

**DEPARTMENT OF ECONOMICS  
MA/MSC SYLLABUS**

Papers Offered			
Semester	Paper Number	Paper Name	Credit
I	ECO-PG-C101	Microeconomics I	4
I	ECO-PG-C102	Macroeconomics I	4
I	ECO-PG-C103	Introduction to Statistics	4
I	ECO-PG-C104	Mathematical Methods for Economics	4
II	ECO-PG-C201	Microeconomics II	4
II	ECO-PG-C202	Macroeconomics II: Accumulation and Growth	4
II	ECO-PG-C203	Econometrics I	4
II	ECO-PG-C204	International Trade and Finance	4
III	ECO-PG-C301	Indian Economy with Special Reference to its North Eastern Region	4
III	ECO-PG-C302	Introduction to Developmental Issues	4
III	ECO-PG-O303	Public Finance	4
III	ECO-PG-O304	Econometrics II	4
IV	ECO-PG-C401	Analysis of Indian Planning	4
IV	ECO-PG-C402	Analysis of Economic Database #	4
IV	ECO-PG-O403	Game Theory with Applications to Economics	4
IV	ECO-PG-O404	Time Series Analysis	4
IV	ECO-PG-O405	Themes in Resource and Environmental Economics	4
IV	ECO-PG-O406	Theory of Industrial Organisation	4
IV	ECO-PG-O407	Agricultural Economics with Special Reference to India	4
IV	ECO-PG-O408	Theories of Economic Growth	4
IV	ECO-PG-O409	Labour Economics	4
IV	ECO-PG-O410	Concepts and Measures of Inequality and Poverty	4

# This paper will be Core Paper for the PG students of the Department and Open for PG students of other departments.

## ECO-PG-C101: Microeconomics I

### Unit I: Consumer Behaviour

Decision Making Under Certainty: Three approaches – (a) Hicks-Allen (b) Revealed preference and (c) Duality Theory. Consumer's Surplus. Market Demand.

**Producer Behaviour:** Technology, Costs and Production Functions; Duality Theory; supply, profit and cost functions for competitive firm. Market supply.

**Competitive Market: Partial equilibrium** Equilibrium in a competitive market, Its Stability and Comparative Static properties in some cases.

### Unit II: Decision Making Under Uncertainty

Expected Utility Theorem, Measures of Risk Aversion; applications.

**Monopoly** Single Product Monopoly; Discriminating Monopoly; durable goods monopoly, recycling, leasing versus selling, The Coase conjecture.

### Unit III: Game Theory with applications to Oligopoly Theory

Extensive and Normal form representation of games; Nash Equilibrium (in pure and mixed strategies): definition and existence; subgame perfection in dynamic games. Applications: strategic behaviour of firms in a market (Bertrand, Cournot and Stackleberg models) and Entry Deterrence.

### Unit IV: Information Economics

Market Failure under adverse selection; signaling models, screening models; optimal contract design in a moral hazard; applications.

### Readings

Hal Varian (7<sup>th</sup> edition), *Intermediate Microeconomics*, Norton

Hal R. Varian (3<sup>rd</sup> Edition), *Microeconomic Analysis*, Norton.

Mas-Colell, A., M.D. Whinston, and J. R. Green, *Microeconomic Theory*, OUP

G. A. Jehle and P. J. Reny, *Advanced Microeconomic Theory*, Addison Wesley.

J.R. Hicks (2<sup>nd</sup> Edition), *Value and Capital*, Clarendon Press.

P.A. Samuelson, *Foundations of Economic Analysis*, Harvard U. Press

E. Malinvaud, *Lectures on Microeconomic Theory*, North Holland.

## ECO-PG-C102: Macroeconomics I

### Unit I: Demand Side Approaches

**Identities in National Accounts and Money Supply:** The Income-Expenditure identity and why certain items can be treated as “autonomous”; Public Sector accounts: the distinction between revenue and capital accounts, concepts of Fiscal, Revenue and Monetary deficits and the distinction between public debt and increase in money stock through the government budget; Components of Reserve Money, different definitions of money stock and significance of maturity periods; Balance of Payments identities: the distinction between current and capital accounts and between trade, factor payments and transfers; Accounts in real and nominal terms – the concept of price deflators

## **Unit II: Determination of Money Income (Keynesian Multiplier):**

Concept of the aggregate consumption function, its behavioural, distributive and intertemporal aspects and how this differs from demand functions in microeconomic theory; Significance of demand components autonomous of current income and the idea of how these multiply through the consumption function into aggregate nominal demand; The (ir)relevance of an economy-wide budget constraint, i.e. of money incomes determining money expenditure, and the role of government budgets in the determination of nominal national income. The Kalecki interpretation in two-sector, two-class terms; Concept of leakages: the multiplier in an open economy;

## **Unit III: Money and Interest Rates**

The Quantity theory and the Aggregate Demand Function; Inside and Outside Money – monetary institutions, money creation and the money multiplier; Reserve Money, its links with the budget deficit and external deficits, and the idea of “independence” of the Central Bank; The Demand for Money – the LM curve and influences on private investment from equity markets; Interest rates: autonomous or endogenous?

**Real Economy (Levels of Output and Employment):** Classical theory and assumption of full employment; AS-AD analysis: unemployment an outcome of real wage rigidity and inflation a result of excessive money supply; Unemployment equilibrium: the concept of under-utilised capacity, i.e. operating within the production possibility frontier and of rigidities in nominal and real wages; Conventional IS-LM analysis: importance of assumptions of fixed prices and sensitivity of savings, investment and of money demand to interest rates? Post-Keynesian developments.

**Price-Wage Relationship and the Price level:** Importance of the wage unit in Keynesian analysis; Kaleckian formulation of price formation – importance of the degree of monopoly in determination of the mark-up and its relation to stories about monopolistic competition; Alternative theories of the rigidity of the price-wage ratio: efficiency wages and other institutional stories of price-wage adjustment; The Philips curve and the inflation barrier;

## **New Keynesian and Post-Keynesian Approaches to these Issues**

**Extensions to the open economy:** the concepts of nominal and real exchange rates. Mundell-Flemming. Model for the Open Economy.

**Policy Issues:** Relationship between Fiscal and Monetary policy in a closed economy – the inflation-unemployment trade-off and sustainability of fiscal deficits; The Balance of Payments and the external constraint: devaluation and tariff/quota policies with limited capital flows; The external sector with capital mobility.

## **Unit IV: Supply Side Approaches**

Monetarist and New Classical Approaches to the Above Mentioned Topics. Wealth effects and alternative formulations of the consumption function; The Lucas critique and

“rational” expectations. Inflation and the Expectations augmented Philips curve; and the NAIRU. “Signal Extraction” Problem and Business Cycles. Real Business Cycle Theories, Monetarist and New Classical Approaches to the Open Economy. Policy Irrelevance. Central Bank Independence.

### **Evaluating Demand-side and Supply-side theories in the crises of Great Depression of 1929, Stagflation of 1970s, and the Global Economic Crisis of 2007-2008.**

#### **Readings:**

Bhaduri, A. (1986), *Macroeconomics: the dynamics of commodity production*, Macmillan. (For Section I)

Patnaik, P. (1996), *Macroeconomics*, OUP.

Romer, D. 2006, *Advanced Macroeconomics*, 3<sup>rd</sup> edition, McGraw-Hill.

Friedman M. & Anna Jacobson Schwartz (1971) *A Monetary History of the United States, 1867-1960*, Princeton

Galbraith, JK (1997) *The Great Crash: 1929* Mariner Books

Minsky, H. (2008), *Stabilizing an Unstable Economy*. McGraw-Hill Professional

Economic and Political Weekly, March 28, 2009, *Special Issue on Global Economic and Financial Crisis*

## **ECO-PG-C103: Introduction to Statistics**

### **Unit I: Descriptive Statistics**

Collection, organization and presentation of data; Measures of central tendency and dispersion. 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:** least squares, 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.

**Readings:**

DeGroot, M. H. (1975), *Probability and Statistics*, Addison Wesley.  
Freedman, D., R. Pisani and R. Purves (1998), *Statistics* Norton and Co.  
Hogg and Tanis (1989), *Probability and Statistical Inference* Maxwell Macmillan.

**ECO-PG-C104: Mathematical Methods in Economics****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.

**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.

**Readings:**

G. Hadley, (1987), *Linear algebra*, Narosa Publishing House.  
Carl P. Simon and Lawrence Blume, (1994) *Mathematics for economists*, W. W. Norton and Company.  
Alton H. Smith and Jr. Walter A. Albrecht, (1966) *Fundamental concepts of analysis*, Prentice Hall of India.  
Rangarajan K. Sundaram, (1996), *A first course in optimisation theory*, Cambridge University Press.  
Alfred Tarski(1965), *Introduction to logic and to the methodology of deductive science*, Oxford University Press.  
Allen, R.G.D. (1976), *Mathematical Analysis for Economists*, Macmillan.  
Chiang, A.C. (1974), *Fundamental Methods of Mathematical Economics*, McGraw Hill and Kogakusha, New Delhi.

## **ECON-PG-C201: Microeconomics II**

### **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

### **Readings:**

Amartya Sen, *Collective Choice and Social Welfare*, Holden-Day, 1970

A. Mukherji: *Introduction to General Equilibrium Analysis: Walrasian and Non-Walrasian Equilibria*, Oxford University Press, 2002.

D. Kreps "A course in Microeconomic theory" (1992) Prentice Hall of India.

## **ECO-PG-C202: Macroeconomics II: Accumulation and Growth**

### **Unit I: Classical Approach**

**Location of Surplus Production:** contribution of classical political economy; deployment of economic surplus as the determinant of growth; concept of productive and unproductive labour in Adam Smith alternative definitions; Division of labour and increasing returns; Adam Smith's theory of economic growth and falling rate of profit.

**Ricardo's Theory of Distribution and Growth:** Ricardo's theory of the falling rate of profit and the movement of the terms of trade between manufacturing and agriculture; Ricardo's theory of comparative advantage and the effect of trade on growth; Ricardo on machinery-A critique of "classical traverse" a la Ricardo.

### **Unit II: Marxist Approach**

**Marx's Critique of Ricardo's Theory of Accumulation:** Marx's Value Theory; Marx's rejection of Say's law and recognition of the possibility of generalized over-production;

Marx on machinery and technological progress; role of the reserve army of labour; Marx's theory of the falling tendency of the rate of profit; theory of crises and the centralization of Capital; methodology in the study of economic growth under capitalism.

### **Unit III: Demand-Side Approach**

**Market Question and Capital Accumulation:** Rosa Luxemburg; Harrodian dynamics. Concepts of actual, warranted and natural growth rates; Harrod's theory and the dynamic instability of the capitalist system; Kaleckian Critique of Harrod's theory: role of exogenous stimuli in capital accumulation; role of innovations in stimulating growth: Schumpeter and his critics.

### **Unit IV: Neo-Classical Approach**

**Neo-Classical Critique of Harrod:** Solow's growth theory and the moving equilibrium approach; Technological progress in the neo-classical Paradigm; neutral technological progress; Disembodied and embodied technological progress; Cambridge critique of neo-classical approach. Ramsey's model Neo-Classical Approach II **Technological Progress through Learning by Doing:** Endogenous growth theory; its relationship with the neo-classical approach; critique of the market from a dynamic perspective.

**Critical Issues in Growth Theory** International trade and economic growth: export-led growth and export-led retrogression; possibility sectoral trade and economic growth; Inter-relationship between technological change, income distribution and economic growth.

### **Readings:**

Arrow, K.J. (1970), "Economic Implications of Learning by Doing" in Sen, A.K. ed. *Growth Economics* Penguin.

Bhaduri, A. (1994), *Unconventional Economic Essays* OUP, Delhi.

Chaudhuri, P. (1989), *The Economic Theory of Growth* Harvester Wheatsheaf, UK.

Dasgupta, D. (2005), *Growth Theory: Solow and His Modern Exponents*, OUP.

Goodwin, R.M. (1991), *Chaotic Economic Dynamics* Oxford.

## **ECO-PG-C203: Econometrics I**

### **Unit I: Simple and Multiple Linear Regression Model**

Ordinary least squares estimator (OLS). Heteroscedasticity and autocorrelation. Multicollinearity. Chow test, Ramsay's RESET, Bera Jarque test of normality of errors, Hausman specification test.

Nonspherical disturbances and their implications. Aitken theorem and generalised least squares (GLS) method. Restricted least squares estimator and testing procedures.

Stochastic regressors—errors in variables and its consequences. Endogeneity, instrumental variables and dummy variables. Hypothesis testing under multiple parameter restrictions.

## **Unit II: Simultaneous Equations System**

Structural and reduced forms, least squares bias problem, identification problem--rank and order conditions, estimation methods--two and three stage least squares, introduction to VAR.

## **Unit III: Autoregressive and Distributed Lag (ADL) Relationships**

Specification, estimation and tests, exogeneity tests, Wu-Hausman test.

## **Unit IV: 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.

### **Readings:**

Dongherty, C. (1992), *Introduction to Econometrics*, Oxford University Press, New York.

Gourieroux C. et A. Monfort, *Statistics and Econometric models*, Vol. 1 and 2, Cambridge University Press.

Maddala, G.S. (Ed.) (1993), *Econometrics Methods and Application* (2 Vols.), Aldershot

Wooldridge, J.M. (2000), *Introductory Econometrics* Southwestern.

Baltagi, B.H. (1998), *Econometrics*, Springer, New York.

Goldberger, A.S. (1998), *Introductory Econometrics*, Harvard University Press, Cambridge, Mass.

Gujarati, D.N. (1995), *Basic Econometrics* (2nd Edition), McGraw Hill, New Delhi.

Maddala, G.S. (1997), *Econometrics*, McGraw Hill, New York.

Pindyck, R.S. and D.L. Rubinfeld (1976), *Econometric Models and Economic Forecasts*, McGraw Hill Kogakusha, Tokyo.

## **ECO-PG-C204: International Trade and Finance**

### **Unit I: Theories of international trade**

Why countries trade; what determines the patterns of trade; what are the gains and implications of trade? Ricardian comparative advantage and other classical models; Heckscher-Ohlin-Samuelson factor endowment based models; Demand – similarity hypothesis; Imperfect competition models, models relating to intra-industry trade, and theories of strategic trade policy

### **Unit II: Context of international trade**

The historical evolution of trading patterns and the institutional context within which trade occurs – Patterns of trade in the 19<sup>th</sup> and early 20<sup>th</sup> centuries, and the emergence of the international division of labour by the mid 20th century; International investment, MNCs and trade patterns; Preferential trade agreements, their justification and implications; GATT and the WTO, with special consideration to the implications of specific GATT agreements and ongoing WTO negotiations



### **Unit III: Trade policies for development**

The theoretical and empirical basis for trade and industrialisation policies of developing countries, and the current constraints – dynamic comparative advantage of Trade and growth; Theories of tariff protection, infant industry protection and dynamic comparative advantage; experience of developing countries regarding trade “openness”; emerging issues for developing countries like India and current constraints

**Open economy macroeconomics:** The implications of openness for macro-economic performance and policy – Keynesian (elasticities and absorption) and Monetarist (stock and portfolio choice) approaches to balance of payments adjustment; Implications of capital flows, Mundell-Fleming and subsequent models; Theories of exchange rate determination and the evidence: Purchasing Power Parity, asset market model, etc.; Imperfections in international financial markets.

### **Unit IV: Historical and institutional context of international financial flows**

The Gold Standard regime – Theoretical explanations and actual patterns; interwar period of international financial instability; Bretton Woods regime; Post-Bretton Woods arrangements, including the current role of the IMF and World Bank, and the current structure of international financial markets.

**India and its Policy concerns:** The IMF adjustment package, how it has changed over time, and current implications; financial liberalization, especially capital account liberalization, and its effects; Crises in emerging markets – patterns, consequences and lessons; Possible strategies for developing countries in the current context.

#### **Readings:**

Borkakoti, J. (1998), *International Trade: Causes and Consequences*

Ethier, W.J. 3<sup>rd</sup> edition (1995), *Modern International Economics*

Krugman, P. and M. Obstfeld 5<sup>th</sup> edition. (2000), *International Economics: Theory and Policy*,

## **ECO-PG-C301: Indian Economy with Special Reference to its North Eastern Region**

### **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; 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.

**Agriculture, Industry and Service Sectors**

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, 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: Economy of 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

**Rural Economy:** 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: Infrastructure, Industry and Employment**

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.

### **Readings:**

Bhagwati, J. N., and P. Desai (1970), *India: Planning for Industrialisation* OUP.

Agarwal, A.K. (1987): *Economic Problems and Planning in North East India*, Sterling Publishers.

Alam, K. (ed.) (1993): *Agricultural Development in North East India: Constraints and Prospects*, Deep and Deep, ND.

Banerjee and Kar (1999): *Economic Planning and Development of North-Eastern States*, Kanishka, ND.

Menon, S. (ed.) (2007): *India's North East Economy-Problems and Prospects*, ICFAI Univ. Press, Hyd.

Ahluwalia, I.J and I.M.D. Little (eds.) (1998): *India's Economic Reforms and Development*, OUP, ND.

Brahmananda, P.R. and V.R. Panchmukhi (eds.) (2001): *Development Experience in Indian Economy: Inter-State Perspectives*, Bookwell, Delhi.

Dantwala, M.L. (1996): *Dilemmas of Growth: The Indian Experience*, Sage, ND.

Joshi, V. and I.M.D. Little (1999): *India: Macro Economics and Political Economy, 1964-1991*, OUP, ND.

Tendulkar, S.D and T.A. Bhavani (2007): *Understanding Reforms- Post 1991 India*, OUP.

## **ECO-PG-C302: Introduction to Developmental Issues**

### **Unit I: Development Economics**

Genesis and evolution of Development Economics; and its appreciation among economists today.

**Theories of Development:** State versus Market; Classical (Adam Smith, Ricardo, Malthus and James Mill) and Marxian theories of growth; Marx and capitalistic economy; Immutable laws of capitalist development; Schumpeter and capitalistic development; innovation role of credit, profit and degeneration of capitalism; Structural and Dependency theory of development; Mainstream theories of economic development (Including imperfect market paradigms).

### **Unit II: Sectoral Aspects of Development**

Role of agriculture in economic development; Efficiency and productivity in agriculture, New technology and sustainable agriculture; Agriculture in the process of industrialization; Globalization and agricultural growth; strategies of industrialization and trade; Rationale and pattern of industrialization in developing countries; The choice of techniques and appropriate technology and employment; Efficiency of small-scale vs. large-scale production; Infrastructure and its importance; Labour markets and their functioning in developing countries; Capitalism in the international context.

### **Unit III: Trade and Economic Development**

Terms of trade between agriculture and industry International trade as engine of growth; Static and dynamic gains from trade; Prebisch, Singer and Myrdal thesis vs. free trade; Export-led growth; Dual gap analysis; Balance of payments; Tariffs and effective protection; Post-GATT international economic order; WTO and developing countries.

### **Unit IV: History of Capitalist Development**

Transition from pre-capitalist formations to capitalism; Primitive Accumulation and the Genesis of the Capitalist and the Working Classes in Western Europe. Impact of Colonialism and Development of Underdevelopment. Economic Development since World War II.

### **Readings:**

A. Sen – *Development Economics: Which Way Now*

D. Hunt – *Economic Theories of Development*

Higgins, B. (1959), *Economic Development*, W.W. Norton, New York.

I. Little – *Economic Development: Theory Policy and International Relations*

K.S. Jomo & E.S. Reiner (ed.) – *The Origins of Development Economics*, Tulika.

Karl Marx – *Capital*, Vol. I, II and III.

M. Blomstrom L.B. Hethne – *Development Theory in Transition*

M. Kalecki – *Essays on Developing Economies*

M. Todaro (latest edition) – *Economic Development in the Third World*  
Meier, G.M. (1995), *Leading Issues in Economic Development*, OUP, New Delhi.  
P. Sweezy – *Theory of Capitalist Development*  
R. Skarstein – *Development Theory*

## **ECO-PG-O303: Public Finance**

### **Unit I: Introduction**

Theory of social goods – Partial equilibrium and general equilibrium approach to social goods – Market failure – Public goods, merit goods and mixed goods – social Bads – External costs and pollution – Cost benefit analysis – Pricing of public utilities – Arrow's Impossibility Theorem. Market failure — imperfections, decreasing costs, externalities, public goods; Uncertainty and non-existence of futures markets; Informational asymmetry — Theory of second best.

**Public Choice:** Private and public mechanism for allocating resources; Problems for allocating resources; Problems of preference revelation and aggregation of preferences.

### **Unit II: Rationale for Public Policy**

Allocation of resources: provision of public goods; Voluntary exchange models; Impossibility of decentralized provision of public goods (contributions of Samuelson and Musgrave); Demand revealing schemes for public goods.

**Public Expenditure:** Wagner's law of increasing state activities; Wiesman- Peacock hypothesis; pure theory of public Expenditure; Structure and growth of public expenditure; Criteria for public investment; Social Cost-benefit analysis: Project evaluation, Estimation of costs, discount rate; Reforms in expenditure budgeting; Programme budgeting and zero base budgeting.

### **Unit III: Taxation**

Theory of incidence; Alternative concepts of incidence: Allocative and equity aspects of individual taxes; Benefit and ability to pay approaches; Theory of optimal taxation; Excess burden of taxes; Tradeoff between equity and efficiency; Theory of measurement of dead weight losses; The problem of double taxation.

**Public Debt:** Classical view of public debt; Compensatory aspect of debt policy; Burden of public debt; Sources of public debt; Debt through created money; Public borrowings and price level; Crowding out of private investment and activity; principles of debt management and repayment.

### **Unit IV: Fiscal Policy**

Objectives of fiscal policy: full employment, anti-inflation, economic growth, redistribution of income and wealth; Interdependence of fiscal and monetary policies; Budgetary deficits and its implications; Fiscal policy for stabilization: automatic vs. discretionary stabilization.

**Indian Public Finances:** Indian tax system; Revenue of the Union, States and local bodies; Major taxes in India: base of taxes, direct and indirect taxes, taxation of agriculture, expenditure tax, reforms in direct and Indirect taxes, taxes on services; Non-

tax revenue of Centre, State and local bodies; Analysis of Central and State government budgets; Lack of flexibility in Central and State budgets, shrinking size of development finance through budgets; Trends in public expenditure and public debt; Fiscal crisis and fiscal sector reforms in India; Reports of Finance Commissions in India.

**Readings:**

Buchanan, J.M. (1970), *The Public Finances*, Richard D. Irwin, Homewood.

Cullis, J.G. and Jones, P.R. (1998), *Public Finance and Public Choice*. Oxford: Oxford University Press.

Jha, R. (1998), *Modern Public Economics*, Routledge, London.

Musgrave, R.A. (1959), *The Theory of Public Finance*, McGraw Hill, Kogakusha, Tokyo.

Musgrave, R.A. and P.B. Musgrave (1976), *Public Finance in Theory and Practice*, McGraw Hill, Kogakusha, Tokyo.

Shoup, C.S. (1970), *Public Finance*, Aldine, Chicago.

## **ECO-PG-O304: Econometrics II**

### **Unit I: Discrete and Limited Dependent Variables Model**

Types of discrete choice models, linear probability model, the probit and logit models and Tobit models.

**Analysis of Panel Data:** fixed effects model, random effects model (error components model). Wu Hausman test. Swamy's random coefficients model.

### **Unit II: Specification Testing and Diagnostic Checking**

Inferential problems in mis-specified or inadequately specified models, tests based on maximum likelihood principle--W, LR, and Rao's test, White's information matrix test. Tests for non-nested hypothesis--Davidson and McKinnon's J test and the encompassing test.

**Cointegration:** a general cointegrated system, two variable model. Engle-Granger method, system estimation method--Johansen procedure, Error correction model and tests for cointegration. Vector autoregression and Granger causality.

### **Unit III: ARCH Model**

Properties of ARCH and GARCH models. Different interpretation, various generalisations, estimation and testing.

### **Unit IV: Other Methods of Estimation and Testing**

Generalised method of moments (GMM) and method of least absolute deviation. Basics of nonparametric regression - idea of smoothing, smoothing techniques, the kernel method and choosing the smoothing parameter.

**Readings:**

Cameron, Colin and Pravin Trivedi, (2005), *Microeconometrics*, Cambridge: Cambridge Univ. Press.

Davidson and MacKinnon (2004), *Econometric Theory and Methods*, Oxford University Press.

Goldberger (1991), *A Course in Econometrics*, Harvard University Press.

Greene (2003), *Econometric Analysis*, 5<sup>th</sup> edition, Prentice Hall.

Johnston and DiNardo (1997), *Econometric Methods*, 4<sup>th</sup> edition, McGraw-Hill.

Maddala, *Limited-dependent and Qualitative Variables in Econometrics*, Cambridge, 1982.

Wooldridge, Jeffrey M., (2002) *Econometric Analysis of Cross Section and Panel Data*, MIT Press.

## **ECO-PG-C401: Analysis of Indian Planning**

### **Unit I: Introduction**

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.

### **Unit II: 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 I: The capital goods bottleneck. The 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-‘60s. The relation between public and private investment.

### **Unit III: Forms of disproportionality II**

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: 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.

**Readings:**

Ahuwalia, I.J. (1985) *Industrial Growth in India* Oxford University Press.

Bagchi, A. K. (1971) “Theory of Efficient Neocolonialism”, *Economic and Political Weekly*, Vol. 6, No. 30.

Bagchi, A. K., and N. Banerjee (eds) (1981) *Change and Choice in Indian Industry* K. P. Bagchi.

Bardhan P. K. (1984) *The Political Economy of Development in India* Oxford University Press.

Bhaduri, A., and D. Nayyar (1995) *An Intelligent Person’s Guide to Economic Liberalisation* Penguin Books.

Bhagwati, J. N., and P. Desai (1970) *India: Planning for Industrialisation* Oxford University Press.

Bhalla, G. S., and G. Singh (2001) *Indian Agriculture: Four Decades of Development* Sage Publications.

Bharadwaj, K. (1974) *Production Conditions in Indian Agriculture* Cambridge University Press.

Byres, T. J. (ed) (1998) *The Indian Economy: Major Debates Since Independence* Oxford University Press.

**ECO-PG-C402: Database on Indian Economy (Open Paper)**

**Unit I: Secondary data sources**

NSSO, CSO, Economic survey, Season & Crop Report, Agricultural Census, Livestock Census, Annual Survey of Industries, RBI Reports, etc.; Availability and features of data. Sampling techniques; Survey methods adopted in collection of different kinds of statistics; Questionnaire/Schedule

**Unit II: Collection and analysis of secondary data**

Data processing; Statistical techniques National income accounts (including State-level accounts) Price statistics; Sectoral statistics: Agriculture/primary, industry/secondary and service/tertiary; organized and unorganised sector; Employment and wages; Consumer expenditure.

**Unit III: External trade and balance of payments**

Banking, capital markets and monetary indicators; Public finances including State finances.

**Unit IV: Population, demographic indicators**

Social sector including health and education  
Natural resources.

**Readings:**

Central Statistical Organisation (CSO) (1999), *Guide to Official Statistics*, CSO, Government of India, New Delhi.

Chandrasekhar, C. P. and Tilak, Jandhyala B G (eds.) (2001), *India's Socio-economic Database: Surveys of Selected Areas*, Tulika, Delhi.

CSO (1989), *National Accounts Statistics: Sources and Methods*, CSO, Government of India, New Delhi.

CSO (1997), *Statistical System of India*, CSO, Government of India, New Delhi.

CSO (1999), *Directory of Statistics*, CSO, Government of India, New Delhi.

Rao, J. R. (1968), *Indian Statistical System*, IIPA, New Delhi.

Saluja, M. R. (1972), *Indian Official Statistical Systems*, Statistical Publishing Society, and the Indian Econometric Society, Calcutta.

**ECO-PG-O403: Game Theory with Applications to Economics****Unit I: Introduction to Game Theory**

Static Games of Complete Information: Normal form representation of games; Iterated elimination of dominated strategies; Nash Equilibrium: Definition and Examples; Existence of Nash equilibria in pure and mixed strategies; Rationalizable equilibrium: definition and examples.

**Unit II: Dynamic Games of Complete Information**

Extensive form representation of games, Normal form representation of extensive form games and strategies and actions in extensive form games; Games of perfect information-backward induction; Games of imperfect information: Sub game perfect equilibrium; Sequential bargaining: Rubinstein model;

**Repeated games:** Introduction and examples, infinitely and finitely repeated games, collusion, trigger strategies and folk theorem.

**Unit III: Static Games of Incomplete Information**

Static Bayesian games and Bayesian Nash equilibrium: introduction and examples; Auctions: first price, second price, English and Dutch; The revenue equivalence theorem in auctions; Double auction.

**Unit IV: Dynamic Games of Incomplete Information**

Introduction to perfect Bayesian equilibrium and sequential equilibrium; Signalling games: job market signalling, limit pricing under asymmetric information; Reputation in a finitely repeated prisoner's dilemma.

**Cooperative Games:** Nash Bargaining Solution; Concept of the Core; Shapely Value.

**Readings:**

Osborne, M. (2004), *An Introduction to Game Theory*, OUP New Delhi.

Gibbons, R. (1992), *A Primer on Game Theory* Harvester, Wheatsheaf, New York.

Kreps, D. (1990), *A Course in Microeconomic Theory*, Prentice Hall of India.



Fudenberg, D. and J. Tirole. (1991), *Game Theory*, MIT Press.  
Osborne, M. and A. Rubinstein (1994), *A Course in Game Theory*, MIT Press.

## **ECO-PG-O404: Time Series Analysis**

### **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. Durbin-Levinson and innovations algorithm. Akaike information criterion, Bayes information criterion.

### **Unit II: Nonstationary Processes**

ARIMA. Determination of order of integration, tests of nonstationarity (unit root tests)-- Dickey-Fuller (DF) , augmented DF, Phillips-Perron tests.

**Forecasting and Prediction based on ARMA, ARIMA and seasonal ARIMA models:** minimum mean square error forecasts, forecasting error and optimality of exponential smoothing.

### **Unit III: Intervention Analysis and Outlier Detection**

Different types of intervention, implications of interventions. Additive and innovational outliers, procedures for detecting outliers.

**Single Output Transfer Function Noise Model:** cross correlation function and its properties, identification, estimation and diagnostic checking.

### **Unit IV: State Space Models**

State space representation of ARIMA models, basic structural model and Kalman recursions.

**Elements of Spectral Analysis:** spectral density function and its properties. Spectral densities of AR, MA and ARMA processes. Periodogram analysis.

### **Readings:**

Brockwell, P. J. and Davis, R. A. (2002). *Time series: introduction to time series and forecasting*. Springer.

Chatfield, C. (2003). *The analysis of time series: an introduction* 6<sup>th</sup> edition. Chapman and Hall/CRC press.

Hamilton, J.D. (2009). *Time series analysis*. Princeton University Press.

Brillinger, D. *Time series: data analysis and theory*.

Brockwell, P. J. and Davis, R. A. (2009). *Time series: theory and methods*. Springer.

Fan, J., and Yao, Q. (2005). *Nonlinear time series: nonparametric and parametric methods*. Springer.

## **ECO-PG-O405: Themes in Resource and Environmental Economics**

### **Unit I: Introduction**

Concepts, Nature and Scope of Environmental Economics; Nexus between Economics and Environment; Environment and Economic Development; Sustainable Development; Private versus Social Costs Externalities.

### **Unit II: Basic Environmental Issues**

Environment and ecology, linkages between ecology, environment and economic systems; Material balance approach, environment-development trade-offs; Uncertainty, irreversibility, inter-temporal efficiency, inter-generational equity; Sustainable development: concepts and indicators; sustainable accountings, environmental Kuznets curve.

### **Unit III: Environmental Valuation**

Environmental valuation; Environmental damages/benefits, social cost benefit analysis; Use values, option values and non-use values; total economic value; valuation techniques; production based, contingent valuation, hedonic-pricing, travel cost method, risk assessment, environmental impact assessment.

**Economics of Resource Management and Sustainable Development:** Theories of optimal use of exhaustible and renewable resources; integrated environmental and Economic accounting and the measurement of environmentally corrected GDP; Energy and Environment – Resource Scarcity, Pricing of Resources.

### **Unit IV: Environmental Problems**

Environmental trends in developed and developing countries; Environmental pollution: Air & Water; Land use: Deforestation, urbanization and their impact on Environment; Environmental Costs of Economic Growth, Limits to Growth.

**Environment and Natural Resource Problem in India:** Population, poverty and the environment; with a special reference to North-East India; Environmental resources of North East India – land, forest, water, mineral and the climate; Economic backwardness with rich environmental resource base; People's participation in the management of commons and forest trade; the institution of joint forest management, social forestry: rationale and benefits.

### **Reading:**

Agarwal, S.K. (1997), *Environmental Issues and Themes*, APH Publishing Corporation, New Delhi.

Baumol, W.J. and W.E. Oates (1988), *The Theory of Environmental Policy* (2<sup>nd</sup> Edition). Cambridge University Press, Cambridge.

Dasgupta and Maler (ed.) (1997), *Environment and Emerging Development Issues*, C.U.P., Cambridge.

Dorfman and Dorfman (2<sup>nd</sup> edn) (1977), *Economics of the Environment*, W.W. Norton, New York.

Fisher, A.C. (1981), *Resource and Environmental Economics*, Cambridge University Press, Cambridge.

Hanley N., J.F. Shogren and B. White (1997), *Environmental Economics in Theory and Practice*, Macmillan.

Karpagam I.M., “*Environmental Economics*”, Sterling Publishers, Pvt. Ltd., New Delhi.

Rabindra, N.Bhattacharya (2001 ), “*Environmental Economics*”, Oxford University Press, New Delhi.

Tietenberg, T. (1994), *Environmental Economics and Policy*, Harper Collins, New York.

## **ECO-PG-O406: Theory of Industrial Organisation**

### **Unit I: Cournot Equilibrium**

Existence, Uniqueness, Stability, Free Entry Equilibrium, Welfare etc.

Bertrand-Edgeworth Equilibrium: Existence Problems and its solutions; Stackelberg Equilibrium and Issues in Entry Deterrence. Cournot vs Bertrand Debate.

### **Unit II: Product Differentiation**

Horizontal (Location), Vertical (Quality), Differentiation on both Information and Location. Price Discrimination: 1<sup>st</sup> Degree, 2<sup>nd</sup> Degree, 3<sup>rd</sup> Degree and Oligopoly and Price Discrimination.

### **Unit III: Oligopoly and Financial Structure**

Repeated Games- Reputation, Gang of Four Theorem. Network Externalities.

### **Unit IV: Research and Development**

Contestable Markets. Industrial Organisation in Developing Countries.

### **Readings:**

Tirole Jean (1988, 2009), *The Theory of Industrial Organization*, Prentice-hall Pvt Ltd.

J. Friedman, (1983) *Oligopoly Theory (cambridge Surveys Of Economic Literature)*, Cambridge University Press.

Oz Shy, (1996) *Industrial Organisation: Theory and Applications*, MIT Press

S. Martin, (1995), *Advanced Industrial Economics*

Anindya Sen (Ed.), (1996), *Industrial Organisation*

X. Vives, (1999), *Oligopoly Pricing: Old Ideas and New Tools*

Bains, J.S. (1996), *Industrial Organization*, Cheltenham, U.K.

## **ECO-PG-O407: Agriculture Economics with Special Reference to India**

### **Unit I: Rural India at the time of Independence**

Trends, Patterns and Source of Agricultural Growth in India after Independence. Land Reform in India; Land and Tenancy Markets

### **Unit II: Public Investment and Capital Formation in Agriculture**

Mode of Production Debate in India; Crop and Occupational Diversification

### **Unit III: Interlocking of Rural Markets**

Labour Contracts in Rural India; Credit Markets and Rural Banking; Output Markets and Price Policies in India

### **Unit IV: Food Policy**

Public Distribution System and food Security, Specificities of agriculture in North East Region of India

#### **Readings:**

Appu, P.S (1996), *Land Reforms in India: A Survey of Policy, Legislation and Implementation*, Vikas, New Delhi.

Bhalla, G. S. and Singh, Gurmail (2001), *Indian Agriculture: Four Decades of Development*, Sage Publications, New Delhi

Bharadwaj, R. Krishna (1974), *Production Condition in Indian Agriculture*

Byres, T. J. (ed.) (1998), *The State, Development Planning and Liberalisation in India*, Oxford India Paperbacks, New Delhi.

Patnaik, Utsa (1985), *Reflections on the Agrarian Question and the Development of Capitalism in India*, Daniel Thorner Memorial Lecture, New Delhi.

## **ECO-PG-O408: Theories of Economic Growth**

### **Unit I: Analysis of trend movements**

In output distinct from macroeconomic theory analysing cyclical fluctuations in output. Stylized facts about growth in capitalist economies.

**Economic growth as the result of the growth of demand**, normal capacity output and full employment output. Problems which arise when there are differences in the three rates of growth.

### **Unit II: Supply-constrained models**

The Classical approach. Accumulation of capital and the rate of profit. Adjustments in the natural rate of growth. Alternative explanations of the falling tendency of the rate of profit. Goodwin's growth cycle.

### **Unit III: Supply-constrained models**

The Neoclassical approach. The Solow-Swan model. Golden Rule of Capital Accumulation. Dynamic efficiency of the growth path. Neutral technical progress. Neoclassical models with microfoundations. Growth accounting. The convergence debate. The augmented Solow model.

### **Unit IV: Supply-constrained models**

Endogenous growth. The role of externalities. The role of human capital. The role of endogenous technological change. Schumpeterian growth. Distribution and growth.

**Demand-constrained approach:** Cambridge critique of the neoclassical approach. Post-

Keynesian explanations of equilibrium growth and long-run theories of distribution. Kalecki's model of trend growth. Recent attempts at modeling growth from the demand side.

### **Readings**

D. Foley and T. Michl: *Growth and Distribution*.

Hywell G. Jones: *Introduction to Modern Economic Growth*.

M. Kalecki,(1968) 'Trend and Business Cycles Reconsidered,' *Economic Journal*, 1968.

R. Barro and X. Sala-i-Martin: *Economic Growth*.

Richard Goodwin: 'A Growth Cycle' in E. K. Hunt and J. G. Schwartz (ed.) *A Critique of Economic Theory*.

Robert Blecker: 'Distribution, Demand and Growth in Neo-Kaleckian Macro-Models,' in Mark Setterfield (ed.) *The Economics of Demand-led Growth*.

P. Aghion and P. Howitt: *Endogenous Growth Theory*.

Paul Romer(1994) 'The Origins of Endogenous Growth,' *Journal of Economic Perspectives*.

## **ECO-PG-O409: Labour Economics**

### **Unit I: Concept of Labour**

Meanings, concept and definition of labour, labour process etc.

**Supply of Labour:** concept of labour force, determinants of labour force participation, unemployment, issues relating to quality of labour and human capital, migration.

### **Unit II: Demand for Labour**

Theories of labour demand in the short run and the long run, technological change and labour demand.

### **Unit III: Labour Market**

Theories of wages, wage differentials, market rigidities and flexibilities, internal labour markets, segmented labour markets; rural and urban labour markets in India, and Indian labour in the current era of globalization.

### **Unit IV: Institutional Issues and Labour Market**

Labour legislation, collective action etc. and their implications on wages, employment security and efficiency, labour market as social institution.

**Capital-Labour Relations:** Taylorism, Fordism and Post-Fordism, history of the development of trade unions.

### **Readings:**

Abraham, K.G. and R.B. Mckersie (eds.), *New Developments in Labour Market: Towards a New Institutional Paradigm*.

Borjas, G.J., *Labour Economics*, McGraw Hill International Editions.

Byres T.J., K. Kapadia and J. Lerche (eds.) (1998), *Rural Labour Relations in India*.

Darity, Jr. W. (ed.), *Labour Economics: Modern Views*.

Lester, R.A. (1964), *Economics of Labour*, (2<sup>nd</sup> edition), Macmillan, New York.  
McConnell, C.R. and S.L. Brue (1986), *Contemporary Labour Economics*, McGraw-Hill, New York.  
Papola, T.S., *The Indian Labour Market: Some Facts of its Character and Functioning*.  
Akerlof, G.A. and J.L. Yellen (eds.), *Efficiency Wage Models of the Labour Market*.  
Amin Ash (ed.), *Post-Fordism – A Reader*.  
Ashenfalter, O. and R. Layard (eds.), *Handbook of Labour Economics*.  
Asian Development Bank (2005), *Labour Markets in Asia: Promoting Full, Productive, and Decent Employment*.

## **ECO-PG-O410: Concepts and Measures of Inequality and Poverty**

### **Unit I: Poverty**

Identification. Comparability. Ranking. Multidimensionality. Alleviation.

### **Unit II: Inequality**

Conceptual Underpinnings. The Measurement of Inequality.

### **Unit III: Welfare and Inequality**

Comparisons for Homogeneous Distributions.

Welfare and Inequality Comparisons for Heterogeneous Distributions.

### **Unit IV: Applications of Inequality Analysis**

#### **Readings:**

Chakravarty, S. R. (1990): *Ethical Social Index Numbers*. Springer-Verlag: Berlin.

Foster, J. E. and A. Sen (1997): *On Economic Inequality: Expanded Edition with a Substantial Annexe*. Clarendon Press: Oxford.

S. Subramanian (1997; ed.): *Measurement of Inequality and Poverty*, Oxford University Press, Delhi.

Sen, A. K. (1981a): *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.

Sen, A. K. (1985a), *Commodities and Capabilities*. Amsterdam: North-Holland.

Sen, A. K. (1992): *Inequality Reexamined*. New York: Russell Sage Foundation and Oxford: Clarendon Press.