

SYLLABUS
FOR
M.A. / M.SC. IN ECONOMICS

Effective from Session 2017-2019



DEPARTMENT OF ECONOMICS

WEST BENGAL STATE UNIVERSITY
Berunanpukuria, P.O. - Malikapur, Barasat,
North 24 Parganas, Kolkata- 700126

Course Structure

- First Semester:** 5 Compulsory Papers (50 marks each)
Second Semester: 5 Compulsory Papers (50 marks each)
Third Semester: 3 Compulsory Papers (50 marks each)
 2 Optional Papers (50 marks each)
Fourth Semester: 3 Compulsory Papers (50 marks each)
 2 Optional Papers (50 marks each)

SYNOPSIS OF THE SYLLABUS

<i>Semester</i>	<i>Compulsory Papers</i>	<i>Optional Papers</i>
I	<ul style="list-style-type: none"> • Microeconomics I (ECO-101) • Macroeconomics I (ECO-102) • Quantitative Techniques 1(ECO-103) • Growth Economics (ECO-104) • International Trade & Finance(ECO-105) 	
II	<ul style="list-style-type: none"> • Microeconomics II (ECO-201) • Macroeconomics II (ECO-202) • Basic Econometrics (ECO-203) • Public Finance and Social Sector (ECO-204) • Quantitative Techniques II(ECO-205) 	
III	<ul style="list-style-type: none"> • Development Economics (ECO-301) • Managerial Economics (ECO-302) • Indian Economics with Special Reference to the WB Economy (ECO-303) 	<u>Optional (Any Two)</u> <ul style="list-style-type: none"> • Econometrics-I (ECO-304) • Corporate Finance and Financial Economics-I (ECO-305) • Agriculture Economics-I (ECO-306)
IV	<ul style="list-style-type: none"> • Environmental Economics (ECO-401) • History of Economic Thought (ECO-402) • Project Work through Field Survey & Computer Application (ECO-405) 	<u>Optional (Any Two)</u> <ul style="list-style-type: none"> • Econometrics- II (ECO-403) • Financial Economics II (ECO-404) • Agriculture Economics-II (ECO-406)

Programme Outcome of M.A/M.Sc in Economics

Post graduation in Economics is a master's program that equips its graduates with the advanced knowledge and quantitative skills required for an economic analyst in the business world, the consulting industry, a central bank or public sector. The training provides a thorough understanding of fundamental economic principles, application of mathematical and statistical methods and modeling, and the use of computer software for large-scale data as well as primary level data analysis. During the program student will get in depth knowledge about the core subjects like micro economics theory, macro economics theory, mathematical economics and Econometrics. Apart from these papers theoretical papers like development economics, history of economic thought, public finance and Social Sector, Indian Economics are also covered under the program. The program also includes papers on financial economics and environmental economics. In the fourth semester of the program there is a course, "Project Work through Field Survey & Computer Application". This course helps the students to understand the real economic problems by considering primary survey. The master degree program will contain a mix of economic theory, mathematical and statistical methods, research and field courses that will be very fruitful for understanding the economic development of country. Students learning will be advanced at the post graduate level with a rigorous educational programme that integrates theory, econometrics and economic thought with applications in a wide variety of fields within economics. With a master degree in economics one is expected to have comprehensive knowledge of modern economics as an academic discipline. Through this programme a student can have depth knowledge at about economic theory regarding the way in which economy is influenced by economics policies. It provides a deep insight of finance and management sectors and civilizes the soft skill of a student which makes him /her au fait to face any challenge in public sector.

Semester I

Courses in Details

Microeconomics – I

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This paper will provide foundations of microeconomics to the students of economics. The paper includes topic like consumer behavior, theory of production and cost based on duality concepts. Different market concepts will be taught with special emphasis on imperfectly competitive market. This course will enable them to study advanced microeconomic theory in latter semesters.

Module 1. Consumer Behaviour and Theory of Demand

Preference relations - Introduction, basic properties ; Preference and utility - Existence of a utility function, Lexicographic preference relation, Leontief preference relation ; Utility maximization problem - representation, solution , Walrasian demand function, Indirect utility function and its properties ; Expenditure minimization problem - representation, solution, Hicksian demand function, expenditure function and its properties ; Duality - Introduction, relationships between demand, indirect utility and expenditure functions (Some important identities including Roy's identity) ; Money metric utility functions -examples (Cobb-Douglas utility function and CES utility function) ; Choice - Comparative statics, Slutsky equation, properties of demand functions, integrability problem ; Revealed preference theory - GARP, SARP, WARP ; Inverse demand functions and consumers' surplus in reference to welfare evaluation of economic changes.

References

1. Gibbons : Game Theory for Applied Economists
2. Kreps, D; A Course in Microeconomic Theory
3. Mas-Collel, Whinston and Green : Microeconomic Theory
4. Tirole, J. Theory of Industrial Organization
5. Varian, Hal ; Microeconomic Analysis

Module 2. Theory of firms

Technology

Specification of technology, Output set , Input requirement set, Properties of technology – Monotonic, Convex and Regular; Different technologies- CD, CES, Translog and Leontief Technology; Returns to scale and Scale Elasticity, Elasticity of factor substitution, Homogenous and Homothetic production function, properties of these functions and case of multiple products.

Profit

Profit maximization, Properties of Profit Functions, Hotelling's Lemma, factor Demand functions, Supply functions, Comparative Statistics using profit Function.

Cost

Cost minimization, Derivation of cost functions from production functions of different technology; Conditional factor demand functions for inputs; Cost Function, Geometry of costs ,Properties of cost function, Shephard's lemma; Homothetic Cost Function; Duality between production and cost functions ; Sufficient Conditions for Cost Functions, Uses of Duality.

Module 3. Market Structure

Perfect Competition-Marginal analysis as an approach to price and output determination: perfect competition — short run and long run equilibrium of the firm and industry, price and output determination, supply curve; Welfare Analysis, Efficiency and Welfare.

Monopoly — Short run and Long run equilibrium, Price Discrimination, Market Power; Welfare aspects, Monopoly Control and Regulation;

Monopolistic competition — General and Chamberlin approaches to equilibrium, equilibrium of the firm and the group with product differentiation and selling costs, excess capacity under monopolistic and imperfect competition, criticism of monopolistic competition;

Oligopoly in a game theoretic approach - Cournot-Nash equilibrium ; Bertrand model ; Product differentiation- Linear City Model ; Dynamic game : Backward induction, Subgame perfect equilibrium ; Repeated Interaction : Finitely and infinitely repeated games

References:

1. Chiang, A. C.: *Fundamentals of Mathematical Economics*, 1988, McGraw Hill
2. Deaton, A. and Muellbauer: *Economics and Consumer Behaviour*, 1993, Cambridge University Press
3. Gibbons Robert: *Game Theory for applied economists*, 1992, Princeton University Press
4. Gravelle, H. and R. Rees: *Microeconomics*, 2003, Third Edition, Prentice Hall
5. Mas-Colell, Andrew. Michael D. Whinston and Jerry R. Green: *Microeconomic Theory*, 1995, Oxford University Press
6. Pasinetti, Luigi L. (Eds): *Italian economic papers V.III*, 1998, Oxford University Press
7. Pindyck, Robert S. and Daniel L. Rubinfeld: *Microeconomics*, 1998, Prentice Hall.
8. Robinson, Joan. *Contributions to modern economics*, 1978, Oxford: Basil Blackwell
9. Silberberg, E.: *The Structure of Economics: A Mathematical Analysis*, 1990, McGraw Hill, Second Edition
10. Simon, Carl and Lawrence Blume: *Mathematics for Economists*, W.W.Norton
11. Tirole, Jean: *Theory of Industrial Organisation*, 1996, Eastern Economy Edition, Prentice Hall of India
12. Varian, H (2000) *Microeconomic Analysis*. W.W. Norton, New York
13. Williamson, O.E. and Winter, Sidney G. (Eds): *The nature of the firm; origins, evolution and development*, 1993, Oxford University Press

Macroeconomics – I

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This Course is an introduction to modern macroeconomics at the Post-Graduate level. The objective of the Course is to familiarize the concepts of modern macroeconomics to the students with a wider vision of the present discourse in macroeconomics. This course imparts an understanding of analytical framework developed in

macroeconomics. The course is initiated with the theoretical idea of Keynesian and Neo Classical Synthesis. The structure is designed in a way to understand systematic theoretical developments of macroeconomics of consumption and investment & money.

Following this course, Students will learn the behavior of macroeconomic variables and their relationships. They would be able to understand various issues of macroeconomics and to relate concepts with research and policy. The paper helps the students wishing to continue to study macroeconomics as well as those interested in policy research. The course would be highly effective for the preparation of national level examinations as National Eligibility Test, Indian Economic Service and Indian Civil Service Examinations etc..

Module 1: Keynesian and Neo-Classical Synthesis

Classical System - Walras Law and Say's Identity ; Keynesian System - Product Market & Money market ; The IS-LM Model – Policy Effectiveness ; Supply Side Equilibrium - Flexible Prices ; Wage Rigidity and Wage Price Flexibility ; Keynesian Three Sector Model ; Relative Effectiveness of Monetary and Fiscal Policies ; Budget Adjustment and Taxes ; Balanced Budget Multiplier ; Aggregate Demand and Aggregate Supply – Classical vs Keynesian; Aggregate supply and Perfect Foresight

Module 2 : Consumption

Keynes' Psychological Law of Consumption; Short-run and Long-run Consumption Function ; Estimation of Consumption Function and Empirical Evidence ; Income-Consumption Relations - Relative Income Hypothesis, Life Cycle Hypothesis, Permanent Income Hypotheses ; Fisher's Model of Inter-temporal Optimization ; Consumption and Uncertainty – Random Walk ; Consumption and Interest Rate.

Module 3 : Investment

Marginal Efficiency of Capital – Keynesian theory ; Investment and the Cost of Capital - Refinement of Keynesian Theory of Investment (Ackley & Lerner) ; The Accelerator and Investment Behaviour ; Flexible Acceleration Principle (Chenery & Goodwin) ; ; Jorgenson's Theory of Investment ; Eisner and Stortz Model of Investment Behaviour ; Investment with Adjustment Cost ; Investment Decisions under Uncertainty.

Module 4 : Demand for Money

Classical Quantity Theory Approach to Demand for Money ; Keynes's Liquidity Preference Theory ; Friedman's Restatement Theory of Money Demand ; Regressive Expectation Model ; Inventory Theoretic Approach (Baumol) ; Tobin's portfolio Balance Approach.

Module 5 : Supply of Money

'H' - Theory of Money Supply Determination ; Teigens' Model of Money Supply – Money Multiplier ; Empirical Estimates of Interest Elasticity – Teigen's Model ; A Behavioural Approach of Money Supply Determination – Bank as a Firm ; Control of Money Supply.

References

1. Levacic, R and A. Rebman (1986) – Macroeconomics; (2nd Ed, Macmillan).
2. Ackley,G. (1978), Macroeconomics : Theory and Policy, Macmillan, New York.
3. Branson, W.A. (1989), Macroeconomic Theory and Policy, (3rd Edition), Harper and Row, New York.
4. Dornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York.
5. Romer, D.L. (1996), Advanced Macroeconomics, McGraw Hill Company Ltd., New York.
6. Taylor, L. (1983), Structuralist Macroeconomics, Basic Books, New Longman.

Quantitative Techniques 1

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course offers some fundamentals concepts in mathematical economics including static and dynamic optimization which would help the students to understand advanced micro and macroeconomic theories. These ideas will be helpful to the

students for better understanding of growth economics and environmental economics in later stage.

1. Functions – Concavity, Convexity, Quasi- concavity and Quasi- convexity
2. Constrained Optimization – 1st order and 2nd order conditions for constrained optimization. Global and Local optimum. Uniqueness of Local Maximum- application to economic theory.
3. Comparative Static Analysis- Implicit function theorem – The Envelop Theorem – Hotelling’s Lemma – Shephard’s Lemma.
4. Concave programming- Kuhn-Tucker condition
5. Dynamic equilibrium – 1st order and 2nd order homogenous / non- homogenous differential equations and their applications- 1st and 2nd order homogenous / non- homogenous difference equations and their applications.

References:

1. Michael Hoy, John Livernois, Chris McKenna, Ray Rees and Thanasis Stengos: Mathematics for Economics, Second edition, prentice-Hall, India
2. James M. Henderson and Richard E. Quandt: Microeconomic Theory- A Mathematical Approach, Third edition.

Growth Economics

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course is based on basic theories of economic growth with emphasis on neoclassical growth theory and endogenous growth theory. This course will be useful for further empirical and theoretical research in this area. This course will enable the students to better understand the impact of health and education on economic growth and help them to study economics of social sector.

1. Exchange Based Models – Harrod’s Model, Dynamic Equilibrium in Harrod’s Model
2. Knife-Edge Instability, Long Run Equilibrium in Harrod’s Model

3. Solow's Growth Model and its extensions.
4. Technological Progress, Exogeneous, Endogeneous, Hicks Neutral, Harrod Neutral
5. Swan and Kaldor model of Growth
5. Engogenous Growth Theory of Arrow and Romer ; The Ramsay model ; Long Run Growth and Capital Accumulation ; Technical Changes.

References:

1. Growth Economics- Selected Readings, Edtd by A. K. Sen, Penguin Books,
2. Barro, Robert J. and Xavier Sala-i- Martin (1995), "*Economic Growth*", McGraw-Hill, Inc., Singapore
3. Jones, H.G (1976): *An Introduction to Modern Theories of Economic Growth*, McGraw-Hill.
4. Stiglitz, J. E. and H. Uzawa (ed.)(1969): *Readings in Modern Theory of Economic Growth*, MIT Press.

International Trade & Finance

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: The main objective of the course is to provide the students a deep understanding about the broad principles and theories, which govern the free flow of trade in goods, services and capital across different countries. The paper spread over different modules which cover important international trade theories and policies. The different aspects of welfare implications of the policy of economic openness and the distribution of gains from trade in goods and services between and within countries are also included in the paper. The students may learn about the relevance and limitations of these principles and empirical evidence of theories. The contents of the course are particularly relevant to the students from the policy point of view under the present era of globalization and liberalization.

- 1 Distinguish between inter-regional and international trade. A brief review of traditional trade theories - absolute advantage, comparative advantage and opportunity costs, reciprocal demand.

- 2 The modern theory of factor endowments, theory of factor price equalization, Extension of Heckscher-Ohlin theory of trade, Economies of scale and Trade under imperfectly competitive market, Role of dynamic factors - changes in factor endowments (The Rybczynski Theorem), changes in tastes, technology, non-traded goods, differing demand conditions and transport costs in explaining the emergence of trade.
- 3 New trade theories- The Kravis Theory of Availability, Linder's Theory of Volume of Trade and Demand Pattern, Kenen's Theory of Human Capital, intra-industry trade and its impact on developing economies.
- 4 The Theory of Interventions (Tariffs, Quotas and non-tariff barriers); Economic effects of tariffs and quotas on national income, output, employment, terms of trade, income distribution. The political economy of non-tariff barriers and their implications; nominal, effective and optimum rates of tariffs — their measurement, impact and welfare implications.
- 5 Economic growth and international trade – production and consumption effects of growth -H.G. Johnson, effects of growth on terms of trade- immiserizing growth. (5)
- 6 Balance of Payments (BOP) - Structure of BOP accounts, equilibrium and disequilibrium in the BOP, the Monetary Approach to BOP, Monetary and Fiscal Policies under Alternative Exchange Rate Regimes (Mundell-Flemming model). Foreign Exchange Market - Spot and Forward Rates, Hedging and Speculation, Interest Rates Arbitrage.
- 7 The Economic Integration and co-operation: Distinguish between Regional economic integration and international economic integration, different types of economic integration (PTA, FTA, CU, CM, EU, TEI). Theory of customs union, trade creation versus trade diversion, partial and general equilibrium approaches to the theory of customs union, static and dynamic affects.(6)

References

1. Appleyard, A. Field, S.L. Cobb (1992), International Economics, McGraw-Hill Irwin.
2. Bhagwati, J. (Ed.) (1981), International Trade, Selected Readings, Cambridge, University Press, Massachusetts.

3. Balassa, B. (1962), The Theory of Economic Integration, George Allen & Unwin Ltd., London.
4. Chacholiades, M. (1990), International Trade : Theory and Policy, McGraw Hill, Kogakusha, Japan.
5. Corden, W.M. (1974), Trade Policy and Economic Welfare, Clarendon Press, Oxford.
6. Kenen, P.B. (1994), The International Economy, Cambridge University Press, London.
7. Kindleberger, C.P. (1973), International Economics, R.D. Irwin, Homewood.
8. Krugman, P.R. and M. Obstfeld (1994), International Economics: Theory and Policy, Glenview, Foresman.
9. Roy, P.N. (1986), International Trade: Theory and Practice, New Age International Publishers, New Delhi.
10. Salvatore, D. (1997), International Economics, Prentice Hall, Upper Saddle River, N.J., New York.
11. Soderston & Reed (1994), International Economics, The Macmillan Press Ltd., London

Semester II

Microeconomics II

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: The students in this course will learn Theories of Uncertainty, General Equilibrium and Welfare Economics. The students will be provided with the basic tools and concepts required to understand scientific papers at the research frontier of microeconomic theory. The course also includes basic concepts of game theory. This course will prepare them to study advanced microeconomic theory in the latter stage.

Module 1. Choice under Uncertainty

Von Neumann- Morgenstern expected utility theory.

On utility for money: Absolute and relative risk aversion.

Applications to market demand: demand for insurance and demand for financial assets.

States of nature and Subjective probability theory; Savages sure thing principle.

References

Kreps, D; A Course in Microeconomic Theory

Varian, Hal ; Microeconomic Analysis

Module 2. General Equilibrium

Walrasian equilibrium in a pure exchange economy: Existence, uniqueness, stability

Core: basic idea, Walrasian equilibrium and the core, Shrinking core and Tannonement

Process , Arrow- Debreau equilibrium (Proposed)

References

Mas-Collel, Whinston and Green : Microeconomic Theory

Varian, Hal ; Microeconomic Analysis

Module 3. Welfare Economics

Pareto Efficiency Conditions, Pareto Efficiency and Competitive Markets, First fundamental theorem of welfare economics, Distribution and Market, Second fundamental theorem of welfare economics, Pareto optimal conditions; Optimal resource allocation; Value judgement; Social welfare function; Compensation Principle-Kaldor-Hicks-Scitovsky; Inability to obtain optimum welfare — Imperfections, market failure, decreasing costs, uncertainty and non-existent and incomplete markets; Theory of Second Best, Arrow's impossibility Theorem.

References

Hal R. Varian: *Microeconomic Analysis* (3rd Edition), 1992, International Student Edition, W.

W. Norton and Company

Ross M. Starr: General equilibrium theory; An introduction, 1997, Cambridge University Press

David Kreps: Notes on theory of choice, 1988, Westview Press

Gravell H. and R. Rees (2004), Microeconomics, Longman, London.

R. Gibbons: Game theory for applied economists, 1992, Princeton University Press

D. Fudenberg and J. Tirole: Game Theory, 1996, MIT Press

Patrick Bolton, Mathias Dewatripont: Contract theory, 2005, MIT Press

Martin J. Osborne and Ariel Rubinstein: A course in game theory, 1994, MIT Press.

Module 4. Game Theory

1. Basic Concepts – Types & category of games – constant sum and Non-constant sum game – Two person zero sum game & payoff Matrix.
2. Saddle point solution – Existence; Maximim – Minimax Principle – Fair game & strictly Determinable Game – Game without saddle point – pure and Mixed strategies – Dominant Strategies.
3. Formulation of game theory by Linear Programming method – Nash Equilibrium – working out the Cournot-Nash Equilibrium.
4. Exercises on Game Theory

Reference

1. R. Gibbons: Game theory for applied economists, 1992, Princeton University Press
3. Mas-Collel, Whinston and Green : Microeconomic Theory.

Macroeconomics II

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course is introduced to understand the modern analytical structure developed in macroeconomics to shape policy discourse. The course covers the major debate on inflation-unemployment trade-off in the light of inflation expectations. Open economy macroeconomics is introduced to understand the ideas of macro models with external sector. The course also includes the ideas of disequilibrium models by the Post-Keynesian Economists in the context of Walrasian framework. New classical macro theories are also

introduced. The course also contains the theories of Real Business Cycles in order to capture the behavior of economic fluctuations in modern macroeconomics. After the completion of this Course, students will definitely understand modern theoretical development of macroeconomic models and thereby the policy analysis. The Course will make the Students be able to assess macroeconomic policies of the Govt. The paper also helps the students to prepare for national level examinations. Those who are going to pursue research in macro policies can receive a lot from this paper.

Module 1

Classical & Keynesian Theory of Inflation; Monetarist Approach ; Demand Inflation Dynamics ; Bent Hansans' Dynamic Infation ; The Phillips Curve ; Lipsey's Theoretical Rationale ; Phillips Curve and Price Expectation – Friedman ; Natural Rate of Unemployment Hypothesis ; Tobin's Modified Philips Curve ; Adaptive Expectations and Phillips Analysis ; Phillips Curve and Rational Expectations – NAIRU ; Okun's Law

Module 2

Open Economy Income Determination ; Balance of Payment Adjustment with Exports and Imports ; Foreign Trade Multiplier in a Two Country Model ; Foreign Exchange Market – Equilibrium & Stability ; Balance of payment and Exchange Rate ; Mundell-Fleming Model under Fixed & Floating Exchange Rate ; Exchange Rate, Capital Mobility and Policy Effectiveness ; Asset Markets, Expectations and Exchange rates.

Module 3

The New Classical Critique of Micro Foundations – Disequilibrium Analysis ; Walrasian and Keynesian Adjustment Mechanism ; Patinkin's Synthesis ; Unitary Decision and Dual Decision Hypothesis – Clower ; Constrained Demand and General Equilibrium Model - Barro & Grossman ; A General Disequilibrium Model involving both Excess Supply and Excess Demand Situations

Module 4

Role of Expectations in Macroeconomics ; Keynes's Treatment of Expectation ; Adaptive Expectation Hypothesis ; Rational Expectation Hypothesis ; Rational Expectation and Policy

Ineffectiveness Proposition ; Expectations and Wage Contracts ; Output and Employment Fluctuations ; Hicks-Samuelson Multiplier-Accelerator model of Business Cycle ; Real Business Cycle Models ; A Simple Real Business Cycle Model ; Effects of Technology Shocks ; Fiscal and Monetary Policy Impacts

References

1. Branson, W.A. (1989), *Macroeconomic Theory and Policy*, (3rd Edition), Harper and Row, New York.
2. Hall, R.E. and J.B. Taylor (1986), *Macroeconomics*, W.W. Norton, New York.
3. Romer, D.L. (1996), *Advanced Macroeconomics*, McGraw Hill Company Ltd., New York.
4. Barro and Sala-i-Martin : *Growth Economics*, Prentice Hall
5. Levacic, R and A. Rebman (1986) – *Macroeconomics*; (2nd Ed, Macmillan).
6. Mueller, M.G. (1966), *Readings in Macroeconomics*, Holt Rinehart and Winston, New York.
7. Leijonhufvud, A. (1968), *On Keynesian Economics and Economics of Keynes*, Oxford University Press, London.
8. Patinkin, D. (1965), *Money, Interest and Prices*, Harper and Row, New York.
9. Lucas, R. (1981), *Studies in Business Cycle Theory*, M.I.T. Press, Cambridge, Massachusetts.
10. Taylor, L. (1983), *Structuralist Macroeconomics*, Basic Books, New Longman.
11. Begg (1982) - *The Rational Expectations Revolution*.
12. Sheffrin, S.M.(1996), *Rational Expectations*, Cambridge University Press, Cambridge.
13. Plosser, C. (1989): *Understanding Real Business Cycles in Journal of Economic Perspectives* (Summer).

Basic Econometrics

Full Marks: 50
Lecture Hours: 50
Credit:4

Course Outcome: The present paper is devoted to equip the students with foundations of Econometrics and the applications of the econometric methods for understanding of applied economic research. The paper includes various problems of estimation of single-equation regression models and the problems of inference. It also includes topics for analysing problems of regression with qualitative regressors. This paper also contains an introduction to simultaneous equation framework.

Introduction to Econometrics

Nature, meaning and scope of econometrics- deterministic versus stochastic relations, Econometrics and mathematical Economics, Econometrics and Statistics, Concept of Population Regression Function (PRF) & Sample Regression Function (SRF)- Simple and Multiple Regression. Meaning of the term 'Linear' in Regression Analysis.

The Two Variable Classical Linear Regression Model

- The basic Model and its assumptions
- Estimation of basic model by the method of OLS
- Properties of Estimators (BLUE),
- Estimation of the σ^2
- Maximum Likelihood Estimation
- Measuring Goodness of fit
- Testing of Hypotheses
- Prediction
- Residual Analysis

Different Functional Forms

- Review of Exponential and Logarithmic Functions
- Semi-Log Models: Log-Lin and Lin-Log Models
- Polynomial Curve Fittings
- Log-Log Models

Violation of the OLS Assumptions (without using Matrix Algebra)

Heteroscedasticity

- Definition
- Problems created by its Presence,
- Testing for its presence,
- Estimating Methods in its Presence.
- Illustrative Examples

Autocorrelation

- Definition
- Problems created by its Presence,
- Testing for its presence,
- Estimating Methods in its Presence.
- Illustrative Examples

Multicollinearity

- Definition
- Problems created by its Presence,
- Testing for its presence,
- Estimating Methods in its Presence.
- Illustrative Examples

Regression with Qualitative Regressors

- Dummy Variables Meaning and Use
- Classification system; Dummy Variable Trap
- Interpretation of Estimated Coefficients
- Class-effect and Interaction-effect
- Comparing dummy variable Approach with Chow Test

Simultaneous Equation System

- Basic Concepts – Introduction and examples;
- The simultaneous equation bias and inconsistency of OLS estimators,
- Structural Form, Reduced Form and Final Form.
- The identification problem - Rank and Order conditions.
- Reduced Form approach to identification.
- Basics of Estimation

References

1. Goon, A. M., M. K. Gupta and B. Dasgupta (1993) Fundamentals of Statistics, Vols 1 & 2, WPL
2. Gujarati, Damodar, *Basic Econometrics*, McGraw-Hill Publishers © 2003
3. Gupta, S. C. (1993) Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.
4. Greene William H., *Econometric Analysis*, Pearson Education, Asia.
5. Johnston, J. (1991), *Econometric Methods*, McGraw Hill Book Co., London.
6. Johnston and Dinardo: *Econometric Methods* - Tata McGraw Hill
7. Judge, G.G. et al., *Introduction to the theory and Practice of Econometrics*, 2nd ed., John Wiley and Sons.
8. Kennedy, Peter, *A Guide to Econometrics*, 5th ed., MIT Press, Published 1998.
9. Koutsoyiannis, A. (1977), *Theory of Econometrics* (2nd ed.), The Macmillan Press Ltd., Delhi
10. Krishna, K.L. (Ed.) (1997), *Econometric Applications in India*, Oxford University Press, New London.
11. Maddala, G.S. (Ed.) (1993), *Econometrics Methods and Application* (2 Vols.)
12. Millar, J (1996) *Statistics for advanced Level*, Cambridge University Press, Cambridge
13. Nagar, A. L. and R. K. Das (1993) *Basic Statistics*, Oxford University Press, New Delhi.
14. Pindyck, R.S. and D.L. Rubinfeld (1976), *Econometric Models and Economic Forecasts*, McGraw Hill Kogakusha, Tokyo.
15. Spiegel, M. R. (1992) *Theory and Problems of Statistics*, McGraw Hill Book Co. London.
16. Theil, H. (1981), *Introduction to Econometrics*, Prentice Hall of India, New Delhi.
 - a. U.K.
17. Wooldridge Jeffrey M. *Introductory Econometrics: A Modern Approach*, South Western Educational Publishing.

Public Finance & Social Sector

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: The first part of the course covers elements of public economics and the second part of the course includes different issues of economics of social sector. Public economics includes different theories of public expenditure and also some topics on subsidy. Education and health are the two important social dimensions of human development. The course emphasizes on the macroeconomic and microeconomic studies of impact of education and health. The course will enrich the students with theoretical as well as empirical studies on economics of social sector focusing on role of public finance and human capital on economic growth.

Group A

Public Finance

1. Nature and characteristics of Public Goods – Determining the Efficient output of a Public Goods – Public Goods and the Free Rider Problem.
2. Pure Theory of Public Expenditure – The Benefit Principle – Lindahl's Pure Theory of Public Expenditure (Voluntary Exchange Model)
3. Samuelson's Pure Theory of Public Expenditure
4. Principles of Expenditure Analysis – Effects of Government Expenditure on Non-marketed Goods.
5. Effects of a Fixed – Quantity Subsidy for Marketed (Private) Goods.
6. Effects of an Excise Subsidy.

References:

1. Musgrave, (2) Musgrave & Musgrave, (3) E. K. Browning & J. K. Browning – Public Finance & the Price System (4th Edition), Chapters 2 and 4.
2. Due and Friedlaender – Government Finance.

Group-B
Social Sector

1. Economics of Education: Education as an instrument for economic growth; Human capital — Human capital vs. Physical capital, components of human capital; Demand for education — private demand and social demand, Determinants of demand; Cost of Education — Expenditure on education, private costs and social costs and wastage and stagnation; Benefits of education — Direct and indirect benefits, private and social benefits; Educational planning and economic growth — Cost-benefit analysis, production function models, growth accounting equations of Schultz and Denison, Manpower requirements approach, programming and input-output models; Educational financing — Resource mobilization and utilization, pricing and subsidies and effects of educational financing on income distribution; Education and labour market — Effects of education, ability and family background on earnings, poverty and income distribution, education and employment; Economics of educational planning in developing countries with special emphasis on India.

2. Health Economics: Health dimensions of development; Determinants of health — poverty, malnutrition and environmental issues; Economic dimensions of health care — demand and supply of health care; Financing of health care and resource constraints; The concept of human life value; Theory and empirical studies of production of health care; Inequalities in health — class and gender perspectives; Institutional issues in health care delivery.

3. Economics of Infrastructure- Infrastructure and economic development - Infrastructure as a public good. Social and physical infrastructure. Organization and Financing of Supply of Social Services. Private vs. Public Sector Financing; Recent debate about the fixation of prices of social services. Cross-subsidization — free prices, equity and efficiency.

References

Education

1. Becker, G.S. (1974), Human Capital (2nd Edition), National Bureau of Economic Research, New York.

2. Blaug, M. (1972), Introduction to Economics of Education, Penguin, London.
3. Padmanabhan, C.B. (1984), Financial Management in Education, Select Books, New Delhi.
4. Schultz, T.W. (1971), Investment in Human Capital, Free Press, New York.
5. Tilak, J.B.G. (1994), Education for Development in Asia, Sage Publications, New Delhi.
6. Vaizey, J. (1962), Economics of Education, Faber and Faber, London.
7. Woodhall, M. (1992), Cost Benefit Analysis in Educational Planning, UNESCO, Paris.

Health

Baru, R.V. (1998), Private Health Care in India : Social Characteristics and Trends, Sage Publications, New Delhi.

1. Berman, P. (Ed.) (1995), Health Sector Reform in Developing Countries : Making Health Development Sustainable, Boston: Harvard Series on Population and International Health.
2. Berman, P. and M.E. Khan (1993), Paying for India's Health Care, Sage Publications, New Delhi.
3. Dasgupta, M., Chen, L.C. and Krishnan, T.N. - Health, Poverty and Development in India (ed.), Delhi, Oxford University Press, 1998.
4. Klarman, H.E. (1965), The Economics of Health, Columbia University Press, New York.
5. National Family Health Survey (various issues)
6. Panchamukhi, P.R. (1980), Economics of Health : A Trend Report in ICSSR, A Survey of Research in Economics, Vol. VI, Infrastructure, Allied, Delhi.
7. World Bank (1993), The World Development Report, 1993 : Investing in Health, Oxford University Press, New York.
8. World Health Report 2000, WHO, Geneva.

Both Health, Education and Infrastructure

1. Arrow, K.J. (1970), 'The Organization of Economic Activity : Issues Pertinent to Choice of Market versus Non-market Allocation' in Public Expenditure and Policy Analysis, (Ed.), Haveman, R.H. and J. Margolis, Markham, Chicago.
2. Crew, M.A. and P.R. Kleindorfer (1979), Public Utility Economics, Macmillan, London.
3. Crones, R. and T. Sandler (1989), The Theory of Externalities and Public Goods, Cambridge University Press, Cambridge.
4. Dinniwidy and Teal: Principles of Cost Benefit Analysis for Developing Countries, CUP, 1996.

5. Goyal, S.K. (Ed.) (1985), Public Enterprises, Indian Institute of Public Administration, New Delhi.
6. Human Development Reports ,UNDP (various issues)
7. Indian Council of Social Sciences Research (ICSSR) (1976), Economics of Infrastructure, Vol. VI, New Delhi.
8. Indian Council of Social Sciences Research (ICSSR) (1976), Economics of Infrastructure, Vol. VI, New Delhi.
9. Naik, J.P. (1975), Equality, Quality and Quantity, Allied Publishers, Bombay.
10. National Council of Applied Economic Research (NCAER) (1996), India Infrastructure Report: Policy Implications for Growth and Welfare, NCAER, New Delhi.

Quantitative Techniques II

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course offers advanced statistical methods such as estimation and inference which are required for better understanding of econometrics.

1. Random Sampling and sampling Distributions - Expectation and Standard Error of sample mean with replacement and without replacement- Standard Normal Distribution, χ^2 distribution, t- distribution and F- distribution
2. Statistical Inference - point estimation of parameters- unbiased estimator, consistent, sufficient and maximum likelihood estimators. MLE from ND, PD and BD- Interval estimation of parameters.
3. Exact Tests and confidence interval for univariate normal distribution.
4. Optimal control theory.

Reference List:

1. Goon, Gupta and Dasgupta- Fundamentals of Statistics
2. Mathai A. M & Rathie P. N- Probability & Statistics
3. Chou, Y. (1975) Statistical Analysis, Holt, Reinhart and Winston, New York
4. Millar, J. (1996) Statistics for Advanced Level, Cambridge University Press, Cambridge.

5. Nagar, A. L. and R. K. Das (1993) Basic Statistics, Oxford University Press, New Delhi.
6. Spiegel, M. R. (1992) Theory and Problems of Statistics, McGraw Hill Book Co. London.

Semester III

Development Economics

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: The course is about the fundamental models used to analyze theoretical issues in Development Economics. The main target of the course is to disseminate the ideas of growth and development to the students in the context of underdeveloped and developing economies. Evolution of the theories of economic development is clearly highlighted. The course covers theoretical developments in the areas of growth and economic development, economic inequality & poverty issues, rural-urban interconnections, markets for land, credit and interlinkages. The Course contents as designed in the paper will prepare the Students to understand development issues and the related policy discourse. Students may exercise quantitative methodologies as used in different models of development economics in their own research at the regional level.

Module 1. Economics of Growth – a Theoretical and Historical Perspective ; Development - Meaning and Measurement ; Characteristics of Underdevelopment ; Physical Quality of Life Index (PQLI) ; Human Development- Concept, Measurement and Inter-country Analysis ; Development as Capability Expansion ; Development as Freedom ; Development and Social Opportunity.

Module 2. Income Distribution in the Developing Countries ; Income Inequality ; Inequality and Development Interconnections ; Poverty -Absolute and Relative ; Different Dimensions of Poverty ; Income Poverty vs Human Poverty ; Poverty and Nutrition ; Poverty Nutrition and Labour Markets ; Inequality, Poverty and Growth ; Economics of Poverty Alleviation : Employment Guarantee Scheme

Module 3. Rural-Urban Migration - Harriss-Todaro Model ; Labour Turnover Model Explaining Labor Contracts ; Lewis Model of Economic development ; Ranis and Fei model ; Jorgenson's model ; The Wage Productivity model ; Surplus labour and Efficiency Wage ; A Collusive Theory of Unemployment ;

Module 4. Theory of Agrarian Contracts – Land Rental Contracts, Ownership and Tenancy; Productivity and Tenancy ; Permanent Labour Markets ; Credit Markets ; Theories of Informal Credit Markets ; Credit Rationing ; Perfect Insurance

Module 5: Dualism and Cumulative Causation ; Regional Growth Differences ; New Economic Geography and Growth ; Foreign Direct Investment and Economic Development ; Foreign Aid and Welfare ; Issues in Trade Liberalisation and Development ; Agreements Theory

References:

1. Dasgupta, Partha (1993): *An Inquiry into Well Being and Destitution*, Clarendon Press.
2. Ray, Debraj (1999): *Development Economics*, Oxford India Paperbacks. Chap 2.
3. Basu, K. (1997), *Analytical Development Economics*, OUP.
4. Bardhan, P. and C. Udry (1999), *Development Microeconomics*.
5. Todaro, Michael P. and Stephen C. Smith: *Economic Development*, Pearson Education.
6. Chenery, H. and T.N. Srinivasan (Eds.) (1989), *Handbook of Development Economics*, Vols. 1 & 2, Elsevier, Amsterdam.
7. Hayami, Y. (1997), *Development Economics: From the Poverty to the Wealth of Nations*, Oxford: Clarendon Press.
8. Thirwal, A.P. (1999), (6th Edition), *Growth and Development*, Macmillan, U.K.
9. Mookherjee, D. and D. Ray (2000): *Readings in the Theory of Economic Development*, Blackwell: London.
10. Behrman, S. and T.N. Srinivasan (1995), *Handbook of Development Economics*, Vol. 3, Elsevier, Amsterdam.

11. *Fukuda-Parr, S. and A. K. Shiva Kumar (eds.) (2003): Readings in Human Development*, Oxford University Press.
12. Sen, A. K. (1985): *Commodities and Capabilities*, Oxford University Press.
13. Sen, A. K. (1999): *Development as Freedom*, Oxford University Press.
14. Sen, A. K. (2002): *Rationality and Freedom*, Oxford University Press.
15. Sen, A. K. and Jean Dreze (1989): *Hunger and Public Action*, Oxford University Press.
16. Sen, A. K. and Jean Dreze (eds) (1990): *The Political Economy of Hunger, Vols. I, II, & III*, Clarendon Press.

Managerial Economics

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course is based on Structure-Conduct-Performance Paradigm which is a departure from neoclassical paradigm. This course requires foundation knowledge of game theory and includes both theoretical and empirical issues of firm's strategic behavior in markets. This course intends to develop a strong base of understanding the role of R & D, advertising, product differentiation in determining firm level decision. It also covers topics such as merger, concentrations, entry issues etc.

- Transaction cost economics and the firm (Coase(1937), Williamson (1985))
Transaction cost- Human factors-Qualities of transactions- Firm as an alternative institution to market
 - Organizational approach and Team Theory (Alchian and Demsetz (1972))
Metering problem-Monitoring solution-scope of supervision
 - Managerial incentives and the dynamic perspectives
 - Product differentiation : Concept
Linear City Model (Hotteling(1929))
The Circular City Model (Salop(1979))
- Advertising and Informational Product differentiation
Butters (1977)
Grossman and Shapiro(1984)

Entry Issues

- Bains Postulate on entry and the role of fixed cost
- Limit pricing theory
- Stackelberg-Spence-Dixit model

The Job Market:

- Managers and Job Market Signalling.

References:

Oz Shy: Industrial Organization, MIT Press.

Tirole, J. Theory of Industrial Organization

Indian Economy with Special Reference to West Bengal Economy

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: The paper deals with issues in Indian Economy. It emphasizes on understanding of sector-specific issues and policies. The paper focuses on issues in Indian agriculture, industry, services, external sector, financial sector, and social sector development. The focus of the course is on the growth and development of Indian Economy and to aware of the students regarding recent trends in major economic and social indicators and policy debates in India. The various problems of social sector like issues of poverty, unemployment, food security etc. are included. The paper also gives a brief over view of West Bengal economy.

Growth and Structural Changes

Economic Growth in Independent India ; Occupational structure and economic development – growing importance of the tertiary sector, an analysis of trend during 1951-2000 ; Approaches to economic development and its measurement ; Human Development in India and its constituent states (WB economy in Special)

Agriculture

Trends in agricultural production and productivity –Present state of agricultural growth-in India, Causes of deceleration of agricultural growth in the recent period; Cropping Pattern of Indian Agriculture; Institutional Reforms— land reforms in India; Debate on Farm size and Productivity; Agriculture Price Movements; Issues on food security; Public distribution System; Agriculture and WTO— policies for sustainable agriculture.; Concept of Contract Farming and its presence in Indian economy.

Industrial Sector

Growth and pattern of industrialization; New Industrial policy under economic reforms; Small-scale industries in India; Industrial labour and Trade Union movement; Financing and Investment in industrial sector.

Poverty and Inequality

Poverty and Inequality: Concept and Measurement ; Inequality and poverty in India: Estimates ; Regional and Sectoral Dimensions ; Rural Poverty and Agricultural Performrnce (Aluwalia) ; Causes and consequences ; Poverty and Economic Reforms ; Inequality development relationship ; Growth and poverty reduction in the context of Indian Economy; Poverty alleviation programmes in India – Implication and ineffectiveness

References:

1. Sundaram K. 2007, 'Employment and Poverty in India, 2000-05, EPW, 2007.
2. Mahendra Dev , Ravi, C, 2007, 'Poverty and Inequality : All India and States, 1983-2005, EPW, 2007.
3. Brahmananda, P.R. and V.R. Panchmukhi (Eds.) (1987), The Development Process of the
4. Indian Economy, Himalaya Publishing House, Bombay.
5. Chelliah, Raja J. and R. Sudarshan (1999), Income, Poverty and Beyond : Human Development in India, Social Science Press, New Delhi.

6. Hanumantha Rao, C.H. and H. Linnemann (Eds.) (1996), Economic Reforms and Poverty
7. Alleviation in India, Sage Publications, New Delhi.
8. World Bank (2000), India : Reducing Poverty, Accelerating Economic Development, Oxford University Press, New Delhi.

India's External Sector

India's foreign trade – Structure and direction; BOP and trade reforms; Foreign capital in India- composition and direction of foreign investment; Foreign capital and role of MNCs/TNCs in India, impact of FDI; India's external debt; India's foreign policy- Issues in Export-import policy and FEMA, Exchange rate policy; WTO and India's trade reforms; Globalisation of Indian economy; Issues in competition and safety nets.

India's Financial Sector

Banking sector reforms; Revenue and expenditure of Central and State Governments; Fiscal Reforms.

West Bengal Economy

Overall Economic Characteristics of West Bengal Economy; Growth Scenario of the State Domestic Product and its Components; Problems in Agriculture Sector; Institutional Reforms , Land Reforms, Tenancy Reforms- Operation Barga; Agriculture Growth in different Decades; Technical Change , Agriculture Finance and marketing; Industrialization: Formal versus Informal, large versus small scale; Employment Scenario for the last three decades; Problems of Service Sector , government and Private Sector; Decentralization; Institutional (like Panchayats).

Reference:

1. Ahluwalia. I.J. and I M D Little (Eds.) (1999) India's Economic Reforms and Development (Essays in honour of Manmohan Singh), Oxford University Press, New Delhi.
2. Bardhan, P.K. (9th Edition) (1999) The Political Economy of Development in India, Oxford University Press, New Delhi.
3. Brahmananda, P.R. and V.R. Panchmukhi (Eds.) (2001), Development Experience in the Indian Economy Inter State Perspectives, Bookwell, Delhi.

4. Dantwala, M.L. (1996) Dilemmas of Growth; The Indian Experience, Sage Publication New Delhi.
5. Datt, R. (Ed.) (2001) Second Generation Economic Reforms in India, Deep & Deep Publications, New Delhi.
6. Dutt, R and KPS Sundaram – Indian Economics (Latest Edition)
7. Government of India, Economic survey (Annual), Ministry of Finance, New Delhi.
8. Jalan, B (1996) India's Economic Policy - Preparing for the Twenty First Century, Viking, New Delhi.
9. Joshi, V, and I M D Little (1999) India: Macro Economics and Political Economy, 1964-1991, Oxford University Press, New Delhi.
10. Misra and Puri – Indian Economics (Latest Edition)
11. Parikh, K.S. (1999) India Development Report-latest, Oxford University Press, New Delhi.
12. Reserve Bank of India, Report on Currency and Finance(Annual)
13. K. Ramachandran and M Swaminathan (eds) “ Financial Liberalization and rural Credit in India”, Tulika Book(2005).
14. B.A.de Aghion and J. Morduch, “ The Economics of Micro Finance”, Prentice Hall of India (2007)
15. Abhijit Vinayak Banerjee , Roland Benabou and Dilip Mukherjee (eds) “Understanding Poverty”, Oxford university Press(2006)
16. Pranab Bardhan, “ Agrarian Change” , Oxford University Press(1997)
17. Pranab Bardhan, “ Development Microeconomics”, Oxford University Press.
18. Ajitava Raychaudhuri and Tuhin Das (eds) “ West Bengal Economy” , Delhi, Allied Publishers,2005.
19. Dilip Mukherjee and Debraj Roy(eds) “Readings in the theory of Economic Development” , Oxford University (2005).
20. Selected papers from Economic and Political Weekly
21. Debroy, B. (1992), Foreign Trade Policy Changes and Devaluation, B.R. Publishing Corporation, Delhi

22. Martinussen, J. (1988), Transnational Corporations in a Developing Country — The Indian Experience, Sage Publications, New Delhi.
23. Mukherjee, N. (1988), India's International Payments Imbalances, Mayur Offset, Calcutta.
24. Nayyar, D. (Ed.) (1997), Trade and Industrialization, Oxford University Press, New Delhi.
25. Nayyar, D. (1976), India's Exports and Export Policies in the 1960s, Cambridge University Press, Cambridge.
26. Sen, S. (2000), Trade and Dependence : Essays on the Indian Economy, Sage Publications, New Delhi.
27. Basu, K. et. al (1995), Capital Investment and Development : Essays in memory of Sukhamoy Chakravarty, Oxford University Press, New Delhi.
28. Chelliah, Raja J. and R. Sudarshan (1999), Income, Poverty and Beyond : Human Development in India, Social Science Press, New Delhi.
29. Gupta, S.P. (1998), Post-Reform India : Emerging Trends, Allied Publishers, New Delhi.
30. Srinivasan, T.N. (Ed.) (2000), Eight Lectures on India's Economic Reforms, Oxford University Press, Oxford.

Optional Papers (Any Two)

Econometrics I

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course assumes that students are acquainted with the simple linear regression and multiple regression analysis. The paper Econometrics-II covers some selected econometric techniques to test economic theories, estimate economic relationships, and evaluate policy using real world data. This course includes (i) Distributed Lag Model (ii) Non-linear Regression Models, (iii) Qualitative Response Model (iv) Panel data regression models, and (v) Errors in Variables (vi) Simultaneous Equation System. These regression models are extremely useful in applied economic research and these models also pose some special challenges.

Matrix Formulation of K- Variable Regressions

Least Squares Estimation of Regression Parameters

Decomposition of the sum of squares; Mean and Variance of Regression Coefficient
Gauss – Markov Theorem; Restricted and Unrestricted Regression; Problems of
Autocorrelation, Heteroskedasticity and Multicollinearity

Simultaneous Equation System

Methods of Estimation, Single Equation Methods- Indirect Least Squares (ILS) –
Instrumental Variable (IV) estimation – 2-Stage Least Square Estimator (2SLS), Limited
Information Maximum Likelihood(LIML). System Methods-3 Stage Least Squares (3SLS),
Full Information Maximum Likelihood Estimation (FIML).

Errors in Variables

Measurement Errors in dependent variables; Measurement Errors in explanatory Variables-
Reverse Regression- Instrumental Variable Method.

Non-Linear Estimation

Non-Linear least Squares Estimation; Maximum Likelihood Estimation; Hypothesis Testing
and Parametric Restrictions; F and Wald Statistics; Likelihood Ratio Test; Lagrange
Multiplier Test ; Box-Cox Transformation.

Dynamic Econometric Model/Regression with Lagged Variables

Sources of Lagged Variables; Consequences of applying direct OLS in Distributive
Lag models; Polynomial Distributed Lag models; Geometric Lag models; Autoregressive
and distributed lag models Koyak model, Partial adjustment model, Adaptive
expectations; Instrumental variables; Problem of auto-correlation — Applications under
different situations; Almon approach to distributed-lag models; Causality test, Granger test.

Qualitative Response Model

The nature of qualitative Response Model – The Linear Probability Model (LPM) and its
application – The Logit Model – Estimation of the Logit Model and its application –
Estimation of Probit Model -The Tobit Model and its application.

Panel Data Techniques

Fixed Effects

Introduction-Least Square Dummy Variable Approach; Testing the significance of the group effects, The Within and between Groups Estimators .Fixed Time and Group Effects, Unbalanced Panels and Fixed Effects.

Random Effects

Generalized Least squares, Feasible Generalized Least Squares, Testing for Random Effects , Hausman's Test for Fixed and random Effects, Unbalanced and Random Effects

References

1. Balatagi, Badi. H, Econometric Analysis of Panel Data
2. Johnston: Econometric Method, McGraw Hill
3. Johnston and Dinardo: Econometric Methods - Tata McGraw Hill
4. Gujarati: Basic Econometric, Tata McGraw Hill Judge, G.G. et al., *Introduction to the theory and Practice of Econometrics*, 2nd ed., John Wiley and Sons.
5. Koutsoyiannis: Theory of Econometrics
6. Kmenta, J. (1997), *Elements of Econometrics (Reprint Edition)*, University of Michigan Press, New York.
7. Koutsoyiannis, A. (1977), *Theory of Econometrics (2nd ed.)*, The Macmillan Press Ltd.,
8. London.
9. Greene William H., *Econometric Analysis*, Pearson Education, Asia.
10. Maddala, G.S. (Ed.) (1993), *Econometrics Methods and Application (2 Vols.)*
11. Maddala, G.S. *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press.
12. Hsiao Cheng, "Analysis of Panel Data", *Econometric Society Monographs*.

Corporate Finance and Financial Economics I

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course will give a basic idea to the students about the world of finance. They will learn to make financial statements of the firms and they will learn how to evaluate risk and return associated with a financial asset. Further, the course will offer them the ideas regarding how to decide about new investments or make replacement investments in firms, deciding about valuation of firms as far as dividend policy of a corporate firm is concerned, and will learn about market efficiency in financial theory. Finally, the course is so designed to give the students rudimentary ideas regarding the world of derivative products as they are used today in different countries.

1. Introduction to Finance and Financial System: Finance and the Role of Financial Institutions, Financial Markets and Financial Instruments; Basic Ideas of Corporate Finance – Principal Agent Problem; Basic Ideas of Finance and Financial Liberalization in the Age of Globalization – Concept of Securitization; Indian Financial System – Basic Ideas, Concepts, Relevant Markets, Institutions and Financial Instruments
2. Financial Statements – Balance Sheet, Income Statement, Working Capital Statement and Financial Cash Flow Statement
3. Time Value of Money
4. Risk and Return – Portfolio Diversification
5. Valuation of Securities – Bond Market and Stock Market
6. Capital Budgeting along with analysis of different Investment Criteria – NPV Criterion, Benefit-Cost Ratio Criterion, Internal Rate of Return Criterion, Payback Rule and Accounting Rate of Return Criterion
7. Cost of Capital
8. Dividend Policy
9. Efficiency Market Hypothesis
10. Introduction to Derivatives – Forward Contracts, Futures, Options and Swaps (Only rudimentary ideas)

References:

1. Principles of Corporate Finance – Brealy and Myers
2. Corporate Finance – Ross, Westerfeld and Jaffey
3. Investment – Sharpe, Alexander and Bailey
4. Financial Institutions and Markets: Structure, Growth and Innovations – L. M. Bhole
5. Financial Markets and Institutions: Global Edition - 7th Edition - Frederic Mishkin, Stanley Eakins
6. The Economics of Money, Banking and Finance - 4th Edition - Peter Howells, Keith Bain
7. Introduction to Futures and Options – John C. Hull
8. International Finance – Maurice D. Levi

Agriculture Economics-I

Course Outcome: This paper provides an outline of peasant economy and its characteristics and focuses on the theoretical modeling of the peasant economy. This paper highlights interlinkages in the rural market.

Module 1: Peasant Economy – Features of Peasant Societies :Chayanov’s Approach to peasant farming; New Home Economics: - Essential Features of New Home Economics The Barnum-Squire Farm Household Model; The Low Farm Household Model, Women in the peasant household; Time Allocation and the economic role of the farm women; Scope of new Home Economics.

Module 2: Profit maximizing peasant, Risk averse peasants, Drudgery Averse Peasants, Share cropping peasants, peasant technology adoption; Intra-household relationship in peasant economy .

Module 3: Agricultural development and rural markets; Theory of interlinkages transactions and interlikages of rural markets. Nature of Rural Credit Market-Forms of Rural Credit

Module 4: Land Institutions and Land Markets: Efficiency and Equity Issues; Labour Contracts and Organisations;

Module 5: Agricultural Output Markets Role of Agricultural Marketing ---Structure of markets and the role of Oligopsony, Pricing of Agricultural Commodities.

Reference List:

1. Peasant Economics- *Farm households and agrarian development*, Frank Fllis , Cambridge University Press
2. A Bhaduri, A(1973): A study in agricultural backwardness in semi-feudalism', *Economic Journal*, Vol. 83
3. Braverman, A and Stiglitz, J.E(1981): Sharecropping and interlinking of agrarian markets', *American Economic Review*, Vol. 72
4. Kausik Basu: *Less Developed Economy*, OUP
5. Debraj Ray : "Development Economics", Oxford University Press.

Semester IV

Environmental Economics

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This is a course on ecology and environmental economics. This course follows a mathematical approach to modeling several issues in environmental economics as well as some policy related issues such as pollution tax and tradable permits.

Group A

1. Externalities – definition and properties – externalities lead to a market failure misallocation of resources in the case of (a) external economies or benefits and (b) external diseconomies or external costs. Pecuniary externalities – definition, examples.
2. (a) Cost – efficient rule for pollution control – Equality of Marginal Abatement costs (MACs).
(b) Taxation for pollution control – Efficient control of pollution under a pollution tax – advantages of a pollution tax.
3. The basic theory of Tradeable Pollution Permits (TPPs) and the least – cost property of such permits.

References:

1. Hanley, Shogren & White – Environmental Economics, (Macmillan India), Chapters – 2, 3, 4 & 5.
2. Pearce & Turner – Economics of Natural Resources & the Environment.
3. Edger K. Browning & J. M. Browning – Public Finance and the Price System (4th edition) – Chapter – 2, publisher- Pearceson Education.
4. Kolstad – Environmental Economics.

Group B

1. The Economics of Sustainable Development - Weak Vs Strong Sustainability - Economic Indicators of Sustainability.
2. The Economics of Non-renewable Resources - Perfect Competition and Socially Optimal Extraction.
3. Renewable Natural Resources: A Static Economic Model of the Fishery - The Dynamic model of Fishing - Continuous -time Dynamic Optimization - Optimal harvest.
4. Social, Economic and Environmental aspects of Community Forestry in India - Case studies in South Asia and Africa - Deforestation and Forest Policies in India.
5. Natural Resource and Economic Growth - Solow model of Economic Growth and Romer Endogenous Growth model.
6. Climate Change and Economic Growth in Developing countries - Presentation of the Cass- Koopmans Optimal Growth model- Implications of the climate change induced impacts on factors of production say labour and capital in a Cass- Koopmans medel.
7. Ecosystem services

References

1. Nick Hanley, Jason F. Shogren and Ben white: Environmental Economics, (Macmillan India)
2. Ulganathan Sarkar : Environmental Economics in the Theory and Practice -

3. Franck Lecocq and Zmarak Shalizi : How Might Climate Change affect Economic growth in Developing Countries, Policy Research Working paper, 4315, The World Bank
4. Michael Toman : The Roles of the Environment and Natural Resources in Economic growth Analysis, Discussion Paper 02-71, May 2003, Resources for the Future
5. Economic Policy Research Unit, University of Copenhagen - Thorvaldur Gylfason and Gylfi Zoega. Costanza, R., D'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P., van den Belt, M. (1997). The Value of the World's Ecosystem Services and Natural Capital. *Nature* 387, 253-260.
6. Pearce, David W. (2001). The Economic Value of Forest Ecosystems. *Ecosystem Health*
7. , 284-298.

History of Economic Thought

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course of History of Economic thought is a course on historical evolution of the ideas of economic sciences including Mercantilism, Physiocracy, Classical Political economy. This paper also covers some topics on Indian economic thought.

1. The Beginnings : The Old Testament , Plato and Aristotle , The Middle ages and the Canon Law.
2. The Decline of Scholasticism, Mercantilism, Thomas Mun
3. Economic Thought of Petty, Locke, North, Law, Hume, Cantillon , Steuart ; Economic Ideas of Physiocrats – Quesnay's 'Tableau oeconomique'.
4. The Classical System: Features
5. Economic Ideas of
 - A. Smith: On Economic Development , Political Economy, Value and Distribution
 - B. Ricardo: On value and Distribution and Growth
 - C. Malthus: On Population and Accumulation
 - D. Marx: On value and Surplus Value, Reproduction, transformation Process, Organic Composition of capital , Rate of Profit.

Indian Economic Thought

1. Early economic ideas: Kautilya, Valluvar.
2. Modern economic ideas: Naoroji, Ranade, R.C. Dutt and M.N. Roy.
3. Economic ideas of Gandhi: Village, Swadeshi, place of machine and labour, cottage industries, trusteeship.
4. Early approaches to planning (The national planning committee), Gandhiji: cooperation as a way of life and strategy of development.

References:

1. Eric Roll, A history of Economic Thought, OUP
2. Blaug, Mark, Economic Theory in Retrospect, Cambridge UP
3. Dasgupta, A.K, Epochs of Economic History, Basil Blackwell
4. R. Paul, History of Economic Thought

Project Work through Field Survey and Computer Application

Full Marks: 50
Course Credit: 4

Course Outcome: The idea behind introducing this course is to enable the students to develop the ways and means by which a project can be developed using the skills learned in the course. Students in this course get hands on experience in understanding an economic problem and they basically try to examine the real economic issues using the various theory and techniques they have learnt in the previous courses. This includes all the steps involved in designing a project starting from choosing a title, exploring the information relating to the title, collection of primary data, analysing the data using quantitative techniques and also by applying econometric tools, presentation of the result of the project and their interpretation and conclusion.

Optional Papers (Any Two)

Econometrics II

Full Marks: 50
Course Credit: 4
Lecture Hours: 50

Course Outcome: This course has two parts the first one is an applied course in data analysis attached with the econometric techniques, and the second part is time series analysis both considering theory and applications. The purpose of this course is to provide the students with the econometric tools and techniques and practical experience necessary to do applied econometric research. Hands-on practice in data analysis will be provided using the statistical softwares. The focus is on conceptual understanding and ‘hands on’ applications using economic data drawn from real-world examples, rather than on formal theoretical proofs alone. By the end of the course, students will be able to develop simple econometric models and to estimate and interpret the econometric and statistical results reported in other studies. Students may also be able to use quantitative measurement techniques in their research problems at the regional level.

Group A

Module 1. Econometric Estimation through Indices ; Measures of Inequality & Poverty ; Income Distribution Models ; Growth, Poverty & Inequality : Econometric Estimation ; Measures of Development – Human Development Index and other indices

Module 2. Parametric Estimation of Demand Function- Cross section vs Time series, single equation vs simultaneous equation, Properties of demand function, problem of identification ; Estimation of Production function – Problem of simultaneous bias, problem of identification, Estimation Procedures ; Cobb-Douglas, Leontief and CES Production Function ; Estimation of Phillips curve ; Estimation of Money Demand Function ; Partial Stock Adjustment and Money Demand.

References:

1. Desai M. Applied Econometrics
2. Intrilligator, M.D. (1978), *Econometric Methods, Techniques and Applications*, Prentice Hall, Englewood Cliffs, New Jersey.
3. Sen A. K. *On economic Inequality*, Oxford University Press
4. *Measurement of Inequality and Poverty*, S. Subramanian ed. Oxford University Press
5. *Fukuda-Parr, S. and A. K. Shiva Kumar (eds.) (2003): Readings in Human Development*, Oxford University Press.
6. UNDP, Human Development Reports, 1990, 1994, 1997.
7. G.G Judge et.al., *The Theory and Practice of Econometrics*, John Wiley and Sons, New York.
8. J. Johnston and D. Dinardo, *Econometric Methods*, McGraw Hill, New York.
9. Pindyck, R.S. and D.L. Rubinfeld (1976), *Econometric Models and Economic Forecasts*, McGraw Hill Kogakusha, Tokyo.

Group B

Time Series Econometrics

Chapter I. Stationary Time Series Models ; Time series and stochastic process ; Time domain vs. frequency domain, Strict stationary vs. weak stationary, White noise processes, Autoregressive processes (AR), Moving Average processes (MA), ARMA models, Stationarity and invertability restrictions for an ARMA(p,q) model, Autocorrelation function (ACF) and correlogram: AR(1), AR(2), MA(1), MA(2), ARMA(1,1), Partial autocorrelation (PACF) : AR(1), AR(2), MA(1), MA(2), ARMA(1,1), Sample autocorrelation function (SACF) and Sample partial autocorrelation (SPACF), Box Jenkins Model Selection Forecast function Seasonality ARIMA modelling

Chapter II : Testing for trends and Unit roots

TSP vs. DSP

Unit root processes

Dickey-Fuller Tests

Extensions of the DF test : Augmented Dickey-Fuller (ADF) test

Nelson and Plosser (1982) data

Power problem of the ADF test
Phillips-Perron test: Concept only

Chapter III: Spectral Properties of Stationary models

Periodogram of a time series, Spectrum and spectral density function
Simple example of spectral density function

Chapter IV: Multi - equation Time Series models

Intervention Analysis, Transfer function models, Estimating a transfer function
The Impulse response function

References

1. Box, Jenkins and Reinsel , Time Series Analysis
2. Enders, W. Applied Econometric Time Series
3. Maddala and In-Moo Kim Unit Roots, Structural Change and Cointegration
4. Mills, T.C. Time Series for Economists.

Financial Economics II

Full Marks: 50
Lecture Hours: 50
Credit:4

Course Outcome: The course on Financial Economics – II is so designed that the students will learn about portfolio selection problem which is a very basic knowledge in modern finance. The students will also come to know about certain financial assets like bonds as they are traded today. Further, the students will learn how the exchange traded derivatives products are used in the market and determining factors of option prices. This paper will include the basic idea regarding the mode of derivative trading and pay off profiles of futures and (call and put) options.

Group A

Topic 1. Portfolio selection: Efficiency set theorem – concavity of efficiency set- choice of optimal portfolio – portfolio diversification- lending under risk- free rate – Lending and borrowing under risk free market – market model.

Topic 2. Bonds: Basic concepts, Types of bonds, Bond valuation, Yield – to – Maturity.

Topic 3: Financial Derivatives – Future and options – Basic concepts – Marketing – to – market principle – Determinants of value of option – Futures and Options vs. Forward Contract – Pay-off profiles of Futures and Options

Group B

Chapter I: Efficient Market Hypothesis- Concept, forms-Random walk model and Martingales- Portmanteau tests- Variance ratio tests-Predictability and nonlinearity- BDS test

Chapter II : Volatility- Historical, Implied and Stochastic volatilities- ARCH, GARCH- Asymmetry- EGARCH and TGARCH, Modeling Long run relationships- Cointegration, Engle and Granger test, Johansen trace test, Granger Representation Theorem- Error correction model- Granger causality , Switching Models- SETAR, STAR Jmulti software.

References:

Campbell, Lo and MacKinlay: The Econometrics of Financial Markets

Brooks, Chris: Introductory Econometrics for Finance.

Agriculture Economics-II

Course Outcome: This course will enable us to know the economics of farm behavior and also will help us to examine the farm linkages with non farm sector. Moreover the performance of Indian Agriculture in the era of globalization will be examined.

1. Economics of Farm Size.
2. Economic Transformation and the Rural Non-farm Sector: Theoretical Perspectives
3. Farm-Nonfarm Linkages

4. Performance of Indian Agriculture in the Era of Globalisation
5. Agrarian Experience of select Countries

Reference :

Boyce – Agrarian Impasse in Bengal (O.U.P.).

2. KBasu-One Kind of Power Indian Journal of Agricultural Economics, 1980
3. Eswaran and Kotwal- A theory of two tiered labour market (AER 1971)
4. Eswaran and Kotwal-Access to credit and agrarian class formation (AER 1971)
5. K. Basu – Less Developed Economy.
6. Debraj Ray – Development Economics
7. Barbara Harriss-White -Rural Commercial Capital -Agricultural Markets in West Bengal
8. Agricultural Markets From Theory To Practice: Field Experience In Developing Countries by Barbara Harriss-White
9. *Paths of capitalist Agrarian transition in the past and in the contemporary world*/ Terence J. Byres
10. *Agrarian Studies: Essays on Agrarian Relations in Less-Developed Countries* Edited by V.K. Ramachandran and Madhura Swaminathan, New Delhi: Tulika Books. 2002. ISBN 81-85229-57-0
11. *Indian agriculture in the world economy*/ Utsa Pattnaik