001), Environmental Economics - an Indian Perspective (Oup).
- David Paper, (1996), Modern Environmentalism - an Introduction, Routledge , London.
- Dasgupta, Kristrom and Maler (1997), Poverty, institutions and Environmental Resource Base, in J. Berhman & T. N. Srinivasan (Eds.), Handbook of Development Economics, Vol. IIIA.
- Hanley, Shogren and White (1997), Environmental Economics in Theory and Practice, Macmillan India Ltd.(and Oup Edition).
- Hussen, Ahmed. M,(2000), Principles of Environmental Economics: Economics, Ecology and Public Policy, Routledge, New York.
- Kadekodi,Gopal K.(2004) Ed.”Environment Economics in Practice. Oxford University Press, New York.
- Kolstad, D. Charles. (2004). Environmental Economics. Oxford University Press, New Delhi
- Maler, K. Goran, (1974), Environmental Economics: a Theoretical inquiry, Resource for Future, Baltimore.
- Pearce, David. W.(1978)Edt. The Valuation of Social Cost. George Allen and Unwin Ltd. London.
- Sengupta, Ramprasad (2002): Ecology & Economics: an Approach to Sustainable Development, Oup, India (Ch. 5, 6, & 7).
- Solow, in Shankar U. Edt. (2000), Environmental Economics, Oup.
- Tietenberg, Tom. (2000), Environmental & Natural Resource Economics, 5th Edition, Addison-Wesley Longman inc. Usa.
- Turner R K., D W Pearce and I Bateman. (1993). Environmental Economics: an Elementary Introduction. 1st Edition Baltimore: Johns Hopkins Up.
- Shankar, U. (2001), Environmental Economics (Ed.) Oup, Last Chapter

- Van Den Berg, J.C. (1999), Handbook of Environmental & Natural Resource Economics Edward Elgar Uk.
- Undp (1992): Handbook of Sustainable Development & Environmental Management, New York.
- Ulaganathan (2001) Ed. Environmental Economics, Oxford University Press.
- World Commission on Environment & Development (Wced), 1987, Our Common Future, Oup.

Additional Readings:

- Baker, Steve, (2003), Environmental Economics, Dominant Publishers & Distributers, Delhi.
- Banerjee,S. (2001). Economic Valuation of Environmental Benefits and Costs. in Environmental Economics. (Edt) Battacharya ,RabIndra. N, Oxford University Press. New Delhi.
- Bohm Peter & Allen V. Kneese(1972) (Edt). The Economics of Environment. Paper from Nations. Published By Macmillan, St. Martins Press.
- Bowonder, Environmental Management Problems in India (1985), in Environmental Management, Vol. 10, No. 5.
- Burkhardt, Dietrich F and William H. Ittelson (1978). (Edt). Environment Assessment of Socio Economic Systems, Published By Plenum Press- New York, London
- Chopra, Kanchan, Gopal K. Kadekodi (1999): Operationalizing Sustainable Development, Sage.
- Cropper L Maureen & William E Oates. Measuring Benefits and Costs of Pollution Control” Sankar Dorfman, Robert & Nancy S. Dorfman (1973) (Edt). Economy of Environment. Selected Readings Published By W.W Norton & Co. inc.
- Huges,Laurent. (1973).Environment Pollution. Published by Holt, Rinettart & Winston, inc.
- Rajalakshmi N (2002).Environmental Cost of Economics Evaluation. Published By Manare Publications Pvt Ltd.
- Victor,Peter A.(1972). Pollution Economy and Environment. George Allen and Unwin Ltd

Useful Links:

- [Www.Evri.ca](http://www.Evri.ca)
- [Www.Wri.org](http://www.Wri.org)
- [Www.Rff.org](http://www.Rff.org)
- [Www.Undp.org](http://www.Undp.org)
- [Www.Worldwatch.org](http://www.Worldwatch.org)
- [Www.Ecologicaleconomics.org](http://www.Ecologicaleconomics.org)

Semester I (Optional Papers)

No Optional Papers

Semester II (Optional Papers)

1. ECONOMETRICS

Unit 1: Regression Analysis and Violations of Basic Assumptions

- Simple and General Linear Regression Model – Assumptions.
- Estimation (Through OLS Approach) and Properties of Estimators;
- Gauss-Markov Theorem;
- Maximum Likelihood Method,
- Multiple Linear Regression, Partial and Multiple Correlation Coefficient, Hypothesis Testing.
- Nature, Test, Consequence and Remedial Steps of Problems of Heteroscedasticity; Multicollinearity and Auto-Correlation; Problems of Speciation Error; Errors of Measurement.

Unit 2: Regression with Qualitative and Lagged Variables

- Dummy Variable Techniques.
- Testing Structural Stability of Regression Models; Comparing Two Regressions, Interaction Effects, Seasonal Analysis, Piecewise Linear Regression, Use of Dummy Variables. Regression With Dummy Dependent Variables; the LPM, Logit, Probit and Tobit Models.
- Autoregressive and Distributed Lag Models- Koyck Model, Partial Adjustment Model, Adaptive Expectations; Instrumental Variables; Problem of Auto-Correlation-Application; Almon Approach to Distributed - Lag Models.

Unit 3: Simultaneous Equation Models

- The Simultaneous Equation Bias and Inconsistency of OLS Estimators;
- The Identification Problem; Rules, of Identification-order and Rank Condition;
- Method of Estimating Simultaneous Equation System; Recursive Method and OLS; Indirect Least Square (ILS); 2SLS; 3SLS – Applications.

Reading List:

- Amemiya, T. (1985), Advance Econometrics, Harvard University Press, Cambridge, Mass.
- Goldberger, A.S. (1998), Introductory Econometrics, Harvard University Press, Cambridge, Mass.
- Gujarati, D.N. (1995), Basic Econometrics (2nd Edition), Mcgraw Hill, New Delhi.
- Hill R. C, E.G. William and G.G. Judge (1997), Undergraduate Econometrics, Wiley, New York.
- J. Johnston, Econometrics Methods, Mcgraw Hill (Fourth Edition)

- Kennedy. P. (1998), A Guide to Econometrics (Fourth Edition), Mit Press, New York.
- Kmenta, J. (1997), Element of Econometrics (ReprInt Edition), University of Michigan Press, New York.
- Maddala, G.S: (Ed.) (1993), Econometric Methods and Application (2 Volumes)

2. PUBLIC ECONOMICS

Unit 1: Public Economics - Concept, Scope, Provisions of Public Goods

- Public Economics, Concept, Role of Government, Public, Private and Merit Goods, Pure impure Public Goods, Qasi Public Goods
- Information Asymmetry. Externalities,
- Public Goods, Nonrival Consumption and Non Excludability,
- Demand and Supply of Public Goods,
- Local Public Goods and Decentralization Theorem,
- Problems of Preference Revealtion, Voting Rule, Characteristic of Majority Voting Rule, Rent Seeking

Unit 2: Taxes, Public Expenditure, Debt and Budgeting

- Public Expenditure, Structure and Growth, Wagner's Law,
- Peacock– Hypothesis,
- Cost Benefit Analysis, Shadow Pricing, Discount Rate,
- Budgeting, Public Borrowing Public Debt, Budgeting and Zero Based
- Benefits and Ability to Pay Approaches to Taxes Allocative and Equity Aspects of Taxes,
- Deadweight Losses, Excess Burden, Trade off Between Equity and Efficiency.

Unit 3: Fiscal Federalism and Fiscal Reforms in India

- Fiscal Federalism. Assignment of Function, Constitutional
- Provisions, and Sources of Revenue.
- Resource Transfer from Centre to State
- Principles of Multi Unit Finance
- Direct and Indirect Taxes,
- Budget Deficit and Its Implications.

Reading List:

- Duff L, Government and Market, orient Longman, New Delhi 1997.
- Qullis. John and Jones Phillip: Public Finance and Public Choice, Oxford University Press, Second Edition 1998
- Atkinson Anthony B, Stiglitz, Josheph E; Lectures on Public Economics, Mac Graw Hill Book Co. Singapore 1980
- Musgrave, Richard A, Musgrave, Peggy B; Public Finance in Theory and Practice, Tata Mc Graw Hill Companry, New Delhi 2004
- Chelliah Raja J; Fiscal Policy in Under Developed Countries, George Allen and Unwin, London 1971

- Bhargava, R.K.; Some Aspects of Indian Public Finances, Uppal Publishing House, New Delhi – 1985
- American Economic Association: Reading in Fiscal Policy, George Allen and Unwin, London – 1955.

3. FINANCIAL ECONOMICS

Unit 1: Financial Markets

- Financial Markets and Financial Instruments
- Real Assets and Financial Assets
- Stocks, Rate of Interest, Exchange Rates
- Indian Financial Markets, Regulations and SEBI

Unit 2: Modern investment Theory

- Securities Markets Operational Efficiency and Efficient Market Hypothesis (Emh)
- Modern View of Security Analysis, Performance of Securities Market, Price / Earning Ratios.
- The Determinants of Equity Prices, Estimating Fair Value, Capital Asset Pricing Models (CAPM), Arbitrage Pricing Theories (APT), Multifactor Models
- Fixed Income Securities, Bond Valuation and Analysis, Bond Portfolio Management

Unit 3: Financial Derivatives

- Derivatives Forward Markets and Future Markets.
- Mechanics of Futures Markets and Price Determination. Hedgers, Speculators, Hedging Strategies.
- Options and Option Pricing, the Payoffs from Buying and Selling Options, Put-Call Ratio and Parity.
- Mechanics and Properties of Stock Options.

Reading List:

- Alexander, G.J., W.F. Sharpe and J.V. Bailey (2002), Fundamentals of Investments, Third Edition, Prentice-Hall of India Private Limited, New Delhi
- Chandra, P. (1999), Financial Management: Theory and Practice, Galgotia Publishers
- Hull, J.C. (2002), Options, Futures, and other Derivatives, Fifth Edition, Prentice-Hall
- Francis, J.K. (1991), Investments: Analysis and Management, McGraw-Hill
- R.E.Bailey(2005) The Economics of Financial Markets, Cambridge University Press
- Z. Bodie, Robert Merton and David Cleeton (2009), Financial Economics, Pearson
- Z. Bodie, A. Kane and A. Marcus(2008), Investments, McGraw-Hill

4. AGRICULTURAL ECONOMICS

Unit 1: Agriculture and Economic Development-Introduction

- Nature and Scope of Agricultural Economics
- Peculiar Characteristics of Agriculture
- Transformation of Traditional Agriculture-Schultz and Mellor's Analysis
- Agriculture and Dual Models: Fei- Ranis and Arthur Lewis
- Agriculture and Its Contribution-Kuznets's Formulations

Unit 2: Economics of Agricultural Production

- Production Function in Agriculture and forms of Production Functions-Cobb Douglas, Spill Man
- Factor Factor Relationship in Agriculture
- Rational and Irrational Production Stages of Production
- Risk and Uncertainty in Agriculture
- Crop insurance

Unit 3: Issues in India's Agricultural Development

- Land Reforms in India and Their Impact on Agrarian Structure
- The New Agricultural Strategy
- The New Economic Policy and Indian Agriculture
- Wto and its Implication for Indian Agriculture
- Agricultural Price Policy in India

Reading List:

- Ashok Rudra (1965) Economics of Agricultural Production and Resource use, Prentice Hal
- Acharya,S.S.(1998), Agricultural Marketing in India: Some Facts and Emerging Issues,Ijae, July-Sept.
- A.S. Kahlon and D.S. Tyagi, Agricultural Price Policy in India, Heritage Publishers
- Dantwala, M.L. Et Al (1991) Indian Agricultural Development Since Independence, Oxfordand IPH, New Delhi
- Ghatak Subrata and Ken inqresent(1984) Agriculture and Economic Development, Select Book Services Syndicate, New Delhi
- Hanumantha Rao (1964)" Agricultrual Production Functions: Cost ant Return in"India" Asia Publishing House, Bombay
- H. Evan Drummond, Jhon W Goodwin (2004) Agricultural Economics, Pearson Education, Delhi
- Heady E.O.(1964) Economics of Agricultural Production and Recourse use". Prentice Hall India Ltd, New Delhi.
- Kahlon .As. and D.S. Tyagi(1983)Agriculture Price Policy in India, Allied Publishers Ltd, New Delhi
- Krishna Raj (1963) Farm Supply Response in India-Pakistan: a Study of the Punjab Region, Economics J.I Sep
- Khusro AM. (1968) Readings in Agricultural Economics, Allied, Bombay
- Kuznets.S. (1965) Economic Growth and Structure, Oxford and DBH Publishing Compnay, New Delhi.

- Lele U (1965) Food Grain Marketing in India: Private Performance and Public Policy, Popular Prakashan, Bombay.
- Lewis, W.A (1955) Economic Development with Unlimited Supplies of Labour, Manchester School of Economic and Social Study, May
- Mellor J. (1966) the Economics of Agriculture Development, Yom and Company, Bombay. .
- Mellor J.W. (1969) Agricultural Policy in the Context of Economic Development" American Journal of Agriculture Economics, 51 (5).
- Motra A (1977) Terms of Trade and Class Relation, P. P Baghch Ad Company Culcutta
- M.L. Dantwala (Ed) 1985) Agricultural Growth in India, Indian Society for Agricultural Economics. Raj K.N. and Sen A.K. and L.H.H.
- Rao (Ed)(1988) Studies in Indian Agriculture, Oup
- Rao Y.M (1992) Fixing Agricultural Price: Issues and Experiences, Epw March
- Rath, N.K. (1985) Price" Costs of Production and Terms of Trade of Indian Agriculture, IJAE, Oct-Dec
- R.K Sampanth (1980) Economic Efficiency in Indian Agriculture
- Reins G and John Ch Fei (1961) Theory of Economic Development
- Robertson C.A. (1971) Introduction to Agricultural Production Economics and Farm Management" , Tata Macgraw Hill New Delhi
- Sakhyan PI (1988) Introduction to Economics of Agricultural Production, Prentice Hall India Ltd, New Delhi
- S.A.R. Bilgrami(L996) a Introduction to Agricultural Economics, Himalayan Publishing House, Bombay.
- Schultz T.W. (1964) Transforming Traditional Agriculture, New Have, Yale Univesity Press
- Sidhu, D.S. (1990) Some Aspects of Agricultural Economics and Price Policies in India, IJAE,July-Sept.
- Suthworth, H. M. and B.F. Johnston(Ed) (1974) Agricultural Development and Economic Growth Cornell Univesity, London
- Tyagi D.S (1974) Farmers Response to Agricultural Price in India: a Study in Decision Making, Heritage Publishers New Delhi
- Y.Haymi and V.Rutan (1971) Agricultural Development-an International Perspective, Jhon Hopkins
- Witt L (1950) Role of Agriculture in Economic Development, a Review of J.I of Farm Economics, February.

Semester III (Optional Papers)

1. ECONOMICS OF EDUCATION

Unit 1: Economics of Education, Human Development and Economic Development

- Economics of Education, Nature, Definition and Scope of study.
- Education and Human Development and Human Capital Accumulation.
- Aspects, Indicators and Measures of Economic Development.
- Impact of Education on Labour Force Participation, Technological Change and Economic Development.

Unit 2: Cost Benefit Analysis and Financing of Education

- Production and Cost Functions of Education.
- Financing of Education, Public - Private Participation.
- Theories of Public Expenditure on Education, Models and Methodologies.
- Linkages between Education, Skills and Jobs.
- Wastages in Education. Non-participation, Dropouts and Brain Drain.

Unit 3: Problems and Prospects of Education in India:

- Indian Perspective to Education,
- Literacy and Education Programmes of Government of India.
- Education planning, need based and Value based education planning in India.
- Public Expenditure on Education in India.
- Need and Scope for External Participation in Education in India.

Reading List:

- De. Anuradha and Jean Dreze (1999)-Public Report on Basic Education in India (Probe), Oxford University Press. New Delhi.
- Govinda R (Ed) (2000). India Education Report. a Profile of Basic Education National institute of Educational Planning and Administration, Oxford University Press. New Delhi
- Mahbubul Haq (1996) Reflections on Human Development, Oxford University Press. New Delhi.
- Dreze Jean and Sen Amartya (1994) Indian Economic Development and Social Opportunity. Oxford University Press. New Delhi.
- Tilak Jandhala B.G. (1994) Education and Development in Asia, Sage Publications New Delhi.
- Vaidyanathan A and Nair P.R.G (2001) Elementary Education in Rural India- a Grass Root View, Strategies for Human Development in India, Vol. 2, Sage Publications, New Delhi

Additional Readings:

- Ananda Krishnan M (2006) Privatization of Higher Education Opportunities and Anomalies, National Seminar on Privatisation and Commercialization of Higher Education, New Delhi May 2
- Amit Mukherjee (2007) 'Implications for Education' EPW Volume XLII No. 14 April 2007, PP 1273-1276
- Prez, Jeon and Geeta Kingdon (2001), School Participation in Rural India, Review of Development Economics.

- Panchamukhi P.R. (1990) 'Private Expenditure on Education in India- an Empirical Study', Indian Institute of Education, Pune
- Tilak J.B.G (2006) 'Economics of Human Capital in India' Indian Economic Journal 89(4) Dec. 27, 29, Pp 2-24.
- ----- (1999), Investment in Human Capital in India: an Interstate Analysis of Stock Flow of Human Capital of India, School of Political Economy Vol. XI No 1.
- ----- (2002), Education Policy in India Review of Development and Change, Vol. XI, No. 1

Journal:

- National Council of Education Research and Training 1982, 1999. Education Survey Report, New Delhi.
- World Development Reports, Various Issues- Washington D.C Oxford University Press. New Delhi.
- National Human Development Reports Various Issues- Planning Commission GOI, New Delhi
- Human Development Reports, Undp.

2. TIME SERIES ANALYSIS

Unit 1: Introduction of Time Series

- Stochastic Process
- Correlation and Autocorrelation Functions
- Stationarity: Unit-Root Test
- Arima Models

Unit 2: Conditional Heteroscedastic Models

- Characteristics of Volatility
- Structure of A Model
- The Arch Model
- The Garch Models: M-Garch, E-Garch and T-Garch

Unit 3: Vector Autoregression Model, Co-Integration and Forecasting

- Introduction to Var Analysis
- Causality in Time Series: Granger Causality Test and Toda and Yamamoto Causality Tests
- Co-Integration and error Correction Model
- Testing for CoIntegration – Engle – Granger Methodology – Johansen Methodology
- Time Series Forecasting.

Reading List:

- Brockwell P.J. and Davis R.A : "Introduction to Time Series and Forecasting", 2002
- Enders, W.: "Applied Econometric Time Series", 2nd Edition, 2003
- Harris, R. and R. Sollis: "Applied Time Series Modelling and Forecasting", 2003

- Kocenda, E. and A. Cerny, “Elements of Time Series Econometrics”, 2007
- Hamilton, J.D.: “Time Series Analysis, Princeton University Press”, 1994
- Kratzig, M. and H. Lutkepohl, “Applied Time Series Econometrics”, 2004
- Stewart, K. G.: "Introduction to Applied Econometrics", 2005
- Tsay, R. S. : “Analysis of Financial Time Series”, 2005.
- Verbeek, M.: “a Guide to Modern Econometrics”, 2nd Edition, 2004
- Gujarati, D: “Basic Econometrics” 4th Edition, 2004
- Patterson, K, “An Introduction to Applied Econometrics a Time Series Approach”, 2000.

3. INTERNATIONAL FINANCE AND BANKING

Unit 1: The International Monetary and Financial System

- Changing Role of Monetary System
- Organization of the Foreign Exchange Market- The Spot and the Forward Market.
- Parity Conditions in International Finance - Purchasing Power Parity, Fisher Effect & International Fisher Effect, Interest Rate Parity Theory
- Exchange Rate Regime and Foreign Exchange Market in India.

Unit 2: International Financing and Investment Decision.

- Overview of the International Financial Market. Official and Private Sources
- National Capital Markets as International Financial Centers
- The Euro-Currency Market and International Banks.
- International Equities: FDI and Portfolio investment
- Evaluation and Management of Political Risk

Unit 3: Financial and Debt Management

- Roles and Functions of External Debt in Developing Countries
- Budget Deficits and Public External Debt
- Episodes of financial Crisis
- Four Generation Models of Currency crisis
- Interrelationship between Currency, Banking and Financial Crisis
- Proposals to Resolve the Debt Crisis
- Prevention of Financial crisis
- New International Financial architecture

Reading List:

- Ahmad Khan Masood, Euro-Currency Market: Structure and Working, Indus Publishing Company, 1992.
- Brain Tew. the Evolution of International Monetary’ System, Hutchinson, 1985
- Franciso L. Rivera- Batiz, and Luis Rivera- Batiz, International Finance Open Economy Macroeconomics, Mazewell Macmillan International Edition, 1989; Chapter.

- J Dunning (1981), Multinational Enterprises.
- IMF: Recent Multilateral Debt Restructuring with official and Bank Credits, Washington, December 1983.
- IMF: External Indebtedness of Developing Countries Occasional Paper No.3, Washington, May 1981.
- Moris Goldstein, the Asian Financial Crises; Causes, Cures and Systemic Implication Washington Dc, June 1998.
- Obstfeld, M and Rogoff, K “Foundations of International Macroeconomics”, MIT Press, 1996.
- Pecchioli, R.M., the Internationalization of Banking, Oecd, Paris; 1983.
- Rajwade, A.V., (1996), Foreign Exchange, International Finance and Risk Management, Academy of Business Studies.
- Richard M. Levich, International Financial Market, Mc Graw Hill.
- Sachs, J and Radelet, Steven 1998. “The East Asian Financial Crisis; Diagnosis, Causes and Cures, institute of International Development, Us, April. Also, Published in Banking Papers on Economy Activity, 1998.
- Shapiro, Alan C., Multinational Financial Management, John Wiley and Sons, 2003, Seventh Editions, Chapter 3.
- The Banker, Third World Debt, September, 1987.

4. QUANTITATIVE FINANCE

Unit 1: Time Value of Money in Finance

- Time Value of Money – Annuity, Perpetuity, Consols
- Returns and Risks – Mathematical Expectations, Variance, Marginal, Conditional and Joint Distribution of Returns
- Mean Variance Model and Utility Function
- Log-Normality and Jensen’s inequality
- Calculation of NPV, DPV and IRR, and Optimum Investment Decisions
- Efficient Market and Financing Decisions

Unit 2: Capital Market Theory and Estimation

- Efficient Market Model and Testing For Market Efficiency
- Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (Apt) – Estimation Problems
- Factor Models – one Factor Model and Multifactor Model
- Estimating Factor Models and Implications
- Portfolio Analysis – Portfolio Selection Problem and Diversification

Unit 3: Modelling the Behaviour of Stock Prices and Options

- Stochastic Process and Deterministic Process

- Markov Process and Weiner Process
- Non-Stationarity and Integrated Process
- Co-Integration and error Correction Models
- Markov Switching Models
- Dividend Valuation Models
- Binomial Trees and Risk-Neutral Valuation Models
- Geometric Brownian Motion Model
- Black-Scholes Model for options

Reading List:

- Alexander, G.J., W.F. Sharpe and J.V. Bailey (2002), Fundamentals of Investments, Third Edition, Prentice-Hall of India Private Limited, New Delhi.
- Charemza, W.W. and Derek F. Deadman (1997), New Directions in Econometric Practice: General to Specific Modelling, CoIntegration and Vector Autoregression, Second Edition, Edward Elgar Publishing Limited, U.K.
- Cuthbertson, Keith and Dirk Nitzsche (2004), Quantitative Financial Economics: Stocks, Bonds and Foreign Exchange, Second Edition, John Wiley & Sons Ltd., England.
- Hull, J.C. (2002), Options, Futures, and Other Derivatives, Fifth Edition, Prentice-Hall of India Private Limited, New Delhi.
- Ross, S.M. (2003), an Elementary Introduction to Mathematical Finance: Options and other Topics, Second Edition, Cambridge University Press, U.K.
- Ross, S.A., R.W. Westerfield and Jeffrey Jaffe (2005), Corporate Finance, Seventh Edition, Tata Mcgraw-Hill Publishing Company Limited, New York.

5. RURAL ECONOMICS

Unit 1 Rural Development and Introductory Aspects

- Concept of Rural Development
- Scope and Importance of Rural Development
- Different Approaches to Rural Development
- Nature and Problems of Rural Development
- Rural Development - Indian Perspective

Unit 2: Dimensions of Rural Development in India

- Agriculture
- Rural Industrialization
- Human Resources
- Physical Infrastructure

Unit 3: Programmes/ Strategies of Rural Development

- Growth Targeted Strategies
- Rural Development Strategies
- Target oriented Rural Poverty Alleviation Programmes
- Target oriented Rural Employment Programmes

Reading List:

- David A.M. Lea and D.P. Chaudhri (Ed), Rural Development and the State
- Harris John. (Ed). 1982, Rural Development Theories of Peasant Economy and Agrarian Change, Hutchison University Library, South Africa
- Chambers Robert (1985), Rural Development Putting the Last First, Longman
- Basu Kaushik, Agrarian Questions, Oxford University Press
- Battacharya S.N., Rural Industrialization in India
- Rao R.V., Rural Industrialization in India
- Bagchi V., Khadi and Village Industries in the Indian Economy
- Vasant Desai., Organization and Management of Small Scale Industries
- Sundaram J.B., Rural Industrial Development
- Vasant Desai, Problems and Prospects of Small Scale Industries in India
- Mehan K K , Small Industry Entrepreneurs Handbook
- Dandekar V.M. and Rath .N. –Poverty in India
- Government of India – Evolution of Community Development Programme in India
- Desai, Vasant – Study of Rural Economics, Himalya Publishing Company, New Delhi
- Krishnamurthy V.T. –Community Development India
- Jain P.C. – Agriculture Reforms in India
- R.B.I Report On SFDA - -R.B.I. Mumbai
- Maheshwari S. - -Rural Development in India
- Mishra Puri – Indian Economy, Himalya Publishing House, Mumbai
- Datt, Sundaram – Indian Economy, S. Chand and Company, New Delhi
- Government of India, Ministry of Finance, Economic Division Economic Survey- Various Issues
- Jain ,P.C. Agricultural Reforms in India

Semester IV (Optional Papers)**1. MONETARY ECONOMICS****Unit 1: Demand for Money**

- Overview of Development of Monetary Theory and Major Issues
- Classical and Neo-Classical Theories of Money: Early Versions. Pigou and Cambridge School, etc. The Dichotomy between the Monetary Theory and Value Theory. Patinkin's Critique of Neo-Classical Theory.
- Money in Keynesian Framework: Liquidity Preference (L-P) Theory and Further Developments in L-P Approach; Tobin, Boumal Models.
- Friedman, New Monetarism and its Critique.

Unit 2: Supply of Money

- Monetary Aggregates, Liquidity Aggregates and Divisia Index
- H-Theory of Money Supply
- Money Multiplier Process and Factors Affecting H

- Exogeneity of Money Supply
- Money Supply in India: its Components and Trends

Unit 3: Monetary Management and Monetary Policy

- Monetary Management – Rules vs. Discretion
- Price Targeting vs inflation Targeting vs Exchange Rate Targeting
- Monetary Policy – Challenges before Reserve Bank of India.
- Difficulties of Controlling Money Supply in an open Economy
- Further Issues of Monetary Policy and Monetary Management in India

Reading List:

- Pierce D.G. and P.J. Tysome, Monetary Economics: Theories, Evidence and Policy, Butterworths, London, 1985
- Jadhav N., Monetary Economics for India, Macmillan India Ltd., 1994
- Gupta S.B., Monetary Economics: Institutions, Theory and Policy, 1982
- Goldfeld S.M. and L.V. Chandler, the Economics of Money and Banking, Harper and Row, 1981
- Handa J., Monetary Economics, Routledge, New York, 2000

2. ENVIRONMENTAL ECONOMICS - II

Unit 1: Modeling Environment: Non-Market Valuation Techniques

- Theory of Environmental Policy;
- Empirical Models of Non-Market Valuation;
- Revealed Preference Methods: Hedonic Models, Travel Cost Models;
- Stated Preference: Contingent Valuation Method;
- Choice Experiments: Conjoint Analysis;
- Environmental Accounting.

Unit 2: Environmental Issues and Legislation in India

- Environmental Issues in India: Pollution- Types, Causes and Effects;
- Environmental Jurisdiction and Environmental Legislation: Constitutional Provision;
- institutions, Instruments, Regulation and Conservation;
- Environmental Federalism, Inter-Jurisdictional Competition, Environmental Justice;
- Environmental Movements in India.

Unit 3: Global Environmental Issues and Governance

- Transboundary Pollution, Global Warming, Climate Change, Ozone Depletion,
- Climate Change & Sustainable Development, CDM & Sustainable Development;

- International Trade & Environmental;
- Environmental Conflict Management: institutional & Legal instruments, Multilateral Environmental Agreements;
- Major Environmental Organization & Events: Green Peace Movement, the World Conservation Union, The Nature Conservancy, Sierra Club, WWF, UNEP, UNCED;
- Environmental Conventions- Earth Summit, Stockholm Declaration On Human Environment, Rio Declaration, Agenda 21, Montreal Protocol, Convention on Biological Diversity, Climate Change, Basal Convention on the Control of the Transboundary Movement of Hazardous Wastes, Convention On Wetlands of International Importance,

Readings List:

- Baumol, William J. and Wallace E. Oates, (1988) the Theory of Environmental Policy, 2nd Edition, Cambridge University Press, UK
- Bhattacharya, R.N., (2001) (Ed.) Environmental Economics - an Indian Perspective (Oup),
- Chopra, Kanchan, Gopal K. Kadekodi (1999): Operationalizing Sustainable Development, Sage.
- Freeman, A. Myrick. (2003), the Measurement of Environment and Resource Values, Research for Future, Washington D.C.
- Hanley, Shoran and White - Environmental Economics in Theory and Practice, ILO, Encyclopedia of Occupational Health & Safety, Revised 3rd Edition.
- Kadekodi, Gopal K., 2004: Common Property Resource Management: Reflection on Theory & the Indian Experience, Oup
- Kolstad, C.D, (2002), Economic Valuation with Stated Preference Technique, Edward Elgar.
- Kolstad, C.D, (2004), Environmental Economics, Oxford University Press,
- Maler, K. Goran, (1974), Environmental Economics: a Theoretical inquiry, Resource for Future, Baltimore.
- Markandya, Anil & Kirsten Halsnaes (Eds.), 2002 Climate Change & Sustainable Development: Prospects for Developing Countries, Earthscan, UK, USA, (Ch.1, 2, 6-8.).
- Pearson, C.S, (2000), Economics and the Global Environment, Cambridge University Press, UK.
- Shankar, U. (2001), Environmental Economics (Ed.) Oup, Last Chapter
- Totenberg, Tom. (2000), Environmental & Natural Resource Economics, 5th Edition, Addison-Wesley Longman inc. USA. (Ch. 2, 3, 7, 8, 9, 10
- Tribedi, R.K., Handbook of Environmental Laws, Compliance & Standards, Vol. I & II, Environ – Media Karad, India.
- Sandler, Todd, (1998), Global Challenges: An Approach To Environmental, Political, and Economic Problems, 2nd Edition, Cambridge University Press, UK.
- Undp (1992): Handbook of Sustainable Development & Environmental Management, New York.
- V. Kerry Smith: Estimating Economic Values for Nature: Methods for Non-Market Valuation 1996, Edward Elgar, (Some Selected Papers).

- Van Den Berg, J.C. (1995), Handbook of Environmental & Natural Resource Economics Oecd (Ch. 26-30)
- World Commission on Environment & Development (Wced), 1987, Our Common Future, Oup.

Additional Readings:

- Alberini, A and J.Cooper (2002), Applications of Contingent Valuations in Developing Countries-A Survey, FAO Economic and Social Development Paper 146, Rome. (Full Preview Free on www.googlebooks.com)
- Bjomstad, David. J and James R. Kahn (1996), the Contingent Valuation of Environmental Resources: Methodological Issues and Research Needs, Brookfield: Edward Elgar.
- Arrow, K., and others. 1993. Report of the NOAA Panel on Contingent Valuation. Federal Register. Volume 58, Number 10. Pages 4601 to 4614.
- Available at: <http://www.darp.noaa.gov/library/pdf/cvblue.pdf>
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- Centre for Science & Environment: State of Environment Report
- Bowonder, Environmental Management Problems in India (1985), in Environmental Management, Vol. 10, No. 5
- Websites on of Some International Environmental Conventions:
- Convention on Biological Diversity @ <http://www.biodiv.org/>
- Convention on Climate Change @ <http://unfccc.int/>
- The Convention Concerning the Protection of the World Cultural and Natural Heritage (The World Heritage Convention) @ <http://whc.unesco.org/nwhc/pages/sites/main.htm>
- United Nations Convention on the Law of the Sea. <http://www.un.org/depts/los/index.htm>
- Convention on Wetlands of International Importance (Especially as Waterfowl Habitat) @ <http://www.ramsar.org/>
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes @ <http://www.basel.int/index.html>
- Convention On International Trade in Endangered Species of Wild Fauna and Flora (cites) @ <http://www.cites.org/eng/disc/what.shtml>
- Convention on Migratory Species @ <http://www.wcmc.org.uk/cms/>
- Conventions on Ozone Layer Protection the Convention for the Protection of the Ozone Layer the Montreal Protocol on Substances That Deplete the Ozone Layer @ <http://www.unep.org/ozone/aboutsec.shtml>
- Convention Regional Seas @ <http://www.unep.ch/seas/>
- Rotterdam Convention On Voluntary Prior informed Consent Procedure About Hazardous Import and Export @ <http://www.pic.int/index.html>
- Convention to Combat Desertification. Website @ <http://www.unccd.int/main.php>
- Northern American Free Trade Agreement (NAFTA) and Free Trade Agreement of America FTAA. (Environmental Relating Issues and institutional System)
- Center For Environmental Cooperation For NFTA @ www.cec.org

3. INDUSTRIAL ORGANIZATION

Unit 1: Oligopoly: Homogeneous and Differentiated Product Market Structure

- Cournot Competition – Duopoly Cournot Vs Collusion
- Sequential Moves- Leader Follower Model
- Bertrand Market Structure, Capacity Constraint- Edgeworth Paradox, Collusion, Entry Barriers,
- Differentiated Products (Cournot & Bertrand), Location Models

Unit 2: Economics of R& D Licencing & Innovations.

- Model of The innovation Process.
- Patent Race,
- Market Structure and innovation Efforts.
- Incentives For innovations, Socially Optimal and Market investments Into R&D. Patent Life.

Unit 3: Barriers to Entry and Exit and Network Externalities

- Entry Barrier- Limit Pricing, Capacity Constraints,
- Judo Economics- Gelman and Salop Model,
- Low Price As Signalling Device – Milogram and Roberts Model,
- Reaction To Partial Entry, Predatory Pricing,
- Predation in Learning and Network Industries

Reading List:

- Church, J., Roger Ware (2000), Industrial Organization: A Strategic Approach, McGraw-Hill, International Editions.
- Economides, Nicholas, the Economics of Networks, 1996, International Journal of Industrial Organization(14), 673-699.
- Loury G.L., 1979, “Market Structure and innovation”, Quarterly Journal of Economics, Vol. XCIII, No. 3, 395-410.
- Martin S., 1993, Advanced Industrial Economics, Blackwell.
- Salinger M.A., 1988, Vertical Mergers and Market Foreclosure, Quarterly Journal of Economics, Vol. 77, 345-356.
- Oz Shy (1995), Industrial organization: Theory and Applications, The MIT Press, Cambridge, Massachusetts, London, England.
- Tirole J., 1988, the Theory of Industrial organization, the MIT Press

4. GAMES AND INFORMATION

Unit 1: Game Theory under Complete information

- Static Game of Complete Information.

- Dynamic Games of Complete information
- Dynamic Games of Complete But Imperfect information
- Economic Applications

Unit 2: Game Theory Under incomplete information

- Static Games of incomplete information – Bayesian Nash Equilibrium.
- Dynamic Game of Incomplete Information – Perfect Bayesian Equilibrium, Trembling Hand Perfection.
- Economic Applications

Unit 3: Economics of information

- Types of Asymmetric Information - Moral Hazards, Adverse Selection, Signaling, Market for Lemons,
- Principal Agent Problem,
- Efficiency of Market Outcomes under Asymmetric Information

Reading List:

- Gibbons, Robert (1992), a Primer in Game Theory, Harvester Wheatsheaf, Newyork, London.
- Fudenberg, Drew, and Jean Tirole, Game Theory, ANE Books, New Delhi, 2005.
- Oz Shy (1995), Industrial organization: Theory and Applications, Themit Press, Cambridge, Massachusetts, London, England.
- Church, J., Roger Ware (2000), Industrial organization: a Strategic Approach, Mcgraw-Hill, International Editions.
- inés Macho-Stadler, J. David Pérez-Castrillo, Richard Watt, an Introduction to the Economics of Information: Incentives and Contracts, Second Edition, 2001, Oup
- Jehle & Renne, Advanced Microeconomic Theory, Pearson Education, India
- Mas-Colell, andreu, Michael D. Whinston and Jerry R. Green, (1995), Microeconomic Theory, Oup, New York.
- Varian, Hall R., (1992), Microeconomic Analysis (Third Edition), W.W. Norton & Company, New York, London.

5. COMPUTER APPLICATIONS IN ECONOMICS

Unit-I: Fundamental of Database Management

- Concepts of Data
- Information
- Record, File
- Database, DBMS, RDBMS
- Function of DBMS
- Components of DBMS, Database Designer
- Database Administrator

- DBMS Availability
- MS Excel, MS Access, MS Word, MS Powerpoint

**Unit-II: Cross Section & Panel Data Techniques and Methods using SPSS/STATA/
any other Software**

- Series, Groups, Tables, Graphs and Objects.
- Descriptive Statistics
- One Way Tabulation
- Cross Tables
- One Sample T Test
- Independent Sample Test
- Paired Sample T Test
- One Way ANOVA
- Correlation-Bivariate Partial
- Regression-Least Square, Binary & LogisticRegression
- 2 Stage Least Square, Factor Analysis, Principal Component, Panel Regression Analysis.

**Unit-III: Simultaneous Equation and Series Modeling, Using Eviews/Gempack/
any other Software.**

- Introduction of Econometric Software. Creating a work file, Entering Data into a work file, Creating a group, Graphing, Generating new Variables.
- Getting Data
- Importing Data
- Exporting Data
- Unit Root Test
- Cross Correlations and Correlograms
- Granger Causality
- Cointegration

Reading List:

- Eviews- Manual
- SPSS- Manual
- Cramer, J.S., Empirical Econometrics.
- Deaton, A.S., the Analysis of Household Surveys: a Micro-Econometric Approach to Development Policy.
- Deaton, A.S. and J. Muellbauer, Economics and Consumer Behaviour.
- Iyengar, N.S. and N. Bhattacharya, a Survey of Research in Economics, Vol. 7.
- Pollak, R.A. and T.J. Wales, Demand System Specification and Estimation.
- Klein, L.R.: (A) Introduction to Econometrics, (B) Text Book of Econometrics.

- Krishna, K.L. (Ed.), *Econometric Applications in India*.
- Wallis, K.F., *Topics in Applied Econometrics*.
- Fair, R.C., *Specification, Estimation and Analysis of Macro-Econometric Models*, Harvard University Press, Cambridge, 1984.
- Bergstrom, A.R., *Selected Economic Models and Their Analysis*, 1967, New York, American Elsevier Publishing Company, Inc.
- Granger, C.W.J., (Ed.), *Modelling Economic Series: Readings in Econometric Methodology*, Clarendon Press, Oxford, 1990.
- Fair, R.C., *Testing Macro-Econometric Models*, Harvard University Press, 1994.
- Peter R. M., Joanne E.S. and Kenneth, F.W., 'Fiscal Policy Rules in Macro-Economic Models: Principles and Practice', *Economic Modelling*, 17 (2000), 171-193).
- Fisher, P., *Rational Expectations in Macroeconomic Models*, Kluwer, 1992.
- Krishnamurty, K. and V. Pandit, *Macroeconomic Modelling of the Indian Economy*, Hidustan, 1985.
- Bedkin, R., L.R. Klein and K. Marwah, *History of Macro-Econometric Modelling*, Edward Elgen, 1991.