

Appendix No: 'B' Item No: 'B-2'
SRI VENKATESWARA UNIVERSITY :: TIRUPATI
S.V.U COLLEGE OF ARTS
DEPARTMENT OF ECONOMETRICS
(Syllabus Common for S V University College and affiliated by SVU Area)
(Revised Scheme of Instruction and Examination, Syllabus etc., with effect from the
Academic Year's 2016-17 for I and II Semesters and 2017-18 for III and IV Semesters)
Revised CBCS Pattern with effect from 2016-17

M.A. ECONOMETRICS – COURSE OF STUDY
SCHEME OF INSTRUCTION AND EXAMINATION

Semester – I

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 101	Microeconomic Theory I	6	4	Core	20	80	100
2	EMT 102	Macroeconomic Theory I	6	4	Core	20	80	100
3	EMT 103	Mathematical Methods	6	4	Core	20	80	100
4	EMT 104	Practical I	6	4	Core	20	80	100
5.	EMT 105	Statistical Methods	6	4	CF	20	80	100
6.	EMT 106	Human Values and Professional Ethics – I	6	4	EF	20	80	100
		Total	36	24		120	480	600

*All CORE Papers are Mandatory

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

Semester – II

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 201	Microeconomic Theory II	6	4	Core	20	80	100
2	EMT 202	Macroeconomic Theory II	6	4	Core	20	80	100
3	EMT 203	Basic Econometrics	6	4	Core	20	80	100
4	EMT 204	Practical II	6	4	Core	20	80	100
5.	EMT 205	Mathematical Economics	6	4	CF	20	80	100
6.	EMT 206	Human Values and Professional Ethics II	6	4	EF	20	80	100
		Total	36	24		120	480	600

*All CORE Papers are Mandatory

- **Compulsory Foundation - Choose one paper**
- **Elective Foundation - Choose one paper.**
- **Interested students may register for MOOC with the approval of the concerned DDC but it will be considered for the award of the grade as open elective only giving extra credits.**

Semester – III

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 301	Advanced Econometrics	6	4	Core	20	80	100
2	EMT 302	Optimization in Economics	6	4	Core	20	80	100
3	EMT 303	Practical III	6	4	Core	20	80	100
4	EMT 304	Computer Applications and Data Analysis	6	4	Generic Elective	20	80	100
5	EMT 305	Public Finance						
6	EMT 306	Economics of Development and Planning						
7	EMT 307	Financial Institutions and Markets	6	4	Open Elective	20	80	100
8	EMT 308	Introduction to Econometrics						
9	EMT 309	Indian Economy						
10	EMT 310	Economics of Insurance						
Total			36	24		120	480	600

* All CORE Papers are Mandatory

- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

Semester – IV

S. No	Code	Title of the Course	Credit Hrs / Week	No. of Credits	Core / Elective	IA	SEE	Total Marks
1	EMT 401	Applied Econometrics	6	4	Core	20	80	100
2	EMT 402	Time Series Econometrics	6	4	Core	20	80	100
3	EMT 403	Practical IV	6	4	Core	20	80	100
4	EMT 404	International Trade and Finance	6	4	Generic Elective	20	80	100
5	EMT 405	Indian Economy						
6	EMT 406	Environmental Economics						
7	EMT 407	Project	6	4	Open Elective	20	80	100
8	EMT 408	Optimization Techniques in Economics						
9	EMT 409	Data Base for the Indian Economy						
10	EMT 410	Actuarial Statistics						
Total			36	24		120	480	600

* All CORE Papers are Mandatory

- Generic Elective - Choose two
- Open Electives are for the Students of other Departments. Minimum One Paper should be opted. Extra credits may be earned by opting for more number of open electives depending on the interest of the student through self study.
- Interested students may register for MOOC with the approval of the concerned DDC.

Note: 1. The minimum credits per semester will be 24 and total minimum credits for all the semesters will be 96.
 2. The internal students shall take atleast one open elective in a semester from the open electives offered by other Departments in the University or other Universities in the state or country either personally or through MOOCS.

Evaluation: a) The distribution of marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 mark.

b) Two mid tests will be conducted for each theory paper in each semester.
 The average of the two will be taken for 20 marks.

Core Paper - 1

EMT 101: MICROECONOMIC THEORY- I

Unit 1: Theory of Individual Decision Making

Theory of Demand - Consumer equilibrium under Indifference Curve Analysis – Applications of Indifference Curves - Slutsky Theorem – Revealed Preference Hypothesis - Choice under Uncertainty- Recent Developments in the Theory of Market Demand.

Unit 2: Theory of Production and Cost

Concepts of Production Function – Homogeneous Production Function - Least Cost Combinations of Factors – Cobb-Douglas and CES Production Functions – Frontier Production Function - Properties - Laws of Returns to Scale - Theory of Cost – Traditional and Modern theories of Cost.

Unit 3: Traditional Market Structures

Perfect Competition - Equilibrium, Short Run and Long Run considerations, Efficiency and Welfare – Monopoly – Price and output determination - Price Discrimination - Welfare and Output.

Unit 4: Modern Theories of Market

Monopolistic competition – Collusive and Non- Collusive Oligopoly: Cournot, Bertrand Stackelberg models - Nash equilibrium - Kinked Demand curve and Price Leadership models.

Unit 5: Limit Pricing and Managerial Theories of Firm

Bain's Limit Pricing: Recent developments – Sylos-Labini and Franco Modigliani Models - Baumol's Sales Maximisation: Static single product model with and without advertisements – Marris' model of Managerial Enterprise.

TEXT AND REFERENCE BOOKS:

1. J.M. Henderson and R.E. Quandt (2003) Micro-economic Theory: A Mathematical Approach, Tata McGraw Hill publishing company Ltd.
2. Hal R. Varian (1995), Intermediate Micro-econometrics: A Modern Approach, East West Press.
3. A. Deaton and J. Muellbauer (1987) Economics and Consumer Behaviour, Cambridge University Press.
4. A. Koutsoyiannis, (1979), Modern Micro-economics, London: Macmillan.

Core Paper -2

EMT 102: MACROECONOMIC THEORY-I

Unit 1: Macro-Economics

Micro and Macroeconomics - Basic Concepts in Macroeconomics – Stocks and Flows - Statics, Comparative statistics and Dynamics – Micro Foundations of Macroeconomics – Circular flow of National income.

Unit 2: National Income

Definition – Concepts of National Income – Measurement of National Income – Factors determining National income – National Income and Social Accounting - Methods of Estimation – Problems in Estimation of National Income – National Income and Economic Welfare.

Unit 3: Classical and Keynesian Economics

Classical Theory of Employment – Critique of Classical Theory – Basic Keynesian Model – Consumption Function – Investment Multiplier – Accelerator – Interaction between Multiplier and Accelerator - Integration of Monetary theory and Value theory – Don Patinkin theory – The Real Balance Effect – Pigou Effect.

Unit 4: Neo-Classical and Keynesian Synthesis

The IS-LM model – Extension of IS & LM model with government sector – Relative effectiveness of Monetary and Fiscal Policies – Shifts in IS and LM curves.

Unit 5: Savings & Investment

Kinds of investment – Determinations of investment - Investment demand and Output growth – Marginal Efficiency of Capital – Tobin's 'Q' Theory – Lags in Investment demand.

TEXT AND REFERENCE BOOKS:

1. Edward Shapiro, Macroeconomic Analysis, Galgotia Publications, New Delhi.
2. Keynes, J.M. 1936, General theory of Employment, Interest and Money.
3. Gardener Ackley, 1978, Macro-economic Theory - Theory and policy, Macmillan, New Delhi.

Core Paper - 3

EMT 103: MATHEMATICAL METHODS

Unit 1: Basic Concepts and Set Theory

Exponents – Polynomials – Factorization of Equations — Sets - Meaning, Definition, Types of sets, set operations – Ordered Sets – Linear Point Sets - Cartesian product – Relation – Functions.

Unit 2: Functions and Limits

Functions - Type of Functions – Increasing and Decreasing – Implicit and Explicit – Constant, Linear, Quadratic, Logarithmic and Exponential functions – Graphical Representations of Functions – **Economic Applications of Functions - Limits:** Concepts of a Limit of a Function – Theorems on Limits of Functions – Evaluations of Limits in Simple Cases – Limits and Continuity of Functions.

Unit 3: Differential Calculus and Economic Applications (One Variable)

Differential Calculus: Meaning – Process of Differentiation – Rules of Differentiation – Differentiation of Logarithmic and Exponential Functions – Higher Order Derivatives – Maximum and Minimum Points – Points of Inflection - **Economic Applications:** Marginal concepts, Price and cross Elasticity of demand – Relationship among Total, Marginal, Average concepts – Optimizing Economic functions.

Unit 4: Integration and Economic Applications

Concept of an Indefinite Integral – Standard Integral Formula – Rules of Integration – Methods of integration – Concept of a Definite Integral – Area under a Curve – Fundamental theorem of Calculus – Properties of Definite Integral – Area between Curves; **Economic Applications:** Total Functions from Marginal Function – Consumer's and Producer's Surplus.

Unit 5: Matrices and Determinants

Matrices: Concept of a Matrix – Types of Matrices – Matrix Operations – **Determinants:** Properties of Determinants – Minors and Co-Factors – Evaluation of Determinants of Second and Third Order - Inverse of a Matrix – Solutions of Simultaneous Linear Equations involving two or three Variables by Matrix Inverse Method and Cramer's Rule – Characteristic roots and equations – Concept of a Quadratic form – Rank of a Matrix – Concept of g-inverse and c-inverse.

TEXT AND REFERENCE BOOKS:

1. Allen, RGD : Mathematical Analysis for Economists
2. Mehta, BC and Madanani GMK: Mathematics for Economists, Sultan Chand and Sons, Delhi
3. Taro Yamane: Mathematics for Economists (An Elementary Survey), Prentice Hall of India Private Ltd, New Delhi
4. Alpha C. Chang: Fundamental Methods for Mathematical Economics
5. Barry Bressler: A Unified introduction of Mathematical Economics.
6. Dowling, Edward T: Introduction to Mathematical Economics, (2/ed.), Schaum's Outlines, Mc. Graw Hill, 1980
7. Bose, D : An Introduction to Mathematical Economics, Himalaya Publishing Company, Delhi. Equations: Solution of Linear and Quadratic equations, solution of simultaneous equations,

Core Paper - 4

EMT 104: PRACTICAL – I FOR 100 MARKS IN MATHEMATICS AND STATISTICS

Evaluation: a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

Compulsory Foundation

EMT 105 STATISTICAL METHODS

Unit 1: Basics:

Measures of Central Tendency – Measures of Dispersion – Coefficient of Variation, Skewness and Kurtosis – Numerical problems.

Unit 2: Probability and Distributions:

Probability: Concept of Probability – Axioms of Probability – Addition and Multiplication theorems – Bayes's Theorem - **Distributions:** Random Variables – Distribution Function – Probability Density Function - Mathematical Expectation – Binomial, Poisson, Normal and Lognormal distributions – Mean and Variance - Chief characteristics of Normal Distribution.

Unit 3: Estimation and Testing of Hypothesis:

Estimation: Introduction – Point and Interval Estimation - Estimators and their Properties: Consistency, Unbiasedness, Efficiency and Sufficiency - Method of estimation – Method of Least Squares and Method of Maximum Likelihood. **Tests of Hypothesis:** Statistical Hypothesis – Critical Region – Best Critical region – The Most Powerful Test - Types of errors - Large sample tests for means and proportions - Small sample tests based on t, F and Chi-square distributions.

Unit 4: Sampling Theory:

Need for sampling – Census Vs. Sampling - Types of sampling – Simple random sampling – Stratified random sampling – Systematic sampling – Two Stage sampling.

Unit 5: Correlation and Regression:

Simple Correlation – Computation – Properties - Rank Correlation - Regression Lines - Numerical problems – Concept of Partial and Multiple Correlations.

TEXT AND REFERENCE BOOKS:

1. S.C. Gupta and V.K. Kapoor: Elements of Mathematical Statistics.
2. Wonnacott & Wonnacott: Introduction to Statistical Methods.
3. Alexander M.Mood, Franklin A. Graybill and Duance C. Boes: Introduction to the Theory of Statistics. Third Edition. McGraw-hill Statistics Series, 1988.
4. S.P. Gupta: Introduction to Statistical Methods.
5. S.P. Gupta: Elements of Statistics.

Elective Foundation

EMT 106: HUMAN VALUES AND PROFESSIONAL ETHICS - I

Unit-I: Definition and Nature of Ethics- Its relation to Religion, Politics, Business, Legal, Medical and Environment. Need and Importance of Professional Ethics - Goals - Ethical Values in various Professions.

Unit-II: Nature of Values- Good and Bad, Ends and Means, Actual and potential Values, Objective and Subjective Values, Analysis of basic moral concepts- right, ought, duty, obligation, justice, responsibility and freedom. Good behavior and respect for elders, Character and Conduct.

Unit-III: Ahimsa (Non- Violence), Satya (Truth), Brahmacharya (Celibacy), Asteya (Non-possession) and Aparigraha(Non- stealing). Purusharthas(Cardinal virtues)- Dharma (Righteousness), Artha(Wealth), Kama(Fulfillment Bodily Desires). Moksha(Liberation).

Unit-IV: Bhagavad Gita- (a) Niskama karma. (b) Buddhism- The Four Noble Truths – AryaAstangamarga, (c) Jainism- mahavratas and anuvratas. Values Embedded in Various Religions, Religious Tolerance, Gandhian Ethics.

Unit-V: Crime and Theories of punishment- (a) Reformative, Retributive and Deterrent. (b) Views on manu and Yajnavalkya.

REFERENCES:

1. John S Mackenjie: A manual of ethics.
2. "The Ethics of Management" by Larue Tone Hosmer. Richard D. Irwin Inc.
3. "Management Ethics' integrity at work' by Joseph A. Petrick and John F. Quinn. Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. Harold H. Titus: Ethics for Today
6. Maitra, S.K: Hindu Ethics
7. William Lilly: Introduction to Ethics
8. Sinha: A Manual of Ethics
9. Manu: Manava Dharma Sastra or the Institute of Manu: Comprising the Indian System of Duties: Religious and Civil (ed.) G.C.Halighton.
10. SusrptaSamhita: Tr.KavirajKunjanlal, KunjalalBrishagratha. Chowkarnba Sanskrit series. VolLII and III, Varnasi, Vol I 00,16'20,21-32 and 74-77 only.
11. CarakaSamhita :Tr.Dr. Ram Karan Sarma and VaidyaBhagavan Dash, Chowkambha Sanskrit Series office. Varanasi I, 11.111 VolIPP 183-191.
12. Ethics, Theory and Contemporary Issues. Barbara Mackinnon Wadsworth/Thomson Learning, 2001.
13. Analyzing Moral.Issues, Judith A. Boss. May Field Publishing Company - 1999.
14. An Introduction to Applied Ethics (Ed.) John H.Piet and Ayodhya Prasad. Cosmo Publications
15. Text Book for Intermediate First Year Ethics and Human Values. Board of Intermediate Education- Telugu ~ Akademi, Hyderabad.
I.C Sharma Ethical Philosophy of India. Nagin& co Julundhar

Core Paper - 1

EMT 201: MICROECONOMIC THEORY- II

Unit 1: Factor Markets

Factor Pricing: Marginal Productivity Theory of determination of Factor prices - Factor shares and the 'Adding up' problem - Euler's theorem - Pricing of factors under Imperfect Competition.

Unit 2: Functional Distribution

Theories of Rent: Concept of Rent – Ricardian theory of Rent – Quasi Rent, Theories of Wages: Wage determination under Perfect competition, Monopsony and Collective bargaining Bilateral Monopoly), Theories of Interest: Classical theory of interest – Loanable fund theory – Keynes liquidity preference theory of interest, Theories of Profit: Profit as dynamic surplus – innovations and profits – risk uncertainty and profits

Unit 3: Economics of Information

Basic Concepts of Economics of Information - Economic Value of information - Role of information in Economic theory – Information, a measure of risk - Bayes' Rule - Classical Paradoxes - Choice under Risk - Risk Allocation in Exchange Economies Model - Monopolist Insurer - Perfect Competition - Adverse Selection - Monopolistic Screening, Competition and Market Breakdown - Public Intervention - Brief introduction to Game theoretic approach to information use.

Unit 4: General Equilibrium

Meaning of Partial and General Equilibrium – Static and Dynamic Equilibrium – Stable and Unstable Equilibrium –Walrasian System of General Equilibrium - Existence and Stability of General Equilibrium - Externalities and Allocative Efficiency.

Unit 5: Welfare Economics

Welfare Economics – Criteria of Social Welfare – Adam Smith, Bentham, Pigou, and Cardinal school – Pareto Optimality in Consumption, Production and Distribution – Kaldor-Hicks Compensation Criteria- Bergson Social Welfare Function - Social Choice Theory, Coase and Sen.

TEXT AND REFERENCE BOOKS:

1. J.M. Henderson and R.E. Quandt (2003) Microeconomic Theory: A Mathematical Approach, Tata McGraw Hill publishing company Ltd.
2. Hal R. Varian(1995), Intermediate Micro economics: A Modern Approach, East West Press.
3. A. Deaton and J. Muellbauer(1987) Economics and Consumer Behaviour, Cambridge University Press.
4. A. Koutsoyiannis, (1979), Modern Microeconomics, London: Macmillan.
5. Macho-Stadler, I and D. PerezCastrillo (1997): "An Introduction to the Economics of Information", Oxford University Press.
6. J. Hirshleifer and J. Riley (1992): "The Analytics of Uncertainty and Information", Cambridge University Press
7. J.-J. Laffont (1989): "The Economics of Uncertainty and Information", MIT Press
8. L. Philips (1988): "The Economics of Imperfect Information", Cambridge University Press
9. T. Van Zandt (2006): "Introduction to the Economics of Uncertainty and Information"
10. K. Binmore (2011): "Rational Decisions", Princeton University Press
11. M. Osborne: "An Introduction to Game Theory", Oxford University Press.

Core Paper - 2

EMT 202: MACROECONOMIC THEORY - II

Unit 1: Demand for and Supply of Money

The Classical View- Neo-classical view-Quantity Theory of Money – Keynes and the Demand for Money - Post Keynesian theories of demand for money - Baumol , James Tobin and Friedman – Concept of Money Supply – Components of Money Supply – RBI approach to Money supply – High Power Money and Money Multiplier – Determinants of Supply of Money.

Unit – 2: Macro Theories of Distribution

Functional Versus Personal Distribution of Income - Micro versus Macro-theories of Distribution - Marxian, Ricardian, Kelecki Theories of Distribution - Alternate theories of distribution – Kaldor.

Unit 3: Trade Cycles

Meaning and Types of Trade Cycles – Different theories of Trade Cycles – Samuelson`s Model of Trade Cycle – Hicks` Theory Cycle – Kaldor`s Model of Trade Cycle – Control of Business Cycle – Monetary and Fiscal Policies.

Unit 4: Theories of Inflation

Meaning and Types of Inflation – Demand-Pull inflation – Cost-Push Inflation – The Phillips curve – The Inflation – Unemployment trade-off - The Monetarists Accelerationists` Hypothesis – Rational Expectations Hypothesis – New-classical and Real Business cycles Theorem – Post-Keynesians - Implications for Stabilization Policies.

Unit 5: Macroeconomic policies

Objectives of Macroeconomic policies – Objectives of Monetary policy – The policy of Activists arguments – The policy of Non-activists arguments - Fiscal policy – objectives and tools - Automatic stabilizers – Problems of using of Fiscal policies – Effectiveness of Monetary and Fiscal policies –The concept of Open Economy macroeconomics.

TEXT AND REFERENCE BOOKS:

1. Ackley, G. Macroeconomic theory, Macmillan
2. Edward Shapiro, Macroeconomic Analysis, 5th edition, New-Delhi Galgotia publications.
3. Branson, W.B., Macro Economic Theory and Policy.
4. Gupta, S.B., 1983, Monetary Economics, Chand and Co.
5. Hicks, J.R., Mr. Keynes and the Classics; A suggested Interpretation, Econometrics,
6. Laidler, D.E.W., Demand for money.
7. Friedman, M. (ed), The quantity theory of money – A Restatement of studies in the quantity theory of money.
8. Patinkin, Don., Money, Interest and Prices.
9. Rosalind Levacic and Alexander Rebthann, 1982, Macroeconomics; The English Language Book Society and Macmillan.
10. Rongar L. Miller and Robert Pulsinelli, Macroeconomics.

Core Paper - 3

EMT 203: BASIC ECONOMETRICS

Unit 1: Nature of Econometrics and Economic Data

Definition of Econometrics – Steps in Empirical Economic Analysis - Econometric Model – The Role of Measurement in Economics – The Structure of Economic Data: Cross-Sectional data, Time Series data, Pooled Cross Section data, Panel Data.

Unit 2: Simple Regression Model

Two Variable Linear Regression Model: Assumptions, Estimation of Parameters, Tests of Significance and Properties of Estimators – Functional forms of Regression models – Log-linear models, Semi log- models and Reciprocal models – Choice of Functional Form.

Unit 3: The General Linear Model

Review of Assumptions, Estimation and Properties of Estimators: Un-biasness, BLUEs and Tests of significance of estimates – Analysis of Variance - **Dummy variables** - Nature of Dummy variables – Use of Dummy Variables – Errors in Variables and its consequences.

Unit 4: Auto-regressive and Distributed Lag Models

Introduction – Types of Lag schemes - Koyck's lag model, Almon's Lag scheme, Partial Adjustment and Expectations models - Causality in Economics – The Granger Causality Test.

Unit 5: Simultaneous Equation Models

Specification – Simultaneous Bias – Inconsistency of OLS Estimators - The concept of Identification, Rank and Order conditions for Identification – Indirect Least Squares - Two stage Least Squares (without proof), Problems.

TEXT AND REFERENCE BOOKS:

1. Johnston, J: Econometric Methods, McGraw-Hill Book Co., New York.
2. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3rd Ed.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, Tata McGraw-Hill, New Delhi.
4. Tintner, G: Econometrics, John Wiley & Sons, New York.
5. Wooldridge, Jeffery M: Econometrics, Cengage Learning India Pvt. Ltd, New Delhi.

Core Paper - 4

EMT 204 PRACTICAL – II FOR 100 MARKS IN BASIC ECONOMETRICS AND MATHEMATICAL ECONOMICS

Evaluation: a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

Compulsory Foundation

EMT 205: MATHEMATICAL ECONOMICS

Unit 1: Differential Calculus and Economic Applications (Two or More Variables)

Differential Calculus: Functions of two or more variables and Partial Derivatives – Rules of Partial Differentiation – Second-Order Partial Derivatives – Optimization of Multivariable Functions – Constrained Optimization with Lagrange Multipliers – Significance of Lagrange Multiplier – Differentials – Total and Partial Differentials – Homogeneous Functions – Euler’s Theorem – Partial Elasticities; **Economic Applications:** Maximization of Utility – Minimization of Cost – Maximization of Cost, Profit – Elasticity of Substitution

Unit 2: Differential Equations and Economic Applications

Definitions and Concepts – Linear Differential Equations of the First and Second Order with constant coefficient – Non-linear Differential equations of First-Order and First Degree – Variable Separable Case, Differential Equations with homogeneous equations - Economic Applications of Differential Equations – Dynamic Multiplier – Harrod-Domar Model.

Unit 3: Difference Equations and Economic Applications

Definitions and Concepts – Homogeneous Linear Difference Equations with Constant Coefficients – Particular Solution of Non-homogeneous Linear Equations – Linear First Order and Second Order Difference Equations with constant coefficients – Cobweb Model –Market model with Stocks – Dynamic Multiplier – Multiplier Acceleration Model : Harrod Domar Model – Multiplier’s Accelerator Interaction Model of Samuelson.

Unit 4: Input-Output Analysis

Assumptions - Technological Co-efficient Matrix – Closed and open Model – Solution of Open Model – Hawkins-Simon Conditions – Dynamic Input-Output Model – Production Function Approach to Input Output Model.

Unit 5: Linear Programming

Basic Concepts – Formulation of LPP – Basic and Feasible Solutions – Graphical Solution - Simplex Method – Duality in Linear Programming – Elements of Data envelop Analysis and its Applications.

TEXT AND REFERENCE BOOKS

1. Allen, RGD: Mathematical Analysis for Economists.
2. Mehta, BC and Madanani GMK: Mathematics for Economists, Sultan Chand and Sons, Delhi.
3. Taro Yamane: Mathematics for Economists (An Elementary Survey), Prentice Hall of India Private Ltd, New Delhi.
4. Alpha C. Chang: Fundamental Methods for Mathematical Economics.
5. Barry Bressler: A Unified introduction of Mathematical Economics
6. Dowing, Edward T: Introduction to Mathematical Economics, (2/ed.), Schaum’s Outlines, McGraw Hill, 1980.
7. Bose, D: An Introduction to Mathematical Economics, Himalaya Publishing Company, Delhi.

Elective Foundation

EMT 206: HUMAN VALUES AND PROFESSIONAL ETHICS - II

Unit-I: Value Education- Definition - relevance to present day - Concept of Human Values - self introspection – Self-esteem - Family values-Components, structure and responsibilities of family- Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

Unit-II: Medical ethics- Views of Charaka, Sushruta and Hippocrates on moral responsibility of medical practitioners. Code of ethics for medical and healthcare professionals. Euthanasia, Ethical obligation to animals, Ethical issues in relation to health care professionals and patients. Social justice in health care, human cloning, problems of abortion. Ethical issues in genetic engineering and Ethical issues raised by new biological technology or knowledge.

Unit-III: Business ethics- Ethical standards of business-Immoral and illegal practices and their solutions.Characteristics of ethical problems in management, ethical theories, causes of unethical behavior, ethical abuses and work ethics.

Unit-IV: Environmental ethics- Ethical theory, man and nature- Ecological crisis, Pest control, Pollution and waste, Climate change, Energy and population, Justice and environmental health.

Unit-V: Social ethics- Organ trade.Human trafficking.Human rights violation and social disparities, Feminist ethics.Surrogacy/pregnancy. Ethics of media- Impact of Newspapers, Television, Movies and Internet.

REFERENCES:

1. John S Mackenzie: A manual of ethics.
2. "The Ethics of Management" by Larue Tone Hosmer. Richard D. Irwin Inc.
3. "Management Ethics' integrity at work' by Joseph A. Petrick and John F. Quinn. Response Books: New Delhi.
4. "Ethics in Management" by S.A. Sherlekar, Himalaya Publishing House.
5. Manu: Manava Dharma Sastra or the Institute of Manu: Comprising the Indian System of Duties: Religious and Civil (ed.) G.C.Halighton.
6. SusrutaSamhita: Tr.KavirajKunjanlal, KunjalalBrishagratha. Chowkarnba Sanskrit series. VolLII and III, Varnasi, Vol I 00,16'20,21-32 and 74-77 only.
7. CarakaSamhita :Tr.Dr. Ram Karan Sarma and VaidyaBhagavan Dash, Chowkambha Sanskrit Series office. Varanasi I, 11.111 VolIPP 183-191.
8. Ethics, Theory and Contemporary Issues. Barbara Mackinnon Wadsworth/Thomson Learning, 2001.
9. Analyzing Moral.Issues, Judith A. Boss. May Field Publishing Company - 1999.
10. An Introduction to Applied Ethics (Ed.) John H.Piet and Ayodhya Prasad. Cosmo Publications
11. Text Book for Intermediate First Year Ethics and Human Values. Board of Intermediate Education- Telugu ~ Akademi, Hyderabad.
12. I.C Sharma Ethical Philosophy of India. Nagin& co Julundhar

Core Paper -1

EMT 301: ADVANCED ECONOMETRICS

Unit 1: Multicollinearity and Heteroscedasticity

Multicollinearity: Source and Consequences, Tests for Multicollinearity and solutions for Multicollinearity. Heteroscedasticity: Sources and Consequences, Tests for Heteroscedasticity, Generalized Least Squares Method of Estimation.

Unit 2: Autocorrelation

Sources of Autocorrelation - first order Autoregressive scheme - Consequences of Autocorrelation - Tests for Autocorrelation – Durbin-Watson test - Methods of estimation of Autocorrelation coefficient -Estimation from d- statistic and Cochran-Orcutt iterative method.

Unit 3: Unit 3: Qualitative and Limited Dependent Variables Models

Binary Choice Models: Linear Probability Model, Probit Model and Logit Models – Censored and Truncated regression models.

Unit 4: Simultaneous Equation Models: Estimation Methods

Two stage Least Squares, Limited Information Maximum Likelihood, K-class Estimators, Three Stage Least Squares and Full Information Maximum Likelihood Methods – Numerical Problems.

Unit 5: Panel Data Regression Models and Time Series Econometrics

Panel Data – Estimation of Panel Data Regression Models - Fixed and Random Effects – Estimation – Introduction to Time Series Econometrics - Stationary and Non-Stationary Stochastic Process – Integrated Stochastic Process – Unit roots – Co-integration – Test for co-integration, Co-integration and error correction mechanism.

TEXT AND REFERENCE BOOKS:

1. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3rd Rd.
2. Johnston,J: Econometric Methods, McGraw-Hill Book Co., New York.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, New Delhi.
4. Maddala, G.S: Limited-Dependent and Qualitative Variables in Econometrics, Cambridge University Press.

Core Paper - 2

EMT 302 OPTIMIZATION IN ECONOMICS

Unit 1: Transportation Problem

Nature and Matrix form of TP – Transportation Table – Types of Transportation Problem – Balanced Transportation Problem, Unbalanced Transportation Problem – Methods to solve Transportation Problem - The Initial Basic Feasible solution: North-West Corner Rule and Vogel's Approximation method – Moving towards optimality, the Transportation Algorithm.

Unit 2: Assignment Problem: Assignment problem, Transportation problem and Linear Programming – Types of Assignment problem – Properties of Optimal Solution – Solving the Assignment Problem by Hungarian Algorithm – The Auction Algorithm for Assignment Problem – Branch and Bond Techniques for Assignment Problem.

Unit 3 : Game Theory: Basic concepts -Two-person Zero Sum Games - The Maximum Minimax Principle – Games without Saddle Points – Mixed Strategies – Graphical solution of $2 \times n$ and $m \times 2$ Games – Dominance property – The Modified Dominance Property – Reducing the Game Problem as a Linear Programming Problem.

Unit 4 : Inventory Management

Introduction - Inventory control - Techniques of Inventory control with known demand - Economic Lot Size Problems –The fundamental Problem of Economic Order Quantity (EOQ), The Problem of EOQ with Uniform Demand, and The Problem of EOQ with Finite Rate of Replenishment - Problem of EOQ with Shortage.

Unit 5: Simulation

Introduction – Elements of a Simulation Model – Event – Types of Simulation – Generation of Random Phenomena – Monte Carlo Technique – Generation of Uniform (0,1) Random Observations – Simulation languages.

TEXT AND REFERENCE BOOKS:

1. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research, Sultan Chand and sons, New Delhi.
2. Panneerselvam, R: Operations Research, Eastern Economy Edition, Prentice Hall of India, New Delhi, 2007.
3. Srinivasan, G., Operations Research _Principles and Applications, Second Edition, Prentice Hall of India, New Delhi, 2012.
4. Richard, Brown and Govindaswamy, N., Schaum's Outlines Series Operations Research, Second Edition, 2012.
5. Gupta, P.M. and D.S.Hira: Operations Research, Sultan Chand and Sons, New Delhi.
6. Harven, Wagner: Operations Research.
7. Starr and Miller: Inventory Control.

Core Paper - 3

EMT 303 : PRACTICAL – III FOR 100 MARKS IN ADVANCED ECONOMETRICS, OPTIMIZATION IN ECONOMICS AND COMPUTER APPLICATIONS

Evaluation: a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

Generic Elective -1

EMT 304: COMPUTER APPLICATIONS AND DATA ANALYSIS

Unit 1: Computer Fundamentals

Definition - Components of a computer-block diagram – Evolution of computer – Generations – input/output devices – storing information in computer – types of computers – Hardware and Software – Compilers and Assemblers – Low level and high level languages – Operating systems and the graphic user interface – Microsoft Windows operating system.

Unit 2 : MS-WORD

Creating, opening and saving files - editing and formatting text - spell and grammar check – auto correct- hyphenation – creating of tables and columns - mail merge - equation editor – concept of a macro - print preview.

Unit 3: MS-EXCEL

Work sheet – entering data – creation of worksheets and workbooks – opening and saving workbooks - editing and formatting - sorting, filtering and pivot tables - Creating graphs and charts - mathematical and statistical functions - Data analysis pack in Excel - Descriptive statistics, tests of hypothesis, ANOVA, Correlation and Regression, Random Number Generation.

Unit 4: Data Handling Using SPSS

Opening Excel files in SPSS - Variables, labels and values, Analysis tools - Descriptive statistics - Selection of variables in multiple linear regression - Stepwise, forward and backward procedures - Factor analysis and Discriminant analysis (Stress on procedures and syntax only).

Unit 5: Data Analysis using R

R environment – Workspace, Getting help, Packages and Built-in data - Assigning values, performing vectorized arithmetic - Creating objects, vectors, lists, matrices, arrays and data frames - Conditional selection, sorting and indexing data frames, implicit looping - Importing data - Branching and looping statements - plotting data – Bar plots, Pie charts, Histogram, Box plots - Summary statistics - Generating samples from discrete and continuous distributions - Simple correlation and regression - Testing hypothesis of mean and variance, Analysis of variance.

TEXT AND REFERENCE BOOKS:

1. Shelly and Hunt, Computers and Common Sense, Prentice Hall of India, New Delhi.
2. Rajaraman V, Fundamentals of Computers, Prentice Hall of India, New Delhi.
3. Peter Dalgaard (2008): Introductory Statistics with R, 2nd Edition, Springer, New York. (Chapters 1, 2, 3,4,5,6 and 7)
4. Peter Norton's Introduction to computers, Tata McGraw Hill Publishing Co., New York.
5. Foster,J.J.(2001), Data Analyzing using SPSS For Windows 8.0 – 10.0, A Beginner's Guide.
6. M. Crawley, Basic Statistics: An Introduction using R.
7. B.S. Everitt & T. Hothorn, A Handbook of Statistical Analyses Using R (2nd Ed.).
8. J. Maindonald & J. Braun, Data Analysis and Graphics Using R: An Example-based Approach.
9. P. Murrell, R Graphics (2nd Ed.).

Generic Elective – 2

EMT 305 PUBLIC FINANCE

Unit 1: Scope and Structure of Public Finance

Nature, Scope and Importance of Public Finance - Public Finance and relationship with other Sciences - Distinction between Public and Private Finance - Principles of Public Finance - Principle of Opportunity Cost in Public Finance - Theory of Public Goods and Merit Goods - Role of Public Finance in Developing Economies and Underdeveloped Countries.

Unit 2: Public Expenditure

Introduction - Difference between Public and Private Expenditure - Reasons for growth of Public Expenditure - Classification and Canons of Public Expenditure - Effects of Public Expenditure - Wagner's Law of Increasing State Activities - Peacock and Wiseman Hypothesis - Controls and Accountability of Public expenditure in India

Unit 3: Public Revenue and Taxation

Sources of Public Revenue - Classification of Public Revenue - Principle of Public Revenue - Effects and significance of Public Revenue - Characteristics of Good Tax system in India - Canon of Taxation - Classification of Taxation - Benefit (Modern) theories of Taxation - Ability to Pay Theory - Taxable Capacity - Value Added Taxation (VAT) and GST Principle and Issues – Indian Tax Structure – Incidence and Effects of Taxation.

Unit 4: Public Debt

Classification of Public Debt - Causes of Public Debt - Objectives of Public Debt - Effects of Public Debt - Burden of Public Debt - Public debt Management - Public Debt in India.

Unit 5: Budget and Federal Fiscal Systems

Introduction – Definitions of Primary deficit, Revenue deficit, Budgetary deficit and Fiscal deficit - Budget classification - Zero Base Budgeting - Fiscal Deficit and Budgetary Deficit in India – FRBM -Centre-State Financial relations in India –Functions of Finance Commission - Recommendations of 13th and 14th Finance Commissions.

TEXT AND REFERENCE BOOKS:

1. B.P.Tyagi, Public Finance, Jai Prakash & Company, Meerut, 2008.
2. Bhargava .R.N, the Theory and Practice of Union Finance in India, Chaitanya Publishers, Allahabad, 1998.
3. Dalton.H, Principle of Public Finance, Allied Publishers, Bombay, 1992.
4. Dwevedi.P.N, Reading in Indian Public Finance, Chanakya Publications, New Delhi, 2006.
5. Lakadawala.D.T, Union State Financial Relations, Lalwani Publishers House, Mumbai, 1986.
6. Mathew.T, Tax Policy, Some Aspects of Theory and Policy, Chanakya Publications, New Delhi, 2001.
7. Mundle.Sudipto.(ed), Public Finance, Policy Issues for India, Oxford University, Press, 1999.
8. Musgrave.R.A, The Theory of Public Finance- A Study of Public Finance, McGraw hill company, Tokyo, 1999.
9. R.K.Lekhi, Public Finance, Kalyani Publishers, New Delhi, 2007.

Generic Elective – 3

EMT 306: ECONOMICS OF DEVELOPMENT AND PLANNING

Unit 1: Concepts and Measurement of Economic Growth and Development

Economics of Development and Growth - Problems and Causes of Underdevelopment and Development - Factors of Economic Growth - Obstacles to Economic Development - Vicious Circle of Poverty - Characteristics of Modern Economic Growth - Measures of Economic Growth and Economic Development, HDI and PQLI.

Unit 2: Theories of Growth and Development

Classical, Karl Marx and Schumpeter - Joan Robinson Golden Age model, Harrod-Domar model, Rostow Stages of Growth - Lewis theory of Surplus Labour - Rodan's Big Push theory - Nurkse Balanced Growth theory - Hirschman's Unbalanced theory - Ranis - Fei Model - Dependency Theory of Development.

Unit 3: Domestic Factors in Economic Development

Capital Formation and Economic Development- Role of Agriculture and Industry in Economic Development - Population Growth and Economic Development - Human Capital Formation and Man Power Planning - Entrepreneurship in Economic Development - Role of Technology in Economic Development.

Unit 4: Trade and Development

Role of Foreign Trade in Economic Development - Trade as an Engine of Economic Growth - Two Gap Model - Objectives and Role of Monetary and Fiscal Policies in Economic Development - Commercial Policy and Economic Development - Price Policy and Economic Development.

Unit 5: Planning Techniques and Planning in India

Capital-Output Ratio - The Choice of Techniques and Appropriate Technology - Investment Criteria - Elements of Cost-Benefit Analysis - Poverty, Unemployment and Economic Inequalities in India - Role of Public Sector in India - Role of Foreign Aid and Foreign Capital in India.

TEXT AND REFERENCE BOOKS:

1. Kindleberger.C.P, Economic Development, Mc Graw Hill Company, New York, 1988.
2. Lewis.W.A, The Theory of Economic Growth, George Allen and Unwin, London, 1998.
3. Michel.P.Todero & Stephen C.Smith, Economic Development, Pearson Education (Singapore) Limited, New Delhi, 1998.
4. S.K.Misra and V.K. Puri, Economics of Development and Planning, Himalaya Publishing House, New Delhi, 2006.
5. Solow.R.M, Growth Theory: An Exposition, Oxford University Press, New York, 2000.

Generic Elective - 4

EMT 307: FINANCIAL INSTITUTIONS AND MARKETS

Unit 1: Financial System

Evolution of Financial System – Structure of Financial System – Functions of Financial System – Financial System and Economic Development.

Unit 2: Money Market

Features of Money Market – Instruments of Money Market: Call Money Market – Treasury Bills Market – Commercial Bills – Market for Commercial Papers – Certificate of Deposits – Discount and Finance House of India (DFHI) – Securities Trading Corporation of India (STCI) – Deficiencies and Recent Developments in Indian Money Market.

Unit 3: Capital Market

Industrial Securities Market: Primary and Secondary Markets – Government Securities Market and Long Market – Objectives, Functions and performance of Securities and Exchange Board of India (SEBI) – Over the Counter Exchange of India (OCTCEI) – Functions of Stock Exchanges – Bombay Stock Exchange (BSE) – National Stock Exchange (NSE) – Reforms in Capital Market.

Unit 4: Banking and Financial Institutions

Banking: Central Banking: Objectives and Functions - Commercial Banks, Functions and Growth - Process of Credit Creation – Growth and Control of Non-banking Financial Institutions - Functions and Performance of Industrial Finance Corporation of India (IFCI) – Industrial Development Bank of India (IDBI) – Industrial Credit and Investment Corporation of India (ICICI) – Small Industrial Development Bank of India (SIDBI) – State Financial Corporations (SFCs) – Mutual Funds.

Unit 5: Investment Institutions and Foreign Capital

Functions and Performance of Life Insurance Corporation (LIC) – General Insurance Corporation (GIC) and Unit Trust of India (UTI) – Forms of Foreign Capital – International Financial Instruments – Trends in Foreign Capital Inflows to India – Advantages and Disadvantages of Foreign Capital.

TEXT AND REFERENCE BOOKS:

1. M.Y. Khan, Indian Financial System, Tata Mc Graw Hill, New Delhi.
2. L.M.Bhole, Financial Institutions and Markets, Tata Mc Graw Hill, New Delhi.
3. V.A.Avadhani, Indian Capital Market, Himalaya Publishing House, Bombay.
4. H.R.Machiraju, International Financial Markets and India, Wheeler Publishing Company, New Delhi.
5. Vasant Desai, Indian Financial System, Himalaya Publications, Bombay.
6. Peter.S. Rose, Money and Capital Market: Financial Institutions and Instruments, Tata McGraw Hill, London.
7. S.C.Kucchal, Corporation Finance, Chaitanya Publishing, Allahabad.
8. S.L.N.Sinha, Capital Market in India, Vora & Co, Bombay.
9. Hendrik.S. Houthakker, The Economics of Financial Markets, Oxford University Press, New Delhi.

Open Elective – 1

EMT 308: INTRODUCTION TO ECONOMETRICS

Unit 1: Nature of Econometrics and Economic Data

Definition of Econometrics – Steps in Empirical Economic Analysis - Econometric Model – The Role of Measurement in Economics – The Structure of Economic Data: Cross-Sectional data, Time Series data, Pooled Cross Section data, Panel Data.

Unit 2: Simple Regression Model

Two Variable Linear Regression Model: Assumptions, Estimation of Parameters, Tests of Significance and Properties of Estimators – Functional forms of Regression models – Log-linear models, Semi log- models and Reciprocal models – Choice of Functional Form.

Unit 3: The General Linear Model

Review of Assumptions, Estimation and Properties of Estimators: Un-biasness, BLUEs and Tests of significance of estimates – Analysis of Variance - **Dummy variables** - Nature of Dummy variables – Use of Dummy Variables – Errors in Variables and its consequences.

Unit 4: Auto-regressive and Distributed Lag Models

Introduction – Types of Lag schemes - Koyck's lag model, Almon's Lag scheme, Partial Adjustment and Expectations models - Causality in Economics – The Granger Causality Test.

Unit 5: Simultaneous Equation Models

Specification – Simultaneous Bias – Inconsistency of OLS Estimators - The concept of Identification, Rank and Order conditions for Identification – Indirect Least Squares - Two stage Least Squares (without proof), Problems.

TEXT AND REFERENCE BOOKS:

1. Johnston, J: Econometric Methods, McGraw-Hill Book Co., New York.
2. Maddala, G.S: Econometrics, McGraw-Hill Book Co., New York, 3rd Ed.
3. Gujarathi, D.N: Basic Econometrics, Fourth Edition, Tata McGraw-Hill, New Delhi.
4. Tintner, G: Econometrics, John Wiley & Sons, New York.
5. Wooldridge, Jeffery M: Econometrics, Cengage Learning India Pvt. Ltd, New Delhi.

Open Elective - 2
EMT 301: INDIAN ECONOMY

Unit 1: Structure of the Indian Economy

Indian Economy on the Eve of Independence- Basic Characteristics of the Indian Economy as Developing Economy - Major issues of Development in Indian Economy- Growth and Structural Changes in the Indian Economy - Population- Poverty – Measurement of Poverty, Anti Poverty Programmes - Inequality- Natural Resources - Infrastructure- Human Development in India-Prices, Price Policy and Economic Growth - Balanced Regional Development - Unemployment in India.

Unit 2: Agricultural Sector

Role Agriculture in Indian Economy - Share of Agriculture - Interrelationship between Agriculture and Industry – Land Tenure System - Farm Size and Productivity - Institutional and Technological Aspects - New Agricultural Policy - Food Security in India - Rural Credit - Agricultural Marketing - Regional Disparities in Indian Agriculture - Irrigation and other Agricultural Inputs.

Unit 3: Industrial Sector

Industrial Structure and Economic Growth - Large and MSMEs - Industrial Labour Problems and Labour Policy - Industrial Sickness Causes and Remedial Measures - Economic Reforms and Industrial Growth - Pattern of Industrialization - Public and Private Industrial Finance in India - Unorganized Sector and Informalisation of the Indian Economy.

Unit 4: Tertiary and Foreign Sectors

Service Sector - Role, Growth and Structure of Service Sector in India – Growth, Composition and Direction of India's Foreign Trade – Trade Policy and its Reforms in India – India's Balance of Payments - WTO and Indian Economy.

Unit 5: Planning and Development

Objectives and Strategy of Planning - Public Sector and Indian Planning- Re-Organization of Planning Commission (NITI Aayog) - Privatization and Globalization and its impact on India - Government Subsidies in India - Problems of Capital Formation - Foreign Capital, Foreign aid and Economic Development in India.

TEXT AND REFERENCE BOOKS:

1. Ghosh. Alak, Indian Economy – Its Nature and Problems, A New Look Indian Economics, Calcutta, The World Press Private Limited, 1989.
2. Jalan.B, The Indian Economy Problems and Prospects, Viking Publications, New Delhi, 2006.
3. Ruddar Datt and Sundaram. K.P.M, S.Chand and Company, New Delhi, 2008.
4. S.K.Misra and V.K. Puri, Indian Economy, Himalaya Publishing House, New Delhi, 2006.
5. Sen R.K and B.Chatterjee, Indian Economy-Agenda for 21st Century, Deep and Deep Publications, New Delhi, 2001.
6. Uma Kapila, Indian Economy Since Independence, Agricola Publications Academy, New Delhi, 1998.

Open Elective - 3
EMT 310: ECONOMICS OF INSURANCE

Unit 1: Element of Risk and Risk Management

Fundamental of Risk and Uncertainty – Classification of Risk – Risk Pooling and Risk Transfer - Concept of Risk Management – Essentials and Elements of Risk Management – Risk Assessment and Risk Control.

Unit 2: Risk and Insurance

Definition of Insurance – Role and Functions of Insurance – General and Specific Principles of Insurance Contract – Insurance and Economic Development – Insurance as Financial Intermediaries and Investment Institutions – Classification of Insurance - The Concept of Re-insurance.

Unit 3: Life and Health Insurance

Fundamental Principles of Life and Health Insurances – Functions of Life and Health Insurances – Plans of Life and Health Insurance – The Process of Underwriting Life and Health Insurance- Group Insurance

Unit 4: General and Other Types of Insurance

Definition of General Insurance – Marine, Motor Vehicular, Fire and other types of Insurances –Physical and Moral Hazards in General Insurance – The General Insurance Corporation (GIC Re) and General Insurance Companies, NOUN – Growth of General Insurance business in India.

Unit 5: Regulation of Insurance

Organization and Growth of LIC - Monopoly of LIC - Need for Insurance Regulation in India - Functions and Duties of Insurance Regulation and Development Authority (IRDA) of India — Entry of Private and Foreign Insurance Companies – Implications – Prospects of Insurance Companies.

TEXT AND REFERENCE BOOKS:

1. Misra, M. N. and V. K. Puri, (2008), Insurance Principles and Practice, New Delhi: S. Chand.
2. Periasamy, P. (2007), Principles and Practice of Insurance, Mumbai: Himalaya Publishing House.
3. Palande, P. S., Shah, R. S. and Lunawal, M. L. (1983), Insurance in India, Changing Policies and Emerging Opportunities, New Delhi: Response Books, A Division of Sage Publications.
4. Bhole, L. M. (1990), The Indian Financial System, New Delhi: Tata McGraw Hill.
5. Black, K. Jr. and H. D. (2000), Life and Health Insurance, New Jersey: Prentice Hall.
6. Bailey, R. (1999), Underwriting and Life and Insurance, Atlanta: LOMA.
7. Bickelhaupt, D. L. (1992), General Insurance, Burr Bridge: Irwin Inc.
8. Hedad, G. L. AND Horn I. I. (1991), Essentials of Risk Management, Vol. I Insurance Institute of America.

Core Paper-1

EMT 401: APPLIED ECONOMETRICS

Unit 1: Demand Analysis

Demand functions – Restrictions to be satisfied by Demand functions - Single Equation models, Engel Functions and Curves, Specification of Functional forms and Estimation – Linear Expenditure System - Review of Empirical Studies.

Unit 2: Consumption Function

Theories of Consumption Function – Alternative specifications – Absolute Income Hypothesis, Relative Income Hypothesis, Life Cycle Hypothesis, Permanent Income Hypothesis – Problems of Estimating the Consumption Function – Review of some empirical studies.

Unit 3: Production Functions

Single Equation Estimation of production functions - Cobb-Douglas, CES, Trans-log – Specifications and Estimation issues – Review of Empirical studies – Functional forms and Estimation of Cost Functions - Estimation of Factor demand Equations - Empirical Studies.

Unit 4: Macro Econometric Models

Nature of Simultaneous Macro Econometric Models – Klein-Goldberger Model for USA - Brookings Model – Macro Econometric models for India – Agarwal, K. Krishna Murthy and N.V. A. Narasimhan Models.

Unit 5: Other Applications of Single and Simultaneous Equation Models

Models of Money Demand and Supply – Estimation of Demand for Money Function – Application in Industrial Organization, Labour Economics and Health Systems – Review of Empirical Studies.

TEXT AND REFERENCE BOOKS:

1. Intriligator, M. D. (1978) *Econometric Models, Techniques and Applications*, North-Holland.
2. ICSSR Survey of Economics – Vol.7 (Econometrics) Allied Publishers
3. Deaton A. and John Muellbauer, *Economics and Consumer Behaviour* – Cambridge University Press, 1987
4. Killingsworth Mark R.- *Labour Supply*, Cambridge University Press 1985
5. Meghnad J.Desai 1973 – *Macro-economic models for India: A Survey* – Sankhya series-B 85 – PP 169-205

Core Paper-2

EMT 402: TIME SERIES ECONOMETRICS

Unit 1: Basic concepts

Introduction – Stationary Stochastic Process – Non-stationary Stochastic Process; Unit root Stochastic Process, Integrated Stochastic Process, tests of Stationarity.

Unit 2: Co-integration

Integrated Variables, Unit root tests - Dickey-Fuller tests; Co-integration and error correction mechanism – Engle–Granger, Johansen and Juselius Co-integration tests – ARDL Co-integration Tests.

Unit 3: Forecasting

Nature and uses of Forecasts – Forecasting with a single-equation linear regression model -Forecasting with a multi-equation econometric model - Evaluation of the forecasting power of a model – Conditional and Unconditional Forecasting – Single and Double exponential smoothing – Box-Jenkins Model.

Unit 4: Linear Time Series Models

Univariate Time Series Models - Moving Average Models - Auto Regressive Models - Mixed Auto Regressive Moving Average Models – ARIMA models.

Unit 5: Vector Auto-regressions and Models for Volatility

Estimation and Forecasting with VAR, VAR and Causality, Some problems with VAR Modeling, Measuring Volatility - The ARCH (p) models – ARCH tests – GARCH (p, q) model – Asymmetric GARCH models.

TEXT AND REFERENCE BOOKS:

1. Gujarathi, D.N, Basic Econometrics, Fourth Edition, Tata McGraw Hill, New Delhi, 2004.
2. Koutsoyiannis, A, Theory of Econometrics, The Macmillan Press Ltd., Hong Kong, Second Edition, 1983.
3. Robert S.Pindyck and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts, McGraw Hill Book Company, 1988
4. Francis Diebold, Elements of Forecasting, South Western College Publishing, 1998.
5. Newbold and Bos, Introductory Business and Economic forecasting (second edition), South Western College Publishing, 1994.
6. William H. Green, Econometric Analysis, Pearson's Education, fifth Edition, 2003.
7. Hamilton, J.D, Time Series Analysis, Princeton, N.J., Princeton University Press, 1994.

Core Paper-3
EMT 403 PRACTICAL – IV FOR 100 MARKS IN
APPLIED ECONOMETRICS AND TIME SERIES ECONOMETRICS

Evaluation: a) The distribution of 100 marks for Practical Paper is as follows:

Practical Examination	- 60 marks
Viva-Voce	- 15 marks
Seminars	- 15 marks
Record	- 10 marks

b) Two mid tests will be conducted for each theory paper in each semester. The average of the two will be taken for 30 marks.

Generic Elective – 1
EMT 404: INTERNATIONAL TRADE AND FINANCE

Unit 1: Old and New Theories of International Trade

Comparative advantage in Ricardian, Haberler and Heckscher–Ohlin Theories – Factor Price Equalization Theorem - Intra Industry Trade – Neo-Chamberlin and Neo-Heckscher-Ohlin Theorems - Product Cycle and Technology Gap and Strategic Trade theories.

Unit 2: Free Trade and Protection

Free Trade vs. Protection – Theory of Tariffs – The Political Economy of Non-tariff Barriers - Terms of Trade – Secular Deterioration (Singer-Prebisch) Thesis - Immiserizing Growth - The Concept of Customs Union - Regional Trade Agreements - EU and SAARC.

Unit -3: Balance of Payments and adjustment Mechanism

Balance of Payments Accounts – Adjustment of Deficit in Balance of Payments – Traditional Elasticity and Absorption Approaches - Theories of policy mix - BOP adjustments with capital mobility – Foreign Trade Multiplier.

Unit 4: Theories of Exchange rate determination

Exchange rate under free market – Spot and Forward Rates - Exchange rate adjustments under capital mobility - Floating Rates and their implications for developing countries - Currency Boards - Import and Exchange Controls and Multiple Exchange Rates.

Unit 5: Global Institutions

The Bretton Woods System - IMF and World Bank – Collapse of Bretton Woods System – New International Monetary Order – WTO – Issues at the recent WTO ministerial Conferences- Multinational Corporations - Implications for Developing countries

TEXT AND REFERENCE BOOKS:

1. Paul Krugman & Maurice Obstfeld (6th ed.) International Economics, (Chapters 2-11) Addison Wesley, 2003.
2. Caves, R. and Jones, R. World trade and payments (chapters 4, 6, and 7). Boston: Little, Brown and Company, 1977.
3. Sodersten, B. and Reed, G. International economics (chapters 1-11, 13-16, 19, 20, 22-24, 26 & 27). Macmillan Company, 1994.
4. Pilbeam, K. International finance (chapters 4-15). Macmillan, 1994.
5. Turnovsky, S. J. Macroeconomic analysis and stabilization policy (chapters 9-12). Cambridge University Press, 1977.
6. Dixit, A. and Norman, V. The theory of international trade. Cambridge University Press, 1980.
7. Grossman, G. M. and Rogoff, K., eds. Handbook of international economics. Vol III. Elsevier, 1995.
8. Kierzkowski, H., ed. Protection and competition in international trade. New York: Blackwell, 1987.
9. Bhagwati, J, Arvind Panagariya, & T.N. Srinivasan: Lectures on International Trade, 2nd ed. MIT Press 2001.
10. Grossman, G. M. and Rogoff, K., eds. Handbook of international economics. Vol III. Elsevier, 1995.

Generic Elective – 2

EMT 405: INDIAN ECONOMY

Unit 1: Structure of the Indian Economy

Indian Economy on the Eve of Independence- Basic Characteristics of the Indian Economy as Developing Economy - Major issues of Development in Indian Economy- Growth and Structural Changes in the Indian Economy - Population- Poverty – Measurement of Poverty, Anti Poverty Programmes - Inequality- Natural Resources - Infrastructure- Human Development in India-Prices, Price Policy and Economic Growth - Balanced Regional Development - Unemployment in India.

Unit 2: Agricultural Sector

Role Agriculture in Indian Economy - Share of Agriculture - Interrelationship between Agriculture and Industry - Farm Size and Productivity - Institutional and Technological Aspects - New Agricultural Policy - Food Security in India - Rural Credit - Agricultural Marketing - Regional Disparities in Indian Agriculture - Irrigation and other Agricultural Inputs.

Unit 3: Industrial Sector

Industrial Structure and Economic Growth - Large and Small Scale Industries - Industrial Labour Problems and Labour Policy - Industrial Sickness Causes and Remedial Measures - Economic Reforms and Industrial Growth - Pattern of Industrialization - Public and Private Industrial Finance in India - Unorganized Sector and Informalisation of the Indian Economy.

Unit 4: Tertiary and Foreign Sectors

Service Sector - Role, Growth and Structure of Service Sector in India – Growth, Composition and Direction of India's Foreign Trade – Trade Policy and its Reforms in India – India's Balance of Payments - WTO and Indian Economy.

Unit 5: Planning and Development

Objectives and Strategy of Planning - Public Sector and Indian Planning- Re-Organization of Planning Commission (NITI Aayog) - Privatization and Globalization and its impact on India - Government Subsidies in India - Problems of Capital Formation - Foreign Capital, Foreign aid and Economic Development in India.

TEXT AND REFERENCE BOOKS:

7. Ghosh. Alak, Indian Economy – Its Nature and Problems, A New Look Indian Economics, Calcutta, The World Press Private Limited, 1989.
8. Jalan.B, The Indian Economy Problems and Prospects, Viking Publications, New Delhi, 2006.
9. Ruddar Datt and Sundaram. K.P.M, S.Chand and Company, New Delhi, 2008.
10. S.K.Misra and V.K. Puri, Indian Economy, Himalaya Publishing House, New Delhi, 2006.
11. Sen R.K and B.Chatterjee, Indian Economy-Agenda for 21st Century, Deep and Deep Publications, New Delhi, 2001.
12. Uma Kapila, Indian Economy Since Independence, Agricola Publications Academy, New Delhi, 1998.

Generic Elective - 3

EMT 406: ENVIRONMENTAL ECONOMICS

Unit 1: Nature and Scope of Environmental Economics

Nature and Scope of Environmental Economics – Economic Growth and Environmental degradation – Environmental Kuznets Curve - Limits to Economic Growth - Sustainable Development – Environmental Quality and Economic Development.

Unit 2: Environmental Degradation and Resource Depletion

Natural Resources – Renewable and Non-renewable Resources – Approaches to the use of Natural Resources – Theories of Natural Resources - Depletion of Natural Resources – Tragedy of Commons – Causes of Environmental Degradation.

Unit 3: Sources and Effects of Pollution

Sources and Types of Pollution – Soil, Air, Water Pollution - Industrialization and Environmental Pollution – Urban Solid-waste and other sources of Pollution – Aqua Culture, Coastal and Marine Pollution - Economic Effects of Pollution.

Unit 4: Environmental Principles and Policies

Environmental Regulation and Control of Pollution – Polluter Pays Principle - Hedonic Pricing Principle – Pigovian Analysis of taxes and Subsidies - Pollution Permits – Environmental Institutions - Environmental Policy – Objectives – National Environmental Policy of 2006 - Pollution Control Policies in India.

Unit 5: Environmental Laws and Management Strategies

Environmental Laws and Regulations – The Air Act, The Water Act, The Environmental Protection Act, The Wildlife Protection Act in India - Environment Management Strategies – Development of Clean Production Technologies - Forest Conservation, Management and Conservation of Common Property Resources and Environmental Education – Social Forestry – Community Participation.

TEXT AND REFERENCE BOOKS:

1. Bhattacharya, R.N. (Ed), 2001, Environmental Economics; An Indian Perspective, Oxford University press, New Delhi.
2. Sankar,U. (Ed), 2001, Environmental Economics, Oxford University press, New Delhi.
3. Baumol, W.J. and W.E. Oates, 1998, the theory of Environmental policy, (2nd Edition), Cambridge University press, Cambridge.
4. Anil Kumar, 1990 Environmental Protection and Industrial Development, Ashish Publishing House, New Delhi;
5. Mussen, A.M. 1999, Principles of Environmental Economics, Rutledge, London
6. Kolstad, C.D., 1999, Environmental Economics, Oxford University press, Baltimore.
7. Sengupta, R.P.2001, Ecology and Economics: An approach to sustainable development, Oxford University press, New Delhi.

Generic Elective – 4
EMT 407: PROJECT

Open Elective-1

EMT 408 OPTIMIZATION TECHNIQUES IN ECONOMICS

Unit 1: Transportation Problem

Nature and Matrix form of TP – Transportation Table – Types of Transportation Problem – Balanced Transportation Problem, Unbalanced Transportation Problem – Methods to solve Transportation Problem - The Initial Basic Feasible solution: North-West Corner Rule and Vogel's Approximation method – Moving towards optimality, the Transportation Algorithm.

Unit 2: Assignment Problem: Assignment problem, Transportation problem and Linear Programming – Types of Assignment problem – Properties of Optimal Solution – Solving the Assignment Problem by Hungarian Algorithm – The Auction Algorithm for Assignment Problem – Branch and Bond Techniques for Assignment Problem.

Unit 3 : Game Theory: Basic concepts -Two-person Zero Sum Games - The Maximum Minimax Principle – Games without Saddle Points – Mixed Strategies – Graphical solution of $2 \times n$ and $m \times 2$ Games – Dominance property – The Modified Dominance Property – Reducing the Game Problem as a Linear Programming Problem.

Unit 4 : Inventory Management

Introduction - Inventory control - Techniques of Inventory control with known demand - Economic Lot Size Problems –The fundamental Problem of Economic Order Quantity (EOQ), The Problem of EOQ with Uniform Demand, and The Problem of EOQ with Finite Rate of Replenishment - Problem of EOQ with Shortage.

Unit 5: Simulation

Introduction – Elements of a Simulation Model – Event – Types of Simulation – Generation of Random Phenomena – Monte Carlo Technique – Generation of Uniform (0,1) Random Observations – Simulation languages.

TEXT AND REFERENCE BOOKS:

1. Kanti Swarup, P.K.Gupta and Man Mohan: Operations Research, Sultan Chand and sons, New Delhi.
2. Panneerselvam, R: Operations Research, Eastern Economy Edition, Prentice Hall of India, New Delhi, 2007.
3. Srinivasan, G., Operations Research _Principles and Applications, Second Edition, Prentice Hall of India, New Delhi, 2012.
4. Richard, Brown and Govindaswamy, N., Schaum's Outlines Series Operations Research, Second Edition, 2012.
5. Gupta, P.M. and D.S.Hira: Operations Research, Sultan Chand and Sons, New Delhi.
6. Harven, Wagner: Operations Research.
7. Starr and Miller: Inventory Control.

Open Elective-2

EMT 409: Data Base for Indian Economy

Unit 1: Census – Demographic Indicators – Definitions – schedules – Dissemination – Database – Types – Other data sets from Census – Economic census – Education census – Agricultural census – Major Results of Recent Census Data in India.

Unit 2: National Income Accounting – Base year – Methods of Estimation – Types of Reporting – Balance of Payments (BOP) and National Income (NI) – State Domestic Product – District Domestic Product - District Census Handbooks.

Unit 3: NSSO – Large and Small samples – NSSO Rounds on Consumption Expenditure, Employment and Unemployment Status in India – Major Findings of Recent NSS reports on Poverty, Inequality and Unemployment – Annual Survey of Industries (ASI) – Coverage – Definition of Terms – price and wage statistics Major Findings of Recent reports – Socio-economic statistics – National Family Health Survey (NFHS) – Health and Morbidity Data.

Unit 4: RBI – Balance sheet approach – Financial and Banking statistics – Money supply Indicators and Statistics on Money Supply in India – Foreign Exchange Reserves – Exchange rate – Stock Market Statistics – Non-banking Financial Institutions data.

Unit 5: Govt. and International data – Ministry of Commerce Data on Exports and Imports – Data in Annual Economic Surveys from the Ministry of Finance - Data from World bank, IMF, ILO, WTO, UNCTAD, UN and other international agencies – Specific data bases such as World Value Surveys – Penn World Tables - Gallop Poll.

Books for Reference:

1. Websites and reports of respective ministries and organizations, like Directorate of Census Operations, CSO, NSSO, GOI, SEBI, RBI.
2. Reports of Statistics Departments in State Governments.
3. Reports of UN Organisations.
4. Annual Economic Surveys, Ministry of Finance, Government of India.
5. <http://www.commerce.nic.in/eidb/iecnttopn.asp>

Open Elective – 3
EMT 410 ACTUARIAL STATISTICS

Unit -1 Theory of Interest rates, Rate of Interest, Nominal rate of interest. Accumulation factors. Force of interest, present values, Stoodley formula for the force of interest, Present value of cash flows, Valuing cash flows - Basic Annuities Certain, Present values and accumulation, Concepts of different annuities, Continuously payable annuities, Varying annuities.

Unit- 2 Utility Theory, Insurance and Utility Theory, Models for individual claims and their sums, Approximations for the distribution of the sum - Application to Insurance - Survival function, time until death for a person age X, Accurate future Life time, Force of Mortality.

Unit-3 Life Table and its Relation with Survival Function – Examples - The Deterministic Survivorship group, Recursion formulas, Assumptions for traditional ages, Analytical Laws of Mortality, Select and Ultimate tables.

Unit – 4 Life Insurance : Insurance payable at the moment of death and at the end of the year of death – Level benefit insurance, Endowment insurance, Deferred insurance and Varying benefit insurance. Life Annuities. Single payment, Continuous Life annuities, Discrete life Annuities - life annuities with monthly payments, Complete annuities – Immediate and Apportionable annuities – due.

Unit 5: Multiple life functions, Joint life and Last Survivor status, Insurance and Annuity benefits through Multiple life function, Evolution for Special Mortality laws - Multiple decrement models, Associated single decrement tables, Central of multiple decrement, Central force assumptions for multiple decrements. Uniform distribution assumption for multiple decrements.

Text books:

1. Bowes, N.L., Gerber, H.U., Hickman ,J.C, Jones, D.A., and nesbitt, C., J .(1986). Actuarial Mathematics. Society of Actuaries, Lthaca, Illins, U/S.A. 2nd ed .(1997) C.H.1,2,3,4,5,9&10.
2. Mc Cutchheon, J.J. and Scott, W.F., An introduction to Mathematics of finance.

References:

1. Spurgeoin,E.T .(1972). Life Contingencies. Cambridge University Press.
2. Nall, A (1977), Life Contingencies. Heinemann.
