

ECONOMICS

PG - Syllabus

Code	Papers	Core/Open / Elective	Credits	Marks
Semester : I				
ECO-PG-C101	Microeconomics I	C	4	100
ECO-PG-C102	Macroeconomics I	C	4	100
ECO-PG-C103	Introduction to Statistics	C	4	100
ECO-PG-C104	Mathematical Economics	C	4	100
Semester : II				
ECO-PG-C201	Microeconomics II	C	4	100
ECO-PG-C202	Macroeconomics II	C	4	100
ECO-PG-C203	Basic Econometrics	C	4	100
ECO-PG-O204	Foundations in Research Methods and Data Analysis *	O	4	100
Semester : III				
ECO-PG-O301	Indian Economy*	C	4	100
ECO-PG-C302	International Trade and Finance	O	4	100
ECO-PG-E303	Advanced Econometrics	E	4	100
ECO-PG-E304	Industrial Economics	E	4	100
ECO-PG-E305	History of Economic Thought	E	4	100
ECO-PG-E306	Globalization and Development	E	4	100
ECO-PG-E307	Public Finance	E	4	100
ECO-PG-E308	Financial Economics	E	4	100
ECO-PG-E309	Economics of Social Sector	E	4	100
ECO-PG-E310	Economics of Identity and Discrimination	E	4	100
ECO-PG-E311	Structure and Growth of Indian Industries	E	4	100
Semester : IV				
ECO-PG-C401	Dissertation	C	4	100
ECO-PG-E402	Economics of Growth and Development	E	4	100
ECO-PG-E403	Environmental Economics	E	4	100
ECO-PG-E404	Agricultural Economics	E	4	100
ECO-PG-E405	Economics of Informal Sector	E	4	100
ECO-PG-E406	Computer Applications in Economics	E	4	100
ECO-PG-E407	Analysis of Indian Planning	E	4	100
ECO-PG-E408	Time Series Analysis	E	4	100
ECO-PG-E409	Poverty and Inequality	E	4	100
ECO-PG-E410	Economy of Mountainous Region	E	4	100
ECO-PG-E411	General Equilibrium Analysis	E	4	100
ECO-PG-E412	Efficiency and Productivity Analysis	E	4	100

*They are the “open papers”, two papers with one asterisk mark, which may be opted by the students from other departments as well under the CBCS of UGC. Otherwise, they are Core/compulsory papers for the students of the Department of Economics.

Note: Electives papers offered may be decided (differed) by the Department semester to semester basis.

MICROECONOMICS I
ECO-PG-C101
Master of Arts in Economics
Semester I (Core Paper)

Total Credit: 4

UNIT-I:

Consumer Behavior: Preference relations, Axioms of preference relations, Utility function and preference relation, Consumer preferences, Consumer budget set, Utility maximization problem, Derivation of Marshallian demand function with application, Indirect utility function and Roy's identity, The expenditure function and Hicksian demand functions, Relation between indirect utility function and expenditure function, Duality between Marshallian and Hicksian demand function, Income and substitution effect, Hicksian substitution effect, Slutsky equation, Aggregation in consumer demand, Choice and Revealed Preference. Decision making in Risk and Uncertainty.

UNIT- II:

Theory of Firm: Production, Production function, Elasticity of substitution, Homogeneous production function and concavity, Returns to scale and varying proportions, Returns to scale (global and local), Cost functions, Conditional input demand function in homothetic production, short run and long run cost functions, duality in production and cost function, recovering production function from cost function, Competitive firm's profit maximization, profit function, supply and input demand function, short run profit function.

UNIT-III:

Market Structure: Perfect competitive market, Short run and long run equilibrium in competitive market, Imperfect competition, pure monopoly and profit maximizing output, discriminating monopoly and durable good monopoly, the Coase Conjecture, Strategic behavior of firms in imperfect markets— Bertrand, Stackleberge and Cournot model; Monopolistic competition.

UNIT-IV:

Equilibrium and Welfare, Market Failure and Game Theory: Price and individual welfare, Efficiency of competitive outcome, efficiency and total surplus maximization, application, market failure under adverse selection, signaling models, screening model; game theory, strategic decision making, dominant strategy, strictly dominated strategy, Nash equilibrium, Mixed strategy, simplified Nash equilibrium test.

SELECTED READINGS

1. G. Jehle and P. Reny (2011). *Advanced Microeconomic Theory*, (3rd Edition) Prentice Hall
2. Andreu Mas Colell, Michael D. Whinston, Jerry, R. (1995). *Microeconomic Theory*, OUP,

3. Perloff, Jeffrey, M (2008). *Microeconomics Theory and Applications with Calculus*, Pearson Addison, Wesley.
4. Sen, A. (1999), *Microeconomics: Theory and Applications*, Oxford University Press, New Delhi.
5. Stigler, G. (1996), *Theory of Price*, (4th Edition), Prentice Hall of India, New Delhi.
6. Varian H R. (1992). *Microeconomic Analysis*, (3rd Edition) Norton International Student Edition
7. Aleskerov, F, Bouyssou, D., Monjardet B, (2007). *Utility Maximization, Choice and Preference*, Springer,
8. Schotter, Andrew (2009). *Microeconomics: A Modern Approach*. South Western, Cen Gage Learning.
9. Angus_Deaton_and_John_Muellbauer (1986). *Economics and Consumer Behavior*, CUP.
10. E, Malinvaud (1990). *Lectures on Microeconomic Theory*, North Holland

MACROECONOMICS I
ECO-PG-C102
Master of Arts in Economics
Semester I (Core paper)

Total Credit: 4

UNIT-I:

National Income Accounting and Consumption Function: Circular Flow of Income— in one, two, three and four sector model; Different forms of National Income Accounting— GDP, GNP, NDP, NNP, etc.; Social Accounting; Consumption Function— Keynes' Psychological Law of Consumption; Kuznets's Consumption Puzzle; Absolute Income Hypothesis; Friedman's Permanent Income Hypothesis; Duesenberry's Relative Income Hypothesis; Ando-Modigliani's Life-cycle hypothesis; The Random Walk Hypothesis.

UNIT-II:

Theories of Supply of Money: Definition of supply of Money and its importance in Macroeconomics; Determinants of Money supply; High-powered Money; Money Multiplier and Credit Creation by Commercial Banks; Factors affecting the Money Multiplier; IS-LM model— derivation, property and shift of the curve; Effects of Monetary and Fiscal policies on IS-LM curve.

UNIT-III:

Theories of Demand for Money: Fisher's Quantity Theory of Money; Keynes Motives for Liquidity preference—Transactions, Precautionary, Speculative; William Baumol's Inventory Theoretic Approach; James Tobin's Liquidity Preference as Behaviour Towards Risk; Friedman's Restatement of Quantity Theory of Money.

UNIT-IV:

Investment Function: Tobin's Q Theory of Investment; Keynesian Approach of Marginal Efficiency of Capital and Investment— long run and short run; the Accelerator and Investment Behavior— Influence of Policy Measures on Investment; Present Value Investment Criteria; Jorgenson's Neo-classical Theory of Investment.

SELECTED READINGS:

1. Ackley, Gardner (1978). Macroeconomics— Theory and Policy, New York: Macmillan.
2. Andolfatto, D. (2005), Macroeconomic Theory and Policy Preliminary Draft, Simon Fraser University.
3. Branson, W. H. (2005). Macroeconomics Theory and Policy, New York: Harper and Row.
4. Chamberlin, G. & Yueh, L. (2006), Macroeconomics, Thomson.
5. Dornbusch, R. and F. Stanley (2011). Macroeconomics, New York: McGraw Hill, Inc.
6. Edgmand, M. R. (1987). Macroeconomics— Theory and Policy, New Delhi: Prentice Hall.
7. Gregory Mankiw, N. (2012). Macroeconomics, New York: Macmillan.
8. Shapiro, E. (2010). Macro-Economic Analysis, New Delhi: Galgotia Publications (P) Ltd.

9. Gupta, S. B. (2016). Monetary Economics- Institutions, Theory and Policy, Delhi: S. Chand.
10. Fama, Eugene F (1965). Random Walks in Security Prices, Financial Analysts Journal, 41: 55-59.

INTRODUCTION TO STATISTICS
ECO-PG-C103
Master of Arts in Economics
Semester I (Core paper)

Total Credit: 4

Unit I:

Descriptive Statistics: Collection, organization and presentation of data; Measures of central tendency and dispersion; Measures of association— Correlation, Concept of least squares and lines of regression.

Unit II:

Theory of Probability and Distribution: *Basic probability*— Sample space, events, classical and axiomatic definitions of probability, independence, conditional and marginal probability, Bayes' formula, random variables, distribution function, variance and other moments.

Unit III:

Distribution theory: Discrete random variables— binomial, geometric and Poisson; Continuous random variables— uniform, normal, exponential, logistic, bivariate normal, t, F, and chi-square; Inequalities and limit results— Chebyshev's inequality, weak law of large numbers and central limit theorem.

Unit IV:

Statistical Inference: *Estimation*— Basic concepts, parameter, statistic, estimate, sampling distribution, properties of estimators, Cramer Rao inequality, point and interval estimators; *Point estimation*— method of moments, maximum likelihood method; *Interval estimation*— level of confidence, confidence limits and critical region; *Hypothesis Testing*— Type I and II errors, level, size, p-value, power; Testing hypothesis about mean and variance of normal population.

Selected Readings:

1. DeGroot, M. H. (1975), *Probability and Statistics*, Addison Wesley.
2. Freedman, D., R. Pisani and R. Purves (1998), *Statistics*, Norton and Co.
3. Hogg and Tanis (1989), *Probability and Statistical Inference* Maxwell Macmillan.
4. Chung, K.L. (1979), *Introductory Probability Theory* Springer-Verlag.
5. Freund, J. (1992), *Mathematical Statistics*, Prentice Hall.
6. Gnedenko, B. (1969), *The Theory of Probability*, Mir.
7. Hoel, P. and E. Stone (1971), *Introduction to Probability Theory*, Universal Book Stall.
8. Hoel, P. and E. Stone (1971), *Introduction to Statistical Theory*, Universal Book Stall.
9. Nagar, A.L. and R.K. Das (1983), *Basic Statistics* Oxford University Press.
10. Rao, C.R. (1965), *Linear Statistical Inference and Applications*, Wiley and Sons.

MATHEMATICAL ECONOMICS
ECO-PG-C104
Master of Arts in Economics
Semester I (Core Paper)

Total Credit: 4

Unit I:

Linear algebra and matrices: Vector space, linear dependence, algebra of matrices— addition, multiplication, transpose, inverse; Orthogonal, symmetric, idempotent and positive definite matrices; Eigenvalues, eigenvectors and quadratic forms; Simultaneous equations with matrices; Introduction to Input-output analysis.

Unit II:

Real analysis: Set theory, introduction to real number system, compactness and convergence; Functions of one and several variables— algebraic, exponential and logarithmic functions; Continuity at a point and over an interval; Differentiability; Limits of functions.

Unit III:

Differential calculus: Rules of differentiation; Derivatives of implicit functions, partial derivatives; Constrained and unconstrained optimization techniques, with special emphasis on application to problems from economics; indefinite integral of algebraic, exponential and logarithmic functions; Define integrals; Introduction to methods in control theory.

Unit IV:

Difference and differential equations: Linear difference and differential equations; Second order differential equations, with emphasis on examples from economics.

Selected Readings:

1. Hadley, G. (1987). *Linear Algebra*. Narosa Publishing House.
2. Simon, C.P. and Blume, L. (1994). *Mathematics for Economists*. W. W. Norton and Company.
3. Smith. A.H. and Albrecht, W.A. (1966). *Fundamental Concepts of Analysis*. Prentice Hall of India.
4. Sundaram R.K. (1966) *A First Course in Optimization Theory*. Cambridge University Press.
5. Tarski, A. (1965). *Introduction to logic and to the methodology of deductive science*, Oxford University Press.
6. Allen, R.G.D. (1976). *Mathematical Analysis for Economists*, Macmillan.
7. Chiang, A.C. (1974). *Fundamental Methods of Mathematical Economics*, McGraw Hill and Kogakusha, New Delhi.
8. Solow, Robert M.; Dorfman, Robert; Samuelson, Paul (1958). *Linear Programming and Economic Analysis*. New York: McGraw-Hill

Second Semester

MICROECONOMICS II
ECO-PG-C201
Master of Arts in Economics
Semester II (Core Paper)

Total Credit: 4

Unit I:

Exchange: The Problem and Solutions— Walras and Edgeworth – Competitive Equilibrium, Core and the Equivalence Theorem Effect of Endowment Changes

Unit II:

Production: Structure of Simple General Equilibrium Production Models, General Activity Analysis Models of Production, Linear Models— Non-Substitution Theorem, Supply Functions

Unit III:

General Equilibrium: Walrasian Equilibria— (i) Existence and Uniqueness: The Need for Supporting Regulatory Mechanisms; (ii) Stability— The Need for Appropriate Distribution of purchasing power and resources; (iii) Efficiency Properties of Walrasian Equilibria Non-Walrasian Equilibria: (i) Non-Tatonnement Processes; (ii) Rationing Equilibria (iii) Effective Demand (iv) Micro foundations of Macroeconomics

Unit IV:

Welfare Economics: Fundamental Theorems of Welfare Economics, Social Welfare Functions and Arrow's Impossibility Theorem, Externalities and Public Goods: Market Failures and, Second best Problems

Selected Readings:

1. G. Jehle & P. Reny (2011) Advanced Microeconomic Theory, (3rd Edition) Prentice Hall
2. Andreu Mas Colell, Michael D. Whinston, Jerry, R. (1995), Microeconomic Theory, OUP.
3. Perloff, Jeffrey, M (2008). Microeconomics Theory and Applications with Calculus, Pearson Addison, Wesley.
4. Sen, A. (1999), Microeconomics: Theory and Applications, Oxford University Press, New Delhi.
5. Stigler, G. (1996), Theory of Price, (4th Edition), Prentice Hall of India, New Delhi.
6. Varian H R. (1992). Microeconomic Analysis, (3rd Edition) Norton International Student Edition
7. Aleskerov, F, Bouyssou, D., Monjardet B, (2007). Utility Maximization, Choice and Preference, Springer.
8. Schotter, Andrew (2009). Microeconomics: A Modern Approach. South Western, Cen Gage Learning.
9. Angus Deaton and John Muellbauer (1986). Economics and Consumer Behavior, CUP.
10. E, Malinvaud (1990). Lectures on Microeconomic Theory, North Holland

MACROECONOMICS II
ECO-PG-C202
Master of Arts in Economics
Semester II (Core Paper)

Total Credit: 4

UNIT I:

Theory of Income and Employment: A review of the Classical Approach and Keynesian reaction— income and employment determination including money and interest; Classical theory of wage, price and interest rate flexibility and assumption of full employment; Keynesian under employment equilibrium— wage, price and interest rate rigidity, Real and monetary sector, Interest rate policy; IS-LM Analysis— explaining the role of government fiscal and monetary policies.

UNIT II:

Implication of Alternative Exchange Rate Regimes: Macroeconomic policy in an Open Economy— the Mundell-Flemming Model; Stabilization of the Open Economy; Rational expectations and rational expectations as efficient forecast; Disequilibrium in International Payment, Adjustment Mechanisms under various Exchange Rate Regimes, Devaluation and Exchange Control— The Monetarist Approach to the Balance of Payments.

UNIT III:

Inflation and Phillips Curve: Classical, Keynesian and Monetarist approaches to inflation; Structuralist theory of inflation; Phillips curve— short run and long run, Okun's law, trade-off between inflation and unemployment; natural rate of unemployment; Adaptive and rational expectations; Policies to control inflation.

UNIT IV:

Business Cycles and Balance of Payment: Concept of Trade/business cycle; Theories of Schumpeter, Kaldor, Hicks, Samuelson; Goodwin's model; Control of business cycles— relative efficacy of monetary and fiscal policies.

SELECTED READINGS:

1. Ackley, Gardner (1978). Macroeconomics— Theory and Policy, New York: Macmillan.
2. Branson, W. H. (1997). Macroeconomics Theory and Policy, New York: Harper and Row.
3. Dornbusch, R. and F. Stanley (2011). Macroeconomics, New York: McGraw Hill, Inc.
4. Edgmand, Michael R (1987). Macroeconomics— Theory and Policy, New Delhi: Prentice Hall.
5. Gregory Mankiw, N. (2012). Macroeconomics, New York: Macmillan.
6. Shapiro, E. (2010). Macro-Economic Analysis, New Delhi: Galgotia Publications (P) Ltd.
7. Gupta, S. B. (2016). Monetary Economics- Institutions, Theory and Policy, New Delhi: S. Chand.

8. Fama, Eugene F (1965). Random Walks in Security Prices, *Financial Analysts Journal*, 41: 55-59.

BASIC ECONOMETRICS
ECO-PG-C203
Master of Arts in Economics
Semester II (Core Paper)

Total Credit: 4

Unit I:

The classical linear regression model (CLRM): Ordinary Least Squares (OLS) — Estimation and Inference, simple and multiple regression models; Functional forms and structural change; Non-linear regression; Growth rates; Dummy variable regressors.

Unit II:

Violation of Classical Assumptions: Violations of OLS assumptions; Misspecification tests; Heteroscedasticity and autocorrelation; Multicollinearity; Aitken theorem and generalised least squares (GLS) method; Restricted least squares estimator and testing procedures; Stochastic regressors— errors in variables and its consequences; Hypothesis testing under multiple parameter restrictions.

Unit III:

Maximum Likelihood Estimation (MLE): Likelihood function, properties of MLE; The gradient and information matrix; Numerical Optimization Methods; The likelihood ratio, Wald, and Lagrange multiplier tests.

Unit IV:

Simultaneous Equations System: Structural and reduced forms, least squares bias problem, Formalization of identification problem— rank and order conditions; Recursive Models – Methods of Estimation; 1LS, 2SLS, 3SLS; The method of instrumental variables – identification and choice of estimation method.

Selected Readings:

1. Dongherty, C. (1992). *Introduction to Econometrics*. Oxford University Press, New York
2. Gourieroux C. A. Monfort. (2002). *Statistics and Econometric Models*. Cambridge University Press Vol. 1 and 2.
3. Maddala, G.S. (Ed.). (1993). *Econometrics Methods and Application*. Aldershot (2 Vols.).
4. Wooldridge, J.M. (2000). *Introductory Econometrics*. Southwestern
5. Baltagi, B.H. (1998). *Econometrics*, Springer, New York
6. Goldberger, A.S. (1998). *Introductory Econometrics*. Harvard University Press. Cambridge, Mass
7. Gujarati, D.N. and Sangeetha, (2007). *Basic Econometrics* (4th Edition), McGraw Hill, New Delhi
8. Maddala, G.S. (1997). *Econometrics*. McGraw Hill, New York

9. Pindyck, R.S. and Rubinfeld D.L. (1976). *Econometric Models and Economic Forecasts*. McGraw Hill Kogakusha, Tokyo
10. Madnani, G.M.M. (2008), *Introduction to Econometrics- Principles and Applications*. OUP.

FOUNDATIONS IN RESEARCH METHODS AND DATA ANALYSIS

ECO-PG-O204

Master of Arts in Economics

Semester II (Core Paper)

Total Credit: 4

Unit I:

Introduction to Research in Social Sciences: Meaning and Significance of Social Science Research, Research in Science and Non-Science Disciplines; Approaches to Research— Descriptive vs Analytical, Qualitative vs Quantitative, Applied vs Fundamental, Conceptual vs Empirical; Research Process in Economics; Formulating the Research Problem, Survey of Literature, Critical Reading, Theorizing the Research, Formulation of hypotheses, The Research Design.

Unit II:

Types and Sources of Data: Cross-Section, Time-Series, Panel and Pooled Cross-Section Data, Secondary Data Sources— Availability, Features and Methods of Data Collection, NSSO, CSO, ASI, RBI, MSME, WBES, Economic Survey, EPWRF, Population Census, Economic Census, Agricultural Census, Livestock Census, Other Databases (PROWESS and WITS) etc., Primary Data— Observation, Interview and Questionnaire/Schedule; Pilot Survey, Reliability and Validity

Unit III:

Sampling, Survey and Data Compilation: Population and Sample, Sample Size, Types of Sampling— Probability and Non-probability Sampling; Error Minimization, Evaluation of Time and Cost, Sample Weights, Choice of Sampling Design; Data Extraction (using

MS Access and SPSS), Data Entry, Editing, Cleaning and Coding (using MS Excel), Classification and Tabulation (using MS Excel and SPSS).

Unit IV:

Data Analysis: Descriptive Statistics, Graphs, Correlation, Regression Analysis— Simple and Multiple Regression; Dummy Variables and its uses; Problems in Econometric Estimation— Endogeneity and Causality; Interpretation of Results, Presentation of Results, Writing a Research Report, References and Bibliography, Oral Presentation, Copyright and Plagiarism.

Selected Readings:

1. Chandrasekhar, C. P. and Tilak, Jandhyala B G (eds.) (2001), India's Socio-economic Database: Surveys of Selected Areas, Tulika, Delhi.
2. Ethridge, Don. (1995) Research Methodology in Applied Economics. Ames IA: Iowa State University Press.
3. Goode & Hatt (2006): Methods in Social Research, McGraw Hill, California
4. Gujarati, D. (2014), Econometrics by Example, Palgrave Macmillan, Hampshire, UK
5. Manna, G.C. (2014), Data on Manufacturing Sector: Current Status and Challenges. In Kathuria, V., Raj, R.S.N. and Sen, K. (eds), Productivity in Indian Manufacturing: Measurements, Methods and Analysis, Routledge, New Delhi.
6. Newbold, P., Carlson, W.L. and Thorne, B. (2007), Statistics for Business and Economics, Pearson Education, New Delhi.
7. Rao, J. R. (1968), Indian Statistical System, IIPA, New Delhi.
8. Saluja, M. R. (1972), Indian Official Statistical Systems, Statistical Publishing Society, and the Indian Econometric Society, Calcutta.
9. Saluja, M.R. (2004), Industrial statistics in India: Sources, Limitations and Data Gaps, *Economic and Political Weekly*, 39(48):5167-5177.
10. Steven A. Greenlaw (2005) Doing Economics: A Guide to Understanding and Carrying Out Economic Research

Third Semester

INDIAN ECONOMY
ECO-PG-O301
Master of Arts in Economics
Semester III (Core paper)

Credits: 4

Unit I:

Economic Development and Poverty: Approaches to development; Development indicators— PQLI, HDI, Gender related Development index and Gender Empowerment Measure; Status and trend of human development; Development strategy after independence; Poverty— magnitude and determinants; Poverty alleviation programmes — IRDP to MGNREGA; Poverty and inequality; debate on poverty in the 1990s.

Unit II:

Structural Change, Employment and Demographic Features: Growth and structural changes in the National and State economies— Regional disparity in post reforms period; Achieving inclusive growth; Employment and growth— Employment and unemployment; Labour Laws and labor markets— Recent strategies and policies for employment generation; Demographic features and trends— National population policies; Privatization and disinvestments debate; Recent trends in industrial growth and diversification; Importance and performance of SSIs and Cottage industries; Performance of service sectors.

Unit III:

Agriculture and Rural economy: Productivity and growth in agriculture, Land reforms, Agricultural price policy; Agricultural finance policy; Food security and Public distribution system, Agriculture and WTO; Industrial policy reforms, Public Sector Enterprises and their performance, Land distribution and land use pattern— its implication for development, forests, water and other mineral resources in the region; Agriculture-pattern, practices (shifting cultivation), problems and prospects, issues in agricultural productivity; Diversification of rural employment— the role of non-farm sector; growth and composition of rural non-farm employment; Rural credit market— characteristics, nature and spread; Microcredit and SHGs.

Unit IV:

Economy of the India's North Eastern Region: North Eastern Region as an economy; Major characteristics, Structure of economy and its transformation, constraints to development; comparison with the Indian economy, demographic features of the NE economy; Poverty, inequality and human development— Status and trend; Exclusion and the need to have inclusive development; Economic Infrastructure— power, road, communication and banking; infrastructure deficiency and regional economic development; Status and structure of industries— constraints to industrialization, industrial policy-North East Industrial and Investment Promotion Policy (NEIIPP) 2007; Employment and unemployment— status, trends and composition; implications for the

development; Migration— inter region and cross boarder; Migration and regional economic development; New development initiatives in NER, Vision Document 2020; Look East Policy and the NE Region.

Suggested Readings:

1. Bhagwati, J. N., and P. Desai (1970), *India: Planning for Industrialization* OUP.
2. Agarwal, A.K. (1987 Ed.): *Economic Problems and Planning in North East India*, Sterling Publishers.
3. Alam, K. (ed.) (1993): *Agricultural Development in North East India: Constraints and Prospects*, Deep and Deep, ND.
4. Banerjee and Kar (1999 Ed.): *Economic Planning and Development of North-Eastern States*, Kanishka, ND.
5. Menon, S. (ed.) (2007): *India's North East Economy-Problems and Prospects*, ICFAI Univ. Press, Hyd.
6. Ahluwalia, I.J and I.M.D. Little (eds.) (1998): *India's Economic Reforms and Development*, OUP, ND.
7. Brahmananda, P.R. and V.R. Panchmukhi (eds.) (2001): *Development Experience in Indian Economy: Inter-State Perspectives*, Bookwell, Delhi.
8. Dantwala, M.L. (1996): *Dilemmas of Growth: The Indian Experience*, Sage, New Delhi.
9. Joshi, V. and I.M.D. Little (1999): *India: Macro Economics and Political Economy, 1964-1991*, OUP, New Delhi.
10. Tendulkar, S.D and T.A. Bhavani (2007): *Understanding Reforms- Post 1991 India*, OUP.

INTERNATIONAL TRADE AND FINANCE
ECO-PG-C302
Master of Arts in Economics
Semester III (Core Paper)

Total Credit: 4

Unit I:

Pure Trade Theory in General equilibrium framework: Tools for Analysis of International Models; Why Countries Trade; General Equilibrium as the basis for Trade; Inter Industry Trade Models— Classical approach, Neo-classical approach; Imperfect Competition Models; Models relating to Intra Industry Trade; Trade and Welfare, Gains from Trade

Unit II:

International Trade Policy: Price support & Production Quotas; Import Quotas & Tariff; Two part tariff; Tariff and its different types, Terms of Trade effect of Tariffs, Theory of Optimum Tariff, Tariff and Income Distribution, The Metzler Paradox, Tariff Games; Effective Rate of Protection; Import quotas, Quota versus Tariff; Theory of Strategic Trade Policy; Other non-Tariff barriers to trade; Cartel as a Trade Restriction; Theory of Custom Union: Net Welfare Effects

Unit III:

Open economy: Foreign Trade and National Income; Balance of Payments, Disequilibrium in BOP, BOP adjustment through variation in exchange rate, Devaluation and BOP adjustment, Elasticity Approach, Marshall Lerner Condition, The Absorption Approach, J-Curve Phenomenon, BOP adjustment Through Expenditure Policies, Monetary & Fiscal Policy Approach in achieving internal and external balance.

Unit IV:

International Finance: Positive and Welfare Effects of Portfolio Investment; Equilibrium in international Money market; Foreign Exchange market; Determination of Exchange rate— Purchasing Power Parity, Interest Parity; Monetary Approach; International Capital Flow; International debt— Debt Forgiveness, Risk Aversion and International Portfolio Diversification.

Selected Readings:

1. Chacholiades, M. (2009), The Pure Theory of International Trade, Aldine Transaction, New Brunswick.
2. Chacholiades, M. (1981), Principles of International Economics, Mc-Graw Hill Book Company, New Delhi.
3. Krugman, P.R. and Obstfeld, M. (2013), International Economics: Theory and Policy, 8th Edition, Pearson Education, New Delhi.
4. Kindleberger, C.P. (1998), International Economics, 8th Edition, Richard D. Irwin, Inc., USA.
5. Mannur, H.G. (1996), International Economics, 2nd Revised Edition, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Sodersten, B. (1984), International Economics, 2nd edition, Macmillan, Hong Kong.

7. Sodersten, B. and Reed, G. (1994), International Economics, 3rd edition, Macmillan, New Delhi.
8. Salvatore, D. (2000), International Economics, John Wiley, London.
9. Thompson, H. (2011), International Economics: Global Markets and Competition, 2nd edition, Cambridge University Press India Pvt. Ltd., New Delhi.

****Third Semester Elective Papers****

****Two Elective papers (Elective 1 and 2) must be chosen from the list given below****

ADVANCED ECONOMETRICS
ECO-PG-E303
Master of Arts in Economics
Semester III (Elective Paper)

Total Credit: 4

Unit I:

Models with Limited Dependent and Qualitative Variables:

Binary choice models— linear probability model, probit, and logit models; Multi response models— multinomial logit and ordered probit models; Truncated and Censored regressions; Tobit model.

Unit II:

Dynamic Econometric Models: Autoregressive and Distributed-Lag Models— Estimation of Distributed-Lag Models; Estimation of Autoregressive Models; Exogeneity tests, Wu-Hausman test.

Unit III:

Introduction to Time Series Analysis: Stationarity; Autocorrelations and Partial Auto-correlation Functions; Unit roots and Units roots tests; ARIMA modelling; ARCH/GARCH models; VAR models and Granger causality; Co-integration.

Unit IV:

Panel Data Regression Models: Estimation of Panel Data Regression Models— the Fixed Effects Approach, the Random Effects Approach; Fixed Effects (LSDV) versus the Random Effects model.

Selected Readings:

1. Cameron, C. and Trivedi P. (2005): *Micro Econometrics*, Cambridge: Cambridge Univ. Press.
2. Davidson and MacKinnon (2004). *Econometric Theory and Methods*, Oxford University Press.
3. Goldberger (1991). *A Course in Econometrics*. Harvard University Press.
4. Greene (2003). *Econometric Analysis*. 5thedition, Prentice Hall.
5. Johnston and Di-Nardo (1997). *Econometric Methods*. 4thedition, McGraw-Hill.
6. Maddala (1982). *Limited-dependent and Qualitative Variables in Econometrics*. Cambridge University Press.
7. Wooldridge, J.M (2002). *Econometric Analysis of Cross Section and Panel Data*. MIT Press.

INDUSTRIAL ECONOMICS
ECO-PG-E304
Master of Arts in Economics
Semester III (Elective paper)

Total Credit: 4

Unit I:

Industrial Organisation and Market Structure: Technology, production cost and demand, Optimum size of firm; Review on theory of firm & industry; Competitive equilibrium and welfare; Equilibrium with simultaneous move (Quantity & Price) — Free entry equilibrium, Welfare, etc.; Best response & stability, uniqueness; Equilibrium with sequential move; Reaching an agreement; Issues in entry deterrence; Repeated game; Alternative motives of firm, Industrial efficiency— Concept & its measurement

Unit II:

Innovation & Spill over, Agglomeration: Classification of process innovation; Innovation as a race, Expected date of discovery, Case for a single firm & case for two firm, Equilibrium in R&D race, Society's optimal R& D level, Innovator choice of R&D level for a given duration of patent, Patent, Duration of patent, Society's optimal duration of patent, Optimal patent & economic welfare, Adaption and diffusion of innovation, Innovation and durability trade-off, Warranties, Economics of compatibility and standards, Advertising, Agglomeration and choice for industrial location

Unit III:

Industrial Finance, Uncertainty & Insurance: Sources of industrial finance (short & long term); Cost of capital to industries; Capital structure decision; working capital financing; long term asset financing, Institutions for industrial finance, Venture capital financing, Uncertainty in industrial organisation, Determinants of demand for insurance

Unit IV:

Demand and Supply of Industrial Input: Input demand and its pricing under perfect and imperfectly Competitive Industry, Overtime pay & supply of labour service, Substitution & scale effect, Minimum wage law, Time & goods constraint, Reservation wage, Non labour income, Unemployment Compensation full disability, Welfare system

Selected Readings:

1. Shy, Oz. (1996), *Industrial Organisation: Theory and Applications*, MIT Press.
2. Tirole, J. (1988, 2009), *The Theory of Industrial Organization*, Prentice-hall Pvt Ltd.
3. Tremblay, Victor J. and Tremblay, Carol Horton. (2012), *New Perspectives on Industrial Organisation with Contributions from Behavioural Economics & Game Theory*, Springer, USA.
4. Church, J. & Ware, R. (2000), *Industrial Organization: A Strategic Approach*, McGraw-Hill.

HISTORY OF ECONOMIC THOUGHT
ECO-PG-E305
Master of Arts in Economics
Semester III (Elective Paper)

Total Credit: 4

UNIT-I

Nature and Importance of Economic Thought: Mercantilism— Views on Trade, Money and Prices, Wages and Employment; Physiocracy— Natural Order; Net product and Circulation of Wealth.

UNIT-II

Classical Thought: Adam Smith— Theories of Value, Distribution and Growth; Ricardian Economics— Value Analysis, Theories of Trade and Distribution, Views on Machinery and Employment, Ricardo-Malthus glut controversy.

UNIT-III

Marxian Economics: From Harmony to Class struggle, Historical Materialism and Marx's Interpretation of History, Dialectical Materialism, Development and Decay of Capitalism.

UNIT-IV

Essential features of Marginalism: Jevon's Theory of Value; Walras's Theory of General Equilibrium; Overview of Marshall's Contribution.

Selected Readings:

1. A.K. Dasgupta (1986): Epochs of Economic Theory, Oxford University Press, New Delhi.
2. D.P.O. Brien (1975): The Classical Economists, London, Oxford University Press.
3. Dobb, Maurice (1975): Theories of Value and Distribution since Adam Smith, CUP.
4. E. Mandel (1971): Marxist Economic Theory, Rupa & Co.
5. Eric Roll (1992): History of Economic Thought, Faber and Faber.
6. Gide, C. and Rist C. (1948): A History of Economic Doctrines, George G. Harap & Co.
7. Krishna Bhardwaj (1978): Classical Political Economy and Rise to Dominance of Supply and Demand Theories, Oxford University Press.
8. M. Blaug (1983): Economic Theory in Retrospect, Vikas Publishing House, 3rd Edition (Cambridge University Pub.).
9. Schumpeter, J.A. (1954): History of Economic Thought, Oxford University Press.

GLOBALIZATION AND DEVELOPMENT

ECO-PG-E306

Master of Arts in Economics

Semester III (Elective Paper)

Total Credit: 4

Unit I:

Historical Perspective and Economics of Globalization: Globalization and its genesis— Growth and trend of globalization; Similarities and differences of the present globalization with an earlier epoch of globalization during the late nineteenth century; Emergence of developing countries in the world economy; Economics of globalization— Economic characteristics, manifestations and drivers of globalization in the present phase; Economic impact of globalization and its consequences for development; Globalization with some focus on the gap between rich and poor.

Unit II:

Globalization and Macroeconomic Theories: Growing interdependence and deepening integration of economies; Globalization and macroeconomic objectives and shifted the focus of macroeconomic policies in developing countries; Debate on the for and against the globalization; Orthodox prescription of markets and globalization as a strategy of development; Critique of its theoretical foundations in terms of economic theory and examines lessons from the development experience during the second half of the twentieth century.

Unit III:

Institutions and Rules: Institutions and cross-border movement of goods, services, technology and finance; WTO, GATT, IMF, World Bank and their emerging rules in the world economy; Asymmetric and unfair global rules in the multilateral trading system and the international financial system.

Unit IV:

National and International Context: Exploring how globalization could be made more conducive to economic development for the poor countries and poor people; Introducing corrective and redesign strategies to bring egalitarian development; Reshaping the rules of the game and contemplate some governance of globalization to create more policy space for the pursuit of national development objectives.

Selected Readings:

1. Amin, Samir (2003). *Obsolescent Capitalism: Contemporary Politics and Global Disorder*, Zed Books, Delhi.
2. Bairoch, Paul (1993). *Economics and World History: Myths and Paradoxes*, University of Chicago Press, Chicago.
3. Baker, Dean, Gerald Epstein and Robert Pollin eds. (1998). *Globalization and Progressive Economic Policy*, Cambridge University Press, Cambridge.
4. Bhagwati, Jagdish (2004). *In Defence of Globalization*, Oxford University Press, Oxford.

5. Chang, Ha-Joon (2002). *Kicking Away the Ladder: Development Strategy in Historical Perspective*, Anthem Press, London.
6. Deepak Nayyar (2006). *Stability with Growth: Macroeconomics, Liberalization and Development*, Oxford University Press, Oxford.
7. Findlay, Ronald and Kevin H. O'Rourke (2007). *Power and Plenty: Trade, War and the World Economy in the Second Millennium*, Princeton University Press, Princeton.
8. Friedman, Thomas L. (2007). *The World is Flat*, [Farrar: Straus and Giroux](#).
9. Rodrik, Dani (2007). *One Economics, Many Recipes: Globalization, Institutions and Economic Growth*, Princeton University Press, Princeton.
10. Stiglitz, Joseph (2012). *Globalisation and its Discontents*, Penguin Books, Gurgaon.

PUBLIC FINANCE
ECO-PG-E307
Master of Arts in Economics
Semester III (Elective Paper)

Total Credit: 4

Unit I:

Introduction to Public Finance: Definition and scope of Public economics, need for public sector, major functions- allocative functions, distributive functions, stabilization function and coordination of budget function; Allocation and Distribution of Public Choice- social goods, market failure, provision of social goods comparison with private goods, mixed goods, merit goods; market provision of non-rival goods; Efficient provision of private goods and public goods; approaches to distributive justice- endowment based criteria, utilitarian criteria, egalitarian criteria; Public Choice- direct democracy, representative democracy Leviathan Hypothesis.

Unit II:

Public expenditure: Role of public expenditure in developing countries; progressive and regressive public expenditure law— Peacock-Wiseman Hypothesis; expenditure evaluation principle— types of benefits and costs and weights to costs and benefits, efficiency of projects, discounting and cost of capital; issues in public projects.

Unit III:

Taxation and Public Debt: Canons of taxation, theory of tax incidence— nature, types and measuring incidence, partial equilibrium view and general equilibrium view; macro aspects of incidence; Tax distortion in partial and general equilibrium framework, magnitude of excess burden; classical view of public debt; effects of public debt on economy; principles of debt management.

Unit IV:

Fiscal Federalism and Fiscal Policy Principles: Fiscal federalism in India, constitutional provisions, Finance commission and NITI Ayog (Earlier Planning Commission); devolution of resources and grants; Centre and state financial relation in India, Objectives of fiscal policy, interdependence of fiscal and monetary policies, budgetary deficits and its implications.

Selected Readings

1. Musgrave, R.A and Musgrave, P.B (2004) *Public Finance in Theory and Practice*, Tata MacGraw Hill, New Delhi.
2. Stiglitz, J (2000) *Economics of the Public Sector*, 3rd Edition, WW Norton Company,.
3. Hillman, A. I (2009) *Public Finance and Public Policy: Responsibilities and Limitation of Government*, 2nd Edition, CUP.
4. Wellisch, D. (2004) *Theory of Public Finance in a Federal State*, CUP, UK.
5. Rosen, S.N and Gayer, T. (2008) *Public Finance*, 8th Edition, Tata MacGraw Hill,
6. Hindricks, J and Myles, G.D. (2006) *Intermediate Public Economics*, MIT Press.
7. Gruber, J (2011) *Public Finance and Public Policy*, Worth Publisher, NY.

FINANCIAL ECONOMICS
ECO-PG-E308
Master of Arts in Economics
Semester III (Elective Paper)

Total Credit: 4

UNIT I:

BASIC CONCEPTS IN FINANCE-I: Introduction to Financial Economics, Subject Matter, Scope and Relevance; Financial Markets— Financial Instruments, Financial Claims-Relation between Stocks and Flows; Introduction to Corporate Finance-Forms of Business Organization-Goals of Financial Management, The Agency Problem; Basic Concepts in Finance— Assets and Liabilities; The Balance Sheet; Profit and Loss Account; Net Working Capital; Liquidity; Time Value of Money— Rationale, Net Present Value, Practical Applications.

UNIT II:

BASIC CONCEPTS IN FINANCE-II: Statement of Changes in Financial Position; Cash Flow Statement; Funds Flow Statement; Ratio Analysis— Different Kinds of Financial Ratios, Calculation and Importance in Financial Analysis; Investment Criteria— Internal Rate of Return, Rate of Interest— Period, Compounded and Effective Annual Rates of Interest; Risk and Return — Importance, Measurement of Risk and Return of an Asset; Measurement of Risk and Return of a Portfolio; Systematic and Unsystematic Risk.

UNIT III:

SECURITY MARKETS: The Supply of Securities— Characteristics, Government Bonds, Index Linked Bonds, Pure Discount Bonds, Spot Yields, Coupon Paying Bonds; The Cost of Capital— Debt and Equity; Costs of Debt, Equity and Preferred Stock; Capital Market— Primary Market and Secondary Markets; Shares and Debentures— Types and issuance; The Stock Exchange— Methods of Trading, Over the Counter Exchange of India, Recent Developments in the Indian Stock Market.

UNIT IV:

STOCK MARKET EFFICIENCY: Security Markets and their Efficiency— The Efficient Market Hypothesis; Weak, Semi-Strong, Strong Forms of Efficiency; The Capital Asset Pricing Model (CAPM)— Estimation of Betas, Validity of CAPM; The Arbitrage Pricing Theory, Its Alternative Approach and importance in Finance; Stock Indices— BSE Sensex, BSE 100, BSE Bankex, Dow Jones Industrial Index.

Selected Reading List

1. Houthakkar, H.S. and Williamson, P.J. (1998). The Economics of Financial Markets, Oxford University Press, New Delhi.
2. Jurgen Eichberger and Ian R Harper. (1998). Financial Economics, Oxford University Press, London.
3. Khan, M Y. and Jain, P K. (2004). Financial Management: Text, Problems and Cases, Tata McGraw Hill, New Delhi.

4. Prasanna Chandra. (2004). Financial Management: Theory and Practice, Tata McGraw Hill, New Delhi.
5. Ross, Stephan A; Rudolph W.; Westerfield and Jaffe, Jaffrey. (2004). Corporate Finance, McGraw Hill, Irwin.
6. Van Horne, J.C. (2005). Financial Management and Policy, Prentice-Hall, New Delhi.

ECONOMICS OF SOCIAL SECTOR

ECO-PG-E309

Master of Arts in Economics Semester III (Elective Paper)

Total Credit: 4

Unit I:

Introduction to Economics of Education: Education as consumption and investment goods; Human capital— the concept, components of human capital; Historical developments in the human capital theory; Human capital and human development; Public and private education; Cost of education— private costs and social costs; Education, employment and income; Education, poverty and income distribution.

Unit II:

Educational Planning and Financing: Approaches to educational planning; Economics of educational planning in developing countries with special reference to India; Educational planning and the problem of educated unemployment and brain drain; Role of financing in the development of education; Equity and efficiency effects of financing education in India.

Unit III:

Introduction to Economics of Health: The concept of health and health care; life expectancy and mortality rates, morbidity— Health as consumption and investment goods; Role of health in economic development; Comparison of education and health; Health as human capital; Determinants of health— Poverty and malnutrition; Economic dimensions of health care— Demand and supply of health Care.

Unit IV:

Financing and Institutional Issues in Health Care: Resource mobilization and utilization of health care in India; Pricing and subsidies to health sector; Equity and efficiency effects of health care financing; Health care and resource constraints; Inequalities in health and health care in India; Institutional issues in health care delivery; Implications of GATT for health sector and financing.

Selected Readings

1. Becker, G.S. (1974). Human Capital. 2nd edition, NBER, New York.
2. Blaug, Mark (1972). Introduction to Economics of Education, London: Penguin.
3. Folland, S., A.C. Goodman, and M. Stano (2001). The Economics of Health and Health Care. New Jersey: Prentice Hall.
4. Klarman, H.E. (1995). The Economics of Health. New York: Columbia University Press.
5. Panchamukhi, P.R. (1980). Economics of Health: A Trend Report. ICSSR Survey, New Delhi: Allied Publisher.
6. Phelps, Charles E. (2010). Health Economics. 4th edition, Prentice Hall.
7. Tilak, J.E.G. (1989). Economics of Inequality in Education. New Delhi: Sage.
8. Walker, Melanie, and Elaine U. (eds.) (2007). Amartya Sen's Capability Approach and Social Justice in Education. Macmillan.

9. William, Jack (2000). Principles of Health Economics for Developing Countries. WBI Development Studies.
10. World Bank (1993). The World Development Report 1993: Investing in Health. Oxford University Press.

ECONOMICS OF IDENTITY AND DISCRIMINATION

ECO-PG-E310

Master of Arts in Economics

Semester III (Elective Paper)

Total Credit: 4

Unit I:

Concepts of Identity and Institutions: Meaning of identity and social institutions— ethnic, religious, culture and political identity; Tribe, caste and community; Concept of institution.

Unit II:

Equal rights, unequal opportunities: Introduction to inter-caste disparity; Survey of economic literature dealing with caste inequality; Regional identity and inter-regional disparities; Gender identity and disparities.

Unit III:

Social groups and economic performance: Measuring discrimination; Beyond the labour market; Caste, religion and gender vs economic performance; Economics of ethnicity, identity formation, politics and ethnic conflict.

Unit IV:

Remedies for inter group disparity and conflict: Affirmative action and compensation issues; State measures and its consequences; civil society organizations and community for inter group disparity and regionalism.

Selected Readings:

1. Sen, Amartya (1998). "On Economic Inequality". New York: Oxford University Press.
2. Singha, K. and Singh, M. A. (eds.) 2016: Identity, contestation and development in Northeast India, Routledge.
3. Thorat, Sukhadeo (1979): *Passage to Adulthood: perceptions from below*, In Sudhir Kakkar (editor), Identity and Adulthood, Oxford University Press,
4. Deshpande, Ashwini (2000). *Recasting Economic Inequality*, Review of Social Economy, Vol 58, No. 3, pp. 381-399
5. Akerlof, George (1984). *The economics of caste and of the rat race and other woeful tales*, The Quarterly Journal of Economics, Vol. 90, No. 4,
6. Madheswaran, S. and Paul Attewell (2007): *Caste discrimination in the Indian urban labour market*, Economic and Political Weekly, Vol. XLII, No. 41, October 13.
7. Deshpande, Ashwini (2001): *Caste at Birth? Redefining disparity in India*, Review of Development Economics, Vol. 5 No. 1.
8. Michael Reich. (1981). *Racial Inequality: A Political-Economic Analysis*, Princeton, New Jersey: Princeton University Press.
9. Deshpande, Ashwini (2007): *Overlapping identities under liberalization: gender and caste in India*, Economic Development and Cultural Change, Volume 55, No. 4.
10. Weiner, Myron (1978): *Sons of the Soil— Migration and Ethnic Conflict in India*, OUP.

STRUCTURE AND GROWTH OF INDIAN INDUSTRIES

ECO-PG-E311

Master of Arts in Economics

Semester III (Elective Paper)

Total Credit: 4

Unit I:

Industrialisation and Development: On the centrality of industry; Autonomous industrialization vs. State-aided; Import Substitution vs Export Promotion; Late industrialisation and premature oligopoly.

Unit II:

Industrial Structure in India: (i) *Nature of Indian monopoly*— Representative unit and oligopolistic behaviour; Implications for prices, output & technical change; Effects of deregulation and liberalisation. (ii) *Role of foreign capital*— Forms of foreign investment; Balance of payments impact. (iii) *Small-scale sector:* Structural characteristics and growth; empty middle and efficiency. (iv) *Public Sector in theory & practice*— Case for public investment; structural evolution of India's public sector; question of "efficiency"; privatisation debate and experience.

Unit III:

Growth and Stagnation - India's Post-Independence Industrial Development Record: (i) Phases of industrial development; (ii) Assessing Import Substitution - Indian Experience— agricultural constraint; Income distribution and demand; Public investment and growth; neoclassical critique; Explaining liberalisation and neo-liberal reform.

Unit IV:

Experience with Liberalisation: (i) Industrial growth during the 1980s— Growth process during the 1980s; changing role of finance; Structural change during the 1980s. (ii) Industrial growth during the 1990s— Industrial reform during the 1990s, Licensing reform, De-reservation Reform, Anti-trust and competition policy, Import liberalisation, Foreign investment after liberalisation; growth process during the 1990s; financing of investment. Some international comparisons and implications

Selected Readings:

1. Ahluwalia, Isher J. (1985), *Industrial Growth in India: Stagnation since the Mid-Sixties*, Delhi: Oxford University Press.
2. Bagchi, A.K. (1972), *Private Investment in India, 1900-39*, Cambridge: Cambridge University Press.
3. Bagchi, A.K. (1987), *Public Intervention and Industrial Restructuring in China, India and the Republic of Korea*, New Delhi: ILO-ARTEP.
4. Bhagwati, Jagdish & Padma Desai (1970), *Planning for Industrialisation: Trade and Industrialisation Policies 1950-66*, Delhi: Oxford University Press.
5. Nayyar, Deepak (1994), *Industrial Growth & Stagnation: The Debate in India*, Delhi: Oxford University Press.

6. Gokarn, S., A. Sen and R. Vaidya (2004). *The Structure of Indian Industry*. Delhi: Oxford University Press.
7. Sen, K. (2008). *Trade Policy, Inequality, and Performance in Indian Manufacturing*. London: Routledge.
8. Kathuria, V., Raj, R.S.N. and Sen, K. (2014). *Productivity in Indian Manufacturing: Measurements, Methods and Analysis*, Routledge, New Delhi.
9. Panagariya, Arvind. (2008). *India: The Emerging Giant*. New Delhi: Oxford University Press.
10. Mookherjee, D. (1995), *Indian Industry: Policies and Performance*, Oxford: Oxford University Press.

Fourth Semester

Dissertation
ECO-PG-C401
Master of Arts in Economics
Semester IV (Core Paper)

In the IV semester there shall be one full compulsory paper (dissertation) of 4 credits on Fieldwork/Internship/Experimental Work/Project Work. The students will be distributed among the faculty members at the end of the III semester, depending on the area of interest (of the both the faculty and students). They will submit dissertations and defend their findings before the entire faculty plus one external examiner at the end of the IV semester.

The average of marks given by internal faculty members shall be counted out of 50% and the external examiner shall mark out of the remaining 50%.

The duration of Fieldwork (if needed) should be two to three weeks and this should be completed during the winter vacation between III and IV semesters.

****Fourth Semester Elective Papers****

****Three Elective papers (Elective 3 to 5) must be chosen from the list given below****

ECONOMICS OF GROWTH AND DEVELOPMENT

ECO-PG-E402

Master of Arts in Economics

Semester IV (Elective paper)

Total Credit: 4

UNIT I

Concept of Growth and Development: Meaning of growth and development; Measuring development— Income measures, Basic Needs Approach, PQLI and HDI and Capabilities Approach; Sustainable development.

UNIT II

Theories of Development: Contributions of Adam Smith, Ricardo, Karl Marx and Schumpeter; Nelson's low level equilibrium trap; Myrdal theory of backwash effect; Nurkse-Roden's balanced growth theory; Hirschman-Singer's unbalanced growth theory; Theory of dualism— Lewis and Fei-Ranis, Hariss-Todaro model; Big push theory.

UNIT III

Theories of Growth and Technology: Harrod-Domer growth model, Harrod's theory and the dynamic instability of the capitalist system; Neo-classical growth model of Solow, Meade, Kaldor-Pasinetti; Technological progress in the neo-classical paradigm; Neutral technological progress— Harrod and Hicks; Disembodied and embodied technological progress.

UNIT IV

Sectoral Aspects of Development: Causes, consequences and controversies of population growth and the quality of life; Education and Population— Investing in education and health, the human capital approach, women and education, educational systems and development; O-Ring theory; Cost and benefits of population growth; Malthusian population trap; Impact of migration on urbanisation and urban unemployment.

Selected Readings:

1. Adelman, Irma (1961): Theories of Economics Growth and Development, Stanford University Press, Stanford.
2. Higgins, B. (1959): Economic Development, W.W. Norton, New Delhi.
3. Todaro, Michael P. Stephen C. Smith (1996): Economic Development, Pearson Education Pvt. Ltd., New Delhi.
4. Hayami, Y. and Yoshihisa Godo (2009): Development Economics— from Poverty to the Wealth of Nations, Oxford University Press, New Delhi.
5. Ray, Debraj (2003): Development Economics, Oxford University Press, New Delhi.
6. Meier, M. Gerald and James E. Rauch (2000): Leading issues in Economic Development, Oxford University Press: New Delhi.
7. Sen, Amartya (2001): Development as Freedom, Oxford University Press, New Delhi
8. Dreze, Jean and Amartya Sen (2005): India— Development and participation, OUP, New Delhi
9. Ghatak, Subrata (1986): An Introduction to Development Economics, Rutledge, UK.
10. Kindleberger, C. P. (1977): Economic Development, McGraw Hill.

ENVIRONMENTAL ECONOMICS

ECO-PG-E403

Master of Arts in Economics

Semester IV (Elective paper)

Total Credit: 4

Unit I:

Economics of Natural Resource: Renewable resources and its optimal use; Exhaustible resources and its optimal use; Intertemporal Production and Consumption decision— Depletable resources; Measuring & mitigating natural resource scarcity; Resource extraction path for different types of market; Condition for optimal depletion of resources; Cost function for non-renewable resources.

Unit II:

Welfare, Social Sector and Environment: Review of welfare theory in context of environment; Detrimental externalities and non-convexities in the production set; Pigouvian solution to externality; Coase theorem; Public goods & the tragedy of common; Lindahl's solution; The optimal level of pollution; Market achievement of optimal pollution; Taxation and optimal pollution; Environmental standards, taxes and subsidies; Marketable pollution permits; Uncertainty and the choice of policy instruments; Environmental risk and irreversibility; Environmental protection and income distribution

Unit III:

Environmental Valuation: Environmental damages/benefits, Social cost benefit analysis; Use values, Option values and Non-use values; Valuation techniques; Production based, Travel cost method; Contingent valuation; Hedonic-pricing method

Unit IV:

Environmental Accounting and Development: Integrated Environmental & Economic Accounting & Measurement of Environmentally Corrected GDP; Environmentally Adjusted NDP; Adjusting NI Measurement to Account for Environment (Non-renewable resources); ENDP with Exploration Activity related to Exhaustible resources; Environment development trade-offs; Sustainable development— Concepts and indicators; Environmental Kuznets curve

Selected Readings List:

1. Anderson, D. A. (2014), *Environmental Economics and Natural Resource Management*, Routledge, London.
2. Baumol, W.J. and Oates, W.E. (1998), *The Theory of Environmental Policy*, Cambridge University Press, New York.
3. Bhattacharya, R. N. (2001), *Environmental Economics*, Oxford University Press, New Delhi.
4. Hanley, N., Shogren, J.F., White, B. (1997), *Environmental Economics in Theory and Practice*, MacMillan.

5. Kolstad, C.D. (1999), *Environmental Economics*, Oxford University Press, New Delhi.
6. Pearce, D.W., Turner, R.K. (1990), *Economics of Natural Resources and the Environment*, Prentice Hall Financial Times, England.
7. Roger, Perman. Yue, Ma. , James, Mc Gilvray., and Michael, Common. (2003), *Natural Resource and Environmental Economics*, Pearson Education Limited.
8. Shankar, U. (ed.) (2001), *Environmental Economics*, Oxford University Press, New Delhi.

AGRICULTURAL ECONOMICS
ECO-PG-E404
Master of Arts in Economics
Semester IV (Elective Paper)

Credit: 4

Unit I:

Agriculture and Economic Development: Nature, scope and issues of agricultural economics, organizational structure of agriculture; Role of agriculture in economic development; Interdependence between agriculture and industry, Some empirical evidence; Models of interaction between agriculture and the rest of the economy, Agricultural development; Agricultural diversification, development of agro-based industries.

Unit II:

Economics of Rural Infrastructure: Use of land, water and energy, rural social infrastructure-education and health; Land reforms, Land distribution, Structure and trends, Land values and rent, Land tenures and farming systems, Peasant, capitalist and state farming; Tenancy and crop sharing, Forms, incidence and effects; Land reform measures and performance; Women and land reforms, problems of marginal and small farmers.

Unit III:

Agricultural Production and Productivity: Agricultural production, Resource use and efficiency, production function analysis in agriculture, factor combination and resource substitution, cost and supply curves; Farm size and laws of returns, Theoretical and empirical findings; Farm budgeting and cost concepts, supply response of individual crops and aggregate supply; Resource use efficiency in traditional agriculture, technical change, labour absorption.

Unit IV:

Rural Labour Market: Rural labour supply, interlocking of factor markets, mobility of labour and segmentation in labour markets; Marginalisation of rural labour, nature, extent and trends in rural employment; Agricultural wages in India, Male-Female wage differences, non-agricultural rural employment, Trends and determinants.

Selected Readings:

1. Bhandari, A. (1984). The Economic Structure of Backward Agriculture, Macmillan, Delhi.
2. Dantwala, M.L. (et al.) (1991). Indian Agricultural Development since Independence, Oxford & IBH, New Delhi.
3. Griffin, K. (1973). Political Economy of Agrarian Change.
4. Joshi, P.C. (1975). Land Reforms in India: Trends and Prospects, Allied Publishers, Bombay.
5. Raj, Sen Rao (1982). Dharm Narain: Studies on Indian Agriculture, Oxford Univ. Press, New Delhi.

6. Rao, C.H.H. (1975). Agricultural Growth, Rural Poverty and Environmental Degradation in India, Oxford University Press, New Delhi.
7. Rudra, A. (1982). Indian Agricultural Economics: Myths and Reality, Allied Publishers, New Delhi.
8. Saini, G.R. (1979). Farm Size, Resource Use Efficiency and Income Distribution, Allied Publishers, New Delhi.
9. Appu, P.S. (1996). Land Reforms in India, Vikas, New Delhi.
10. Bardhan (1984). Land Labour and Rural Poverty, Oxford Univ. Press, New Delhi.

ECONOMICS OF INFORMAL SECTOR
ECO-PG-E405
Master of Arts in Economics
Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Concepts/Measures: Informal Sector— Statistical Concepts and Definitions; Informal Employment Vs Informal Economy; Characteristics of Informal Sector; Regional Estimates of Informal Sector— Conceptual Differences; Composition and Segmentation; Types of Employment in the Informal Sector; Earnings and Benefits; The Urban Informal Sector— Size, Composition and Contribution; Issues in Measurement; Improving Statistics on Informal Employment.

Unit II:

Historical and Theoretical Perspectives on Informal Economy: The ILO and the Informal Sector; Dual Economy Approach— Lewis Theory, Todaro Model, Fei and Ranis Model; Neo-Marxian Approach; Structuralist Approach; Legalist Approach; Institutional Approach; Voluntarist Approach; Recent Rethinking: ILO, WIEGO and World Bank; Sectoral Dependencies and Interlinkages; Formal and Informal Sector Linkage— Forward and Backward; The Informal sector and the Income Distribution— The Inverted U Curve

Unit III:

Informal Sector in Global Context: Informality and Growth— Production, Employment and Environment; Informality and Poverty; Informal Sector and Development Policy Dilemma; Globalisation and Informal Sector; Women and the Informal Sector; Wages and Incomes; Social Protection and Informal Workers; Country Studies— Informality in Developing Countries; The Second Economy in Socialist Countries; The Underground Economy in Developed Countries.

Unit IV:

Informal sector in India: Size, Structure and Growth; Manufacturing Sector; The Policy Context — Small-scale Industry Reservation Policy; Industrial Licensing; Regulation and Informal Sector— Factories Act, Labour Laws and Other Regulations; Informalisation of the Formal Sector; Subcontracting; Debates on Firm Growth; Missing Middle; Determinants of Firm Transition.

Selected Reading:

1. B. Harriss-White and A. Sinha 2007. *Trade Liberalization and India's Informal Economy*, New Delhi: Oxford University Press.
2. Basile, E. 2013. *Capitalist Development in India's Informal Economy*. Oxon: Routledge.
3. Breman, Jan. 2013. *At Work in the Informal Economy of India: A Perspective from the Bottom Up*. New Delhi: Oxford University Press.
4. De Soto, H. 1989. *The other path*. New York: Harper and Row.

5. Little, I.M.D., D. Mazumdar and J.M. Page. 1987. *Small Manufacturing Enterprises: A Comparative Analysis of India and Other Economies*. New York: Oxford University Press.
6. Marjit, S. and Kar, S. 2011. *The Outsiders: Economic Reforms and Informal Labour in a Developing Economy*, New Delhi: Oxford University Press.
7. Mazumdar, D. and S. Sarkar. 2013. *Manufacturing Enterprises in Asia: Size Structure and Economic Growth*. London and New York: Routledge.
8. Portes, A., Castells, M. and L. Benton, eds. 1989. *The Informal Economy. Studies in Advanced and Less Developed Countries*. Baltimore: The Johns Hopkins University Press.
9. Raj, R.S.N. and Sen, K. 2016. *Out of the Shadows? The Informal Sector in Post-Reform India*, Oxford University Press, New Delhi
10. Tanzi, V. 1982. *The Underground Economy in the United States and Abroad*. Lexington: Lexington Books.

COMPUTER APPLICATIONS IN ECONOMICS
ECO-PG-E406
Master of Arts in Economics
Semester IV (Elective Paper)

Credit: 4

Unit I:

Introduction to Computers and Peripherals: Meaning, Characteristics, types and evolution of computers; Basic components of computer; Networking and Resource Sharing; Introduction to Operating System; Fundamental of Database Management— Concepts of Data, Information, Record, File, Database, DBMS, Function of DBMS, Components of DBMS, DBMS Availability, MS Excel, MS Access, MS Word, MS PowerPoint.

Unit II:

Data Compilation and Analysis: Data Processing; Techniques; Data Extraction, Importing Data, Data Entry, Editing, Cleaning and Coding (using MS Access, MS Excel, SPSS); Types of Data: Time Series, Cross Sectional, Panel and Pooled Data; Classification and Tabulation: groups, tables, cross tables, graphs and objects, Arithmetic Progression, Geometric Progression, Time and frequency series.

Unit III:

Cross Section and Panel Data Techniques and Methods using SPSS/STATA/ any other Software: Descriptive Statistics; One Sample T Test; Independent Sample Test; Paired Sample T Test; One Way ANOVA; Correlation: Bivariate, Partial; Regression-Least Square, Binary and Logistic Regression; Factor Analysis, Principal Component, Panel Data Regression Models: Fixed and Random Effects Models

Unit IV:

Simultaneous Equation and Time Series Modeling using STATA/Eviews: Method of Instrumental Variables, Two Stage Least Squares, Endogeneity and Causality, Self-Selection, Hurdle Models, Decomposition Methods, Matching Methods, Distributional Effects; Time Series Modeling: Unit Root Test, Cross Correlations and Correlograms, Granger Causality, Cointegration

Selected Readings:

1. Baum, C.F. (2006), An Introduction to Modern Econometrics Using Stata, Stata Press
2. Bradley, A. (1991), Peripherals for computer systems, Macmillan Education
3. Davis, G. and Pecar, B. (2013), Business Statistics Using Excel, Oxford: Oxford University Press.
4. Griffiths, W.E., Hill, R.C. and Lim, G.C. (2011), Using EViews for Principles of Econometrics, John Wiley & Sons
5. Gujarati, D. (2014), Econometrics by Example, Palgrave Macmillan, Hampshire, UK
6. Kerns (1993), Essentials of Microsoft windows, Word and Excel, Prentice Hall of India, New Delhi.

7. Landau, S. and Everitt, B.S. (2004), A Handbook of Statistical Analyses using SPSS, Chapman and Hall/CRC, London.
8. Stephe, M. (2006), Databases with Access: Learning Made Simple, Butterworth-Heinemann.
9. Thareja, R. (2014), Fundamentals of Computers, New Delhi: Oxford University Press.
10. Thomas, C. (2014), Exploratory Data Analysis in Business and Economics: An Introduction Using SPSS, Stata, and Excel, Springer International Publishing, Switzerland.
Eviews Manual, Stata Manual, SPSS Manual

ANALYSIS OF INDIAN PLANNING
ECO-PG-E407
Master of Arts in Economics
Semester IV (Elective Paper)

Credit: 4

Unit I:

Introduction to Indian Planning: India at Independence – the notion of an underdeveloped economy. The proximate determinants of growth and the role of resource mobilisation. Means to resource mobilisation in an underdeveloped, labour surplus economy— costless utilization of unutilized labour and the productive use of the produced economic surplus; NITI Ayog.

Unit II:

Institutions, Policies and Plan Models: The possibilities of and the constraints to the costless utilization of surplus labour. The role of economic organisation and institutional change. Defining the Economic Surplus. On the productive use of the economic surplus. Two aspects of the problem: “disproportionality” and “resource mobilization”. Forms of disproportionality. The capital goods bottleneck. Planning Models— Harrod-Domar, Mahalanobis model. The Mahalanobis strategy and the concept of the Bargain Sector. The industrial policy regime during the Mahalanobis years. Industrial structure and phases of industrial growth. The role of import substitution. Alternative explanations for the industrial recession of the mid-1960s. The relation between public and private investment.

Unit III:

Major Bottlenecks: The wage goods bottleneck. The agrarian question in India. The experience with land reforms. Features of agricultural growth prior to the Green Revolution and the agricultural crisis of the mid-1960s. The Green Revolution strategy and its consequences. Resource mobilization and the productive use of the produced economic surplus. Trends in government revenue and expenditure. The fiscal crisis of the State. The problem of inflation.

Unit IV:

Economic Reforms: India’s balance of payments. The exchange control regime and alternative perceptions of the foreign exchange problem. The foreign exchange crisis of the 1950s, 1960s and 1990s. Explaining trends in employment, poverty and deprivation. The neoclassical critique of the import-substitution regime. Economic “reform” and liberalisation. The functioning of the economy under neo-liberal policies: some theoretical and empirical issues. Growth during the “reform” years. Poverty and employment trends in the 1990s.

Selected Readings:

1. Ahuwalia, I.J. (1985) *Industrial Growth in India* Oxford University Press.
2. Bagchi, A. K. (1971) “Theory of Efficient Neocolonialism”, *Economic and Political Weekly*, Vol. 6, No. 30.
3. Bagchi, A. K., and N. Banerjee (eds) (1981) *Change and Choice in Indian Industry* K. P. Bagchi.

4. Bardhan P. K. (1984) *The Political Economy of Development in India* Oxford University Press.
5. Bhaduri, A., and D. Nayyar (1995) *An Intelligent Person's Guide to Economic Liberalisation* Penguin Books.
6. Bhagwati, J. N., and P. Desai (1970) *India: Planning for Industrialisation* Oxford University Press.
7. Bhalla, G. S., and G. Singh (2001) *Indian Agriculture: Four Decades of Development* Sage Publications.
8. Bharadwaj, K. (1974) *Production Conditions in Indian Agriculture* Cambridge University Press.
9. Byres, T. J. (ed) (1998) *The Indian Economy: Major Debates Since Independence* Oxford University Press.

TIME SERIES ANALYSIS
ECO-PG-E408
Master of Arts in Economics
Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Exploratory Analysis of Time Series: Graphical display, classical decomposition method, estimation, elimination of trend and seasonal components; Stationary Time Series— weak and strong stationary, AR, MA, ARMA processes; Conditions for stationarity, invertibility and causality; Autocorrelation and partial autocorrelation functions (ACF, PACF); Identification based on ACF and PACF; Estimation, order selection and diagnostic checks; Akaike information criterion, Schwarz information criterion.

Unit II:

Nonstationary Processes: ARIMA; Determination of order of integration, tests of non-stationarity (unit root tests) — Dickey-Fuller (DF); augmented DF (ADF), Phillips-Perron tests; Transforming nonstationary time series, Co-integration— tests for co-integration

Unit III:

Forecasting and Prediction based on AR, MA, ARMA and ARIMA models: Estimation of the ARIMA Model— diagnostic checks-forecasting; VAR Model— estimation of VAR— forecasting with VAR; VAR and Causality— VECM.

Unit IV:

Practical Application of Time Series Data: Applications of different software packages and tools for handling different practical problems related to time series data.

Selected Readings:

1. Brockwell, P. J. and Davis, R. A (2002). *Time Series: Introduction to Time Series and Forecasting*. Springer.
2. Chatfield, C. (2003). *The Analysis of Time Series: An Introduction*. Chapman and Hall/CRC Press.
3. Hamilton, J.D. (2009). *Time Series Analysis*. Princeton University Press.
4. Brillinger, D. (2001). *Time Series: Data Analysis and Theory*.
5. Brockwell, P. J. and Davis, R. A. (2009). *Time Series: Theory and Methods*. Springer.
6. Fan, J., and Yao, Q. (2005). *Nonlinear Time Series: Nonparametric and Parametric Methods*. Springer.

POVERTY AND INEQUALITY
ECO-PG-E409
Master of Arts in Economics
Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Introduction: concepts of poverty, steps in measuring poverty, choice of indicator; Poverty line- Measuring Poverty line, Head Count ratio, Poverty gap Index, Sen Index, The Sen Shorrocks-Thon Index, The Watts Index; Checking for the robustness of Poverty Indices.

Unit-II:

Inequality Measures: Definition of Inequality, Measures of Inequality, comparison, Decomposition of Income inequality, Conceptual issues- inequality is bad for the poor; beyond conventional measures of income and inequality within the household, public policy.

Unit III:

Describing Poverty: Poverty profiles, understanding determinants of poverty; Multi-dimensional poverty, poverty reduction policies, vulnerability to poverty and analysis of poverty over time, poverty monitoring and evaluation

Unit IV:

Poverty and Inequality in India: Concepts of poverty and inequality in context of India, poverty concepts and measurement, poverty index proposed adjustment, The estimates of CSO and NSSO; Regional contrast; Growth of poverty since 1990s and Aspects of rising inequalities; policy responses and evaluation. Tendulkar Committee and Rangarajan Committee Report.

Selected Readings:

1. Houghton, J, Sahidur, K. R (2009) *Handbook of Poverty and Inequality*, The World bank, Washington DC.

2. Cornea, Geovanne. Andrea (Eds) (2004) *Inequality, Growth and Poverty in an Era of Liberalisation and Globalisation*, World Institute for Development Economics Research of the United Nations University (UNV/WIDER) Finland, OUP.
3. Nallari, Ray and Griffin Breda (2011) *Understanding Growth and Poverty: Theory Policy and Empirics*, World Bank, Washington, DC.
4. Danziger Sheldon. H, Haveman, Robert, H. (Eds) (2001) *Understanding Poverty*, Harvard University Press.
5. Jenkins, S.P. and Micklewright, J (Eds) (2007) *Inequality and Poverty Reexamined*, OUP.
6. Wagle Udaya (2008) *Multi-dimensional Poverty Measurement: Concepts and Applications*, Springer Science+ Business media
7. Deaton A., Dreeze Jean (2002) Poverty and Inequality in India, *Economic and Political Weekly*, 7(36): 3729-3748.

ECONOMY OF MOUNTAINOUS REGIONS
ECO-PG-E410
Master of Arts in Economics
Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Economy and Resources: Economy— Characteristics of the mountainous regions' economy; Structure of its economy; Paradigm of structural change; Natural resources— Land ownership and use pattern; Its impact on economic development; Forest and mineral resources; Renewable and non-renewable resources of the terrains; Common Property Resources; Communitisation.

Unit II:

Agriculture, Infrastructure and Industry: Agriculture— Major issues of jhumming; Agricultural practices; Patterns of cropping; Problems of agriculture; Problem of double cropping; Determination of agricultural production and productivity; Issues on irrigation; Agricultural productivity; Modernization of agriculture; Infrastructure— Power, road, banking, transport and communication etc.; Industry— Backwardness of industry, its causes and remedies; Important and major existing industries such as oil, minerals, tea etc.; Small-scale and cottage industries; Industry and sustainability.

Unit III:

Population, Labour Force and Human Development: Population— Pattern and trend of population growth; Factors affecting the growth of population; Policy to control the growth; Urbanization and migration; Labour Force— Occupational structure; employment; unemployment; Human Development- Education, per capita income, life expectancy, human development index.

Unit IV:

International Borders and Trade: Historical relevance and scope; Significance and prospect of border trade in the Himalayan region with special emphasis on Sikkim; Contribution of border trade to state income; Trade with the neighboring countries like Nepal, Bhutan, China (Tibetan Region), Myanmar and Bangladesh; Trade and development in mountainous terrains and its policies.

Selected Readings:

1. Das, G. and Thomas, J.C. (2016 eds.): Look East to Act East Policy, Routledge, New Delhi
2. Datta-Ray, B. (Ed.) (1980). *Shifting Cultivation of North-East India*, North East Indian Council for Social Science Research (NEICSSR), Shillong.
3. Dutta, B.B. and Karna, M.N. (eds.) (1987). *Land Relations in North East India*, People's Publishing House, New Delhi.
4. Pandey, R.S. (2010), Communitisation, Concept Publishing House, New Delhi.
5. Goswami, Atul (ed.) (1996). *Land Reforms and Peasant Movements: A Study of North East India*, Omsons Publications, New Delhi.

6. Lama, Mahendra P (2000 reprint), *Sikkim: Society, Polity, Economy and Environment*, Indus Publications, New Delhi.
7. Lama, Mahendra P, (1986). *The Eastern Himalayas: Environment and Economy*, with RL Sarkar), Atma Ram and Sons, Delhi.
8. Nathu la Trade Study Group (2005). *Sikkim-Tibet Trade via Nathu la: A Policy Study on Prospects, Opportunities and Requisite Preparedness*, Government of Sikkim.
9. Singha, K. (2001). *Economy of a Tribal Village in Manipur*, New Delhi: Concept Publishing Company.
10. Taylor, J.E. and Adelman, I. (1996). *Village Economies*, Cambridge University Press, NY.

GENERAL EQUILIBRIUM ANALYSIS
ECO-PG-E411
Master of Arts in Economics
Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Exchange: The Problem and Solutions (Walras and Edgeworth) – Competitive Equilibrium, Core and the Equivalence Theorem, Effect of Endowment Changes

Unit II:

Production: Structure of Simple General Equilibrium Production Models; General Activity Analysis Models of Production; Linear Models— Non-Substitution Theorem; Supply Functions

Unit III:

Equilibrium under Certainty: Structure and form; Walrasian Equilibrium: Existence, Uniqueness and Stability; Welfare and Efficiency Properties; Non-Walrasian Equilibria— Non-Tatonnement Processes; Rationing Equilibria; Effective Demand; Micro foundations of Macroeconomics

Unit IV:

Equilibrium under Uncertainty: Equilibrium with state contingent Markets, Sequence Economies and the Radner Equilibrium, Fundamental Theorem of Asset Pricing and the Equivalence of Arrow- Debreu and Radner Equilibrium , Equilibrium with Incomplete Market

Selected Readings:

1. Arrow, K.J. and Hahn, F. H. (1971), *General Competitive Analysis*, Holden-Day.
2. Debreu, G. (1959), *Theory of Value: An Axiomatic Analysis of Economic Equilibrium*, New Haven, Yale University Press.
3. Debreu, G., (1984), *Existence of Competitive Equilibrium*, in *Handbook of Mathematical Economics*, Volume II (ed., Arrow and Intrilligator), North Holland, Amsterdam.
4. Hicks, J.R. (1946), *Value and Capital*, Clarendon Press.
5. Mas-Colell, A., Whinston, M.D. and Green, J. R. (1995), *Microeconomic Theory*, Oxford University Press.
6. Mukherji, A. (2002), *An Introduction to General Equilibrium Analysis: Walrasian and Non Walrasian Equilibria*, Oxford University Press.
7. Sen, A. (1970), *Collective Choice and Social Welfare*, Holden-Day.
8. Takayama, A. (1985), *Mathematical Economics*, Cambridge University Press.
9. Varian, H.R. (1992), *Microeconomic Analysis*, Norton.
10. Walras, L. (1954), *Elements of Pure Economics* (translation by W. F. Jaffe), George Allen and Unwin.

EFFICIENCY AND PRODUCTIVITY ANALYSIS

ECO-PG-E412

Master of Arts in Economics

Semester IV (Elective Paper)

Total Credit: 4

Unit I:

Production Function: Parametric form, Rate of technical substitution, elasticity of output, scale and returns to scale, elasticity of substitution; Formal description of technology- Fixed coefficient technology, DEA Models of technology; Cost Functions- properties of cost function, cost function for Cobb-Douglas technology, Leontief technology, CRS and VRS technology; Indirect Production Function- Duality between cost and indirect production, Distance functions.

Unit II:

Efficiency Measurement: The concept of efficiency, Farrell and Pareto-Koopman efficiency, Differences between efficiency and productivity, DEA, The basic input and output oriented DEA model. The primal and dual (multiplier and envelopment model) model and the importance of these forms, CCR Model and BCC model, Computation of scale efficiency and decomposition of technical efficiency into PTE and Mix efficiency, Additive models and Empirical Application.

Unit-III:

Allocation Models: Efficiency with common price and cost, efficiency under different unit prices; Decomposition cost efficiency; Revenue efficiency and Profit efficiency; Empirical applications of cost efficiency, allocative efficiency, profit efficiency and revenue efficiency.

Unit-IV:

Total Factor Productivity: TFP using index number, Malmquist Productivity Index- the concept, the decomposition of Malmquist Productivity Index; Empirical Applications.

SUGGESTED READINGS

1. Cooper, W.W., Lawrence, M.S., Tone, K. (2005). *Introduction to Data Envelopment Analysis and its Uses with DEA Solver Software*, Springer.
2. Charnes, A., Cooper, W. W., Lewin, Y. A., and Seiford, M.L. (Eds) (1994), *Data Envelopment Analysis: Theory, Methodology and Application*, Kluwer Academic Publishers, London.
3. Coelli T., D.S. Prasada Rao, G. E. Battese (1998). *An Introduction to Efficiency and Productivity Analysis*, Kluwer Academic Publishers, London.
4. Ray, Subhas. C. (2004). *Data Envelopment Analysis: Theory and Techniques for Economics and Operation Research*, CUP, NY
5. Thanassoulis Emmanuel (2003). *Introduction to the Theory and Application of Data Envelopment Analysis: A Foundation Text with Integrated Software*, Springer Science+ Media.
6. Blackburn, V; Brennan, Shae; Ruggiero, John (2014). *Non Parametric Estimation of Educational Production and Costs using Data Envelopment Analysis*, Springer.
7. Hackman, Steven T (2008). *Production Economics: Integrating the Microeconomic and*

Engineering Perspectives, Springer, USA.

8. A. Charnes, W.W. Cooper and E. Rhodes, Measuring the Efficiency of Decision Making Units, *European Journal of Operational Research*, 2, 1978, pp.429-444.
9. R. D. Banker, A. Charnes and W.W. Cooper (1984). Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis, *Management Science* 30:1078-1092
10. Varian, Hall. (1984). *Microeconomic Analysis*, NY, WW Norton.