Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5
Number of Credits: 5

COURSE OBJECTIVES:
- To introduce students to the framework that economists use to analyze choices
- To introduce the concepts and theories of microeconomics
- To familiarize students with the application of microeconomics

MODULE I - INTRODUCTION TO MICROECONOMICS (5 Hours)
Micro economics, Branches of Microeconomics, Lionel Robbins' scarcity definition Basic problems of choice of production and consumption- (with the help of Production possibility curve) --Opportunity cost -Positive and Normative Economics, inductive and deductive methods. Merits and limitations of Microeconomics
SELF STUDY: *Definitions prior to scarcity definition, Difference between Micro and Macro Economics.*

MODULE II - THEORY OF CONSUMER BEHAVIOR (20 Hours)
Cardinal Utility analysis-Law of Diminishing marginal utility. Law of Equi-marginal Utility.Marshallian Consumer's surplus. Law of Demand-Changes in demand. Elasticity of demand -types of elasticity of demand, Methods of calculating elasticity of demand, Factors determining elasticity of demand and Hicksian Ordinal Utility Analysis-Indifference Curves-Meaning, Properties,
Consumer's equilibrium-Budget constriant-Income effect- Price effect -substitution effect (only concepts)
Self Study: Practical importance of the concept.

MODULE III - THEORY OF PRODUCTION (20 Hours)
Production function -Law of variable proportions, Law of Returns to Scale – internal and external economies of scale. Cost concepts -TFC, TVC, TC, AC,MC- Short run and long run Analysis *Supply- Law of supply* - Revenue concepts –TR ,AR,MR . Producer's Surplus
SELF STUDY: *Practical importance of cost concepts.*

MODULE IV -THEORY OF PRODUCT PRICING (20 Hours)
Firm and industry equilibrium of a firm. Perfect Competition–features, Price and Output determination, role of time element .Monopoly– features- price and output determination, Price discrimination. Monopolistic Competition- features - product differentiation (concepts), Meaning of oligopoly-Meaning of selling cost.
SELF STUDY: Types of markets based on geography, competition and specialization

MODULE V - THEORY OF FACTOR PRICING (10Hours)
Pricing of Factors of Factors of Production– Rent– Ricardo and Modern, The Marginal Productivity Theory of wages, Wage differential. Interest-Classical theory. *Profit–Risk, Uncertainty*
SELF STUDY: *Dynamic and Innovation theory*

Suggestive topics for assignments:

About Markets,
Firms and Industries
Demand and Supply

Selling cost
Wage differentials
Above topics can be related to ground relaities

REFERENCE BOOKS: (I &II Semester)
1. Ahuja H.L : Advanced Economic Theory,21st ed 2017.
2. Principles of Micro Economics-Mankew Gregory
3. Lipsey.G: An Introduction to Positive Economics. Littlehampton Book Services Ltd, 1973.
4. Pyndick Rubinfeld:
5. Seth M.L- A Text Book of Economic Theory, Lakshmi Narain Agarwal 1999
6. Stonier A.W. And Hague – A Text Book of Economic Theory, AbeBooks, 1958.
7. Varian .H –Intermediate Micro Economics,Norton & Company,2014.

II SEMESTER B.A
ECA 224: MACRO ECONOMICS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5
Number of Credits: 5

COURSE OBJECTIVES:
- To enable students to understand the nature and behaviour of important macro economic variables in the functioning of an economy.
- To impart knowledge regarding the formulation and implementation of macroeconomic policies.

MODULE I - INTRODUCTION TO MACRO ECONOMICS (15 Hours)
Definition and branches of Macro economics -stocks and flow, functional relationships, statics, comparative statics and dynamics. Interdependence between micro and macro economics. Micro-macro paradox.. Circular flow of income and wealth- Concepts and methods of measuring National Income. Uses and limitations of Macro economics
SELF STUDY: Problems in the measurement of National Income.

MODULE II - THEORY OF INCOME AND EMPLOYMENT (20 Hours)
Basic assumptions of the Classicists, Say's Law of Markets , Pigou's concept of wage cut ,Wage-price flexibility and Full Employment ,saving investment equality, Criticisms of the Classical theory.The Keynesian Theory **-**The concept of under employment equilibrium, Effective Demand-Aggregate Demand and Aggregate Supply, Consumption Function and its determinants, psychological law of consumption. Investment Function and its determinants, Multiplier, Accelerator.
SELF STDUDY: KEYNES VS CLASSICAL THEORY

MODULE III - MONEY AND BANKING (20 Hours)
Determinants of Demand for money-Theory of Liquidity preference. Composition of Supply of money-. Value of money– Quantity theory of money – Fisher, Cambridge equations. General equilibrium in the product and money market-IS and LM Model (only concepts)-. Commercial banking functions – credit creation, central banking functions-Monetary policy-Credit Control techniques - quantitative and qualitative methods.
SELF STUDY : Definition and functions of money. M1,M2,M3

MODULE IV - INFLATION AND TRADE CYCLES (20 Hours)
Meaning and types of inflation ,Demand-pull -Cost push Inflation, Inflationary gap. Effects of inflation, measures to control inflation ,employment- inflation trade off- (Philips curve Short run). Measuring inflation- *Trade cycle-Phases.*
Use of Index numbers. Meaning ,types . Consumer Price Index and Wholesale Price Index (only concepts).
SELF STUDY: ,Hawtrey's monetary theory , Schumpeter's theory of innovation.

Assignment Topics:
Study of Banking System
National Income
Inflation, Employment, Price Indices etc

REFERENCE BOOKS: (in addition to books mentioned in Ist Semester)

1. Dornbusch, R and S. Fisher ,Macro Economics McGraw Hill, 11th edition, 2010.
2. Mankiw Gregory   Macro economics Harvard University Worth Publishers, 2010.
3. Olivier Blanchard, Macroeconomics, Pearson Education, Inc., 5th edition, 2009.
4. Froyen-Macro Economics.
5. Edward Shapiro: Macro Economics
6. Dwivedi-macro Economics

SEMESTER I BS.C

ECS 124: MICROECONOMICS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5

 Number of Credits: 5

COURSE OBJECTIVES:

•   To familiarize students with fundamentals of micro economic theory

•   To provide students skills necessary to deal with micro economic problems

MODULE I: MICROECONOMICS: AN INTRODUCTION (5 Hours)

Definition of Economics, Positive and normative economics, definition and scope of Microeconomics; Concept of Equilibrium, Ex-post and Ex-ante statics, comparative statics and dynamics

SELF STUDY: Definitions of Economics

- *Mankiw NG (2011), Principles of Economics, 5th edition. South- Western Cengage Learning. Chapter 1- Ten Principles of Economics, Chapter 4- The Market Forces of Supply and Demand and Chapter 5- Elasticity and its Application.*
- *Pindyck, R. S. and Rubinfeld, D. L. Microeconomics, Global Edition. 2015 - Pearson Education Ltd.   Chapter 1 - Preliminaries.*

MODULE II: THEORY OF CONSUMER BEHAVIOUR, DEMAND AND SUPPLY ANALYSIS (20 Hours)

Marshallian Theory of Consumer Behaviour: Assumptions, Derivation of Equilibrium, Law of Equi-marginal utility, Limitations.

Indifference Curve Approach: Basic Axioms, shape of IC under different situation, Budget Line, equilibrium of the Consumer.

Extension of Indifference Curve Approach: Derivation of Income Consumption Curve, Engel Curve, Price Consumption Curve, Price Effect, Income Effect and Substitution Effect

Demand and Supply: Elasticity of Demand- concept and measurement, law of demand, shape of demand curve, Bandwagon, Snob and Veblen Effect, Elasticity of Supply, Law of Supply, Market Equilibrium, Walrasian and Marshallian Stability Conditions.

Self Study: Revealed Preference Theory: Axioms, consumer's and producer's surplus

MODULE III: THEORY OF PRODUCTION AND THEORY OF COST (10 Hours)

Theory of Production: Short Run production function; Total Product, Average Product and Marginal Product- Concept, measurement and relation between them; Production under long run: Derivation of Isoquant, Elasticity of substitution

Theory of Cost: Short Run average cost curve, average Variable cost, Marginal cost-concept, measurement and relation between them; Theory of Cost under Long Run: Derivation of Isocost line, Equilibrium of the firm, Expansion Path; Long Run Average Cost and Marginal cost curve, Relation between AR and MR.

Self Study: Meaning of Firms and Industry, Equilibrium of Firm.

MODULE IV: THEORY OF MARKETS (20 Hours)

Perfect Competition: Assumptions and derivation of Short Run Equilibrium, Shut down and break-even point, Long Run Equilibrium.

Monopoly and Monopolistic Competition: Assumptions and derivation of Equilibrium of a monopolist, Comparison between perfect competition and monopoly, Deadweight Loss, Price discriminating monopolist and multiplant monopolist, Monopolistic competition and excess capacity.

Oligopoly: Features of Oligopolistic Competition, Meaning of duopoly Cournot Equilibrium, Bertrand Equilibrium in case of homogenous products, Stackelberg's Price leadership Model.

Self Study: Concept of Nash Equilibrium.

MODULE V: THEORY FACTOR PRICING AND WELFARE (20 Hours)

Ricardian Theory of Distribution; Marginal Productivity Theory of Distribution; Theory of Wages under different market conditions in factor and product markets.

Measurement of Welfare, Pareto optimality using Edgeworth Box, First and Second Fundamental Theorem of Welfare Economics. Social Welfare and Arrows Impossibility Theorem. Brief overview of sources of market failure: Monopoly, public good, externalities and asymmetric information.

SELF STUDY: Concepts of general and partial equilibrium.

- *Mankiw NG (2011). Principles of Economics, 5th edition. South-Western Cengage Learning.Chapter 9- Externalities and Chapter 10-Public Goods and Common Resources*

REFERENCES

1. Hall R. Varian (2010), Intermediate Microeconomics: A Modern Approach, East West publication

   8th Edition.

2. Henderson Mitchell and Quandt Richard E. (2003), Microeconomics: A Mathematical Approach, Tata Mc Graw Hill Edition.

3. Koutsoyiannis(2015), Modern Microeconomics, Mcmillan , 2nd Edition.

4. Mankiw Gregory (2011), Principles of Economics, Cengage Learning, 6th Edition.

5. Pyndick Robert.S and Rubinfeld Daniel L (2009) ,Microeconomics,Prentice Hall , 7th edition

6. Sen, A (2000) Microeconomics: Theory and Applications, Oxford University Press.

8. Simon Carl.P and Blume Lawrence (2010)Mathematics for Economists, W W Norton & Company

SEMESTER II BS.C

ECS 224: MACROECONOMICS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5

Number of Credits: 5

COURSE OBJECTIVES:

- To familiarize students with fundamentals of Macroeconomic theory
- To provide knowledge about different schools in macroeconomic theories

MODULE I: INTRODUCTION TO MACROECONOMICS   (5 Hours)

Nature of Macroeconomics and its significance, Indicators of Macro Economic Activity – Key Concepts: Stock and flow variables,

Self Study: Different schools of thought.

MODULE II: NATIONAL INCOME ACCOUNTING   (10 Hours)

Measurement of Macro Variables and Economic Performance: National Income Accounting – *Important Concepts*: GNP, GDP, NNP, NDP, NI, PI, DPI- Real GDP versus Nominal GDP- GDP deflator- Circular Flow of Income- *Method of estimating National Income*- Expenditure Method- Income method-Value added or Net Product method- Mathematical Problems. Difficulties in National Income Accounting- Trends in GDP in India -GNP and Quality of Life – Net Economic Welfare – Green Income.

SELF STUDY: Mathematical Exercise on National Income Accounting

MODULE III: CLASSICAL THEORY OF INCOME AND EMPLOYMENT (15 Hours)

Introduction to classical theory of employment – Basic Assumptions of the Classical School- Say's law of Market- Determination of Output, Employment, Savings, Investment, Wages, Prices and Interest Rate – Equilibrium   OutputEmployment, Quantity Theory of Money- Fisher's and Cambridge theories-Classical Dichotomy - Policy Implications   of   Classical School

SELF STUDY: Types of Money.

- *Review Questions and Problems - Froyen, R.T. (2006) – Macroeconomics Theories and Policies (Eighth Edition), Chapter 2 and 3*

MODULE IV: KEYNESIAN THEORY OF INCOME AND EMPLOYMENT (20 Hours)

Principle of effective demand- Simple Keynesian Model (SKM) - components of aggregate demand – consumption function, investment demand and government expenditure-Keynesian theory of output, income and employment determination – equilibrium, multiplier and accelerator.

Money market and Goods market equilibrium - Interest rate induced investment and IS curve, Money market and LM curve, slope of IS- LM curve and policy analysis. Derivation of Aggregate Demand from IS-LM curve, Aggregate supply- Complete Keynesian Model.

SELF STUDY: Keynes vs Classical approaches

- *Review Questions and Problems, Froyen, R.T. (2006) – Macroeconomics Theories and Policies (Eight Edition), Chapter 2 and 3, Chapter 6-9*
- *Hicks, J. (1937). Mr. Keynes and the "Classics"; A Suggested Interpretation. Econometrica, 5(2), 147-159. doi:10.2307/1907242*
- *Gerrard, Bill. "Keynes, The Keynesians and the Classics: A Suggested Interpretation." The Economic Journal, vol. 105, no. 429, 1995, pp. 445–458. JSTOR, JSTOR, www.jstor.org/stable/2235503.*

MODULE V: THEORY OF CONSUMPTION, INFLATION AND UNEMPLOYMENT (25 Hours)

Keynesian theory of inflation- Inflation unemployment trade-off- Short Run and Long run Phillips Curve. Overview of Post Keynesian theory- monetarism, rational expectation, real business cycle and new Keynesian school.

Keynesian Consumption Hypothesis, Kuznet's findings, Fisher's Inter-temporal Model, Life cycle and permanent income hypothesis, Relative Income Hypothesis, Random walk hypothesis, Keynesian Investment Function-Marginal Efficiency of Capital, Marginal efficiency of Investment and Investment Demand, Accelerator Theory of Investment, Interaction between multiplier and accelerator,

SELF STUDY: Tobin's q. Baumol's Tobin & Friedman theory of money demand.

- *Hüfner, F., & Koske, I. (2010). Explaining household saving rates in G7 countries: implications for Germany. OECD Economic Department Working Papers, (754), 0_1. https://search.proquest.com/openview/28f8b2777dbc891ffc82ef4fba051dc5/1?pqorig site=gscholar&cbl=54478*

REFERENCES:

1. Blanchard Olivier (2013) Macroeconomics, Pearson, Fourth Edition

2. Dwivedi D.N (2008) Macroeconomics Theory and Policy, Tata Mc Graw Hill, 3rd Edition.

3. Froyen R. T. (2005)   Macroeconomics: Theory and Policy, Pearson Education,

4. Mankiw Gregory (2010) Macroeconomics. Worth Publishers, 7th Edition

5. Dwivedi D.N. (2008) Macroeconomics Theory and Policy, Tata Mc Graw Hill, 3rd Edition

6. Hubbard R. Glenn and Anthony Patrick O'Brien, (2012) Macroeconomics, Pearson Prentice, New Jersey, USA.

7.   Edward Shapiro- macro Economics

III SEMESTER B.A.
ECA 325: MATHEMATICAL METHODS FOR ECONOMICS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5
Number of Credits: 5

COURSE OBJECTIVES:

- To enable the use of quantitative methods and its application to economics for quantitative analysis of variables from economics
- To provide valuable insights for using mathematics to further learning of mathematical economics

MODULE I: INTRODUCTION (7 + 8=15 Hours)
Foundation to study Mathematical Economics- Variables, Constants, Parameters, Equations and Identities- Functions- Concept and types of functions- general, specific and exact with intercept and slope.
Need for mathematical approach in economics - Nature and scope of Mathematical Economics. Theory of Sets- Definition and types of sets, Basic operations on sets. Number system- Natural numbers, Integers, Rational and Irrational numbers, Real number system.
SELF STUDY: Problems solving

MODULE II: APPLICATIONS OF LINEAR AND NON-LINEAR EQUATIONS IN ECONOMICS (10 Hours)
Linear and Non- linear Demand and Supply equations. Concept of equilibrium - effects of specific tax, ad-valorem tax and specific subsidy on prices. Walrasian and Marshallian tests for stability. Solutions by algebraic equations and graphical methods.
SELF STUDY: Problems solving

MODULE III: FUNDAMENTALS OF DIFFERENTIATION (25 hours)
Meaning and rule of differentiation, Partial and Total derivatives - its applications in economics. Mathematical relationship between elasticity of demand, MR and AR. Elasticity theorems, applications on Price, Income and substitution elasticity calculations, Output elasticity and Total cost elasticity.
Maxima and Minima of Functions- Formulation of objective functions and constraints for maximisation and minimisation, Lagrangian multiplier method, Applications of maximisation to determine utility and profit maximisation and expenditure and cost minimization subject to budget constraint.
SELF STUDY: Problems solving

MODULE IV – INTEGRATION AND ITS APPLICATIONS IN ECONOMICS (10 Hours)

Concept of integration- Rules of integration, definite and indefinite integrations and their applications to Economics, Consumer's and Producer's surplus.
SELF STUDY: Problems solving

MODULE V: MATRICES (15 Hours)
Meaning and types of Matrices, Matrix Operations- Addition and Subtraction, Matrix Multiplication, Commutative, Associative and Distributive laws, Transpose of a Matrix, Inverse Matrix, Solution to system of linear equation using Cramer's Rule – its applications.
SELF STUDY: Problems solving

References

- Chiang, Alpha C. (1984). Fundamental Methods of Mathematical Economics. McGraw-hill International Book Company (New Delhi).
- Allen R.G.D., (2015) Mathematical Analysis for Economists, Macmillan.
- Chiang, A. C. and Wainwright, K(2005)."Fundamental Methods of Mathematical Economics", McGraw Hill/Irwin, 4th Edition,
- Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia,4th Edition, 2002.
- Bose D., (2003) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.
- Veerachamy, R. (2008). Quantitative Methods for Economists. New Age International Publishers (New Delhi).
- Dowling, E. T., "Introduction to Mathematical Economics", McGraw-Hill, 2001.
- Hoy, M., Livernois, J. McKenna, C, Rees, R. and Stengos, T., "Mathematics for Economics", MIT Press, 3rd Edition, 2011
- Yamane Taro, (2002) Mathematics for Economists - An Implementer Analysis, Phi Learning Publishers.

ECA 425: STATISTICAL METHODS FOR ECONOMICS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5
Number of Credits: 5

COURSE OBJECTIVES:
- To introduce students to the basic concepts of statistics
- To develop skills of data analysis and interpretations

MODULE I - COLLECTION, CLASSIFICATION AND TABULATION OF DATA (10 Hours)
Statistics-definition and uses of statistics, primary and secondary data, Sampling methods random- stratified, systematic, cluster; nonrandom sampling - judgment sampling, convenience and quota sampling. Making a frequency table-discrete and continuous. Cumulative frequency distribution- Bivariate distribution. Classification of data and types- Rules of tabulation- parts of a table, types of tables- Graphical representation- bar chart, histogram, pie chart
SELF STUDY: problems solving

MODULE II - MEASURES OF CENTRAL TENDENCY (10 Hours)
Definition-Characteristics of a good average Arithmetic mean- Median-Mode- Individual observations, deviation method, step deviation method and Grouping method for continues data
SELF STUDY: problems solving

MODULE III - MEASURES OF DISPERSION (10 Hours)
Range, Mean Deviation Quartile Deviation Standard Deviation, Lorenz curve , Skewness Kurtosis and moments (only concepts)
SELF STUDY: problems solving

MODULE IV - CORRELATION AND REGRESSION ANALYSIS (10 Hours)
Meaning of correlation – Types of correlation-Karl Pearson's coefficient of correlation-Rank method. Meaning of regression analysis-regression lines-regression Simple regression equation- and deviation method-OLS method
SELF STUDY: problems solving

MODULE V - INDEX NUMBERS AND TIME SERIES ANALYSIS (10 Hours)
Index numbers-definition-uses-problems- unweighted and weighted index numbers- Laspeyers, Paasche, fisher's methods -Time Reversal test and Factor Reversal test. Consumer Price Index, Wholesale Price Index. Analysis of time series-definition-uses- components- methods of estimating component.
SELF STUDY: problems solving

MODULE VI- Theory of Probability   (10 Hours)
Classical definition of probability and problems, Meaning of Probability distribution Basic concepts of Binomial and Poisson distribution– Normal distribution. -Expected value and variance .
SELF STUDY: problems solving

REFERENCE BOOKS:

1. Elhance D.N, Veena Elhance and B.M Aggarwal Fundamentals Of Statistics, Kitabahal 2014
2. Gupta,S. C. Fundamentals of Statistics, Himalaya Publishing House Pvt. Ltd.2015
3. Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2011). Statistics for business and economics. South-Western College Publisher.
4. Statistical Methods for Economics-T.R Jain, S.C Aggarwal

SEMESTER III B.Sc

ECS 325: QUANTITATIVE METHODS FOR ECONOMISTS

Total Teaching Hours Per Semester: 75   Number of Teaching Hours Per Week: 5

Number of Credits: 5

COURSE OBJECTIVES:

- To familiarize students with quantitative methods used to solve economic problems
- To give the students an understanding of the application of economic theories through mathematical and statistical methods

MODULE I: BASICS OF MATHEMATICAL ECONOMICS   (10 Hours)

Nature of Mathematical Economics and its applications in Economic Analysis - Mathematical Model: Variables, Constants, Parameters, Equations and Identities- Sets: Set notation, operations, laws of set operations, Functions: types of functions

MODULE II: MATRICES AND DETERMINANTS AND ITS APPLICATION IN ECONOMICS   (15 Hours)

Matrix Operations- Addition and Subtraction, Matrix Multiplication, Commutative, Associative and Distributive laws - Transpose – Inverse Matrix – Determinants: Properties, Rank of Matrix, Minor, Co-factor – Cramer's Rule (applications in Economics)

SELF STUDY:

- *Cramer's rule Exercise on IS-LM model, National Income Accounting*

MODULE III: DIFFERENTIATION AND INTEGRATION: ITS APPLICATION IN ECONOMICS (15 Hours)

Rate of Change and the Differentiation: rules of differentiation of a function, Constant Functions, Linear, Power, Sums and Differences of Functions, Product of Functions, Quotient of Functions, Chain Rule, Exponential and Logarithmic Functions, Functions of Two or More Variables – Partial Derivatives, Higher Order Partial Derivatives, the Chain Rule and Total Derivatives, Differential equations: First

Order Linear Differential Equations- Nonlinear First Order Differential Equations- Second Order Linear Differential Equations

Concept of Integration -Rules of Integration – Definite Integrals – Area and summation – Indefinite Integration. Applications integrations in Economic Analysis-Consumers Surplus- Producers surplus-Obtaining primitive function from marginal function

MODULE IV: OPTIMIZATION TECHNIQUES: MAXIMA AND MINIMA (15 Hours)

Concept of maxima and minima – relevance in Economics

Concept of optimisation - Constrained Optimization - Lagrangian Multiplier, Unconstrained Optimization under different market structure including perfect and imperfect markets.

SELF STUDY:

Review Questions and Problems from, Chiang, A. C. and Wainwright, K., "Fundamental

Methods of Mathematical Economics", McGraw Hill/Irwin, 4th Edition, 2005.

MODULE V: STATISTICAL METHODS IN ECONOMICS (20 Hours)

Introduction to Probability and Probability Distributions:

Probability: Basic Concepts- Properties of Probability- Expected Values, Conditional Probability, Random Variables: Discrete and Continuous

Probability Distributions – Probability Density Functions and Cumulative Distribution Functions – Expected values and Moments – The Binomial Probability Distribution, Poisson, Normal and exponential Distribution

Theory of Hypothesis testing, Correlation and Regression:

Meaning of Hypothesis testing-Null and Alternative hypothesis, level of significance, One-tailed and two-tailed tests, Type I, Type II errors – Approaches to Hypothesis Testing – Confidence Interval Approach -Test of Significance Approach

Meaning and types of correlation, methods of computation of correlation coefficient – Karl Pearson's method, Spearman's rank correlation method- Regression–meaning and importance of regression analysis, simple regression lines and equations and forecasting (two variables only)

SELF STUDY:

Measures of Central Tendency and Dispersion:

Arithmetic mean, median, mode, Geometric mean and Harmonic mean: measurement and applications in Economics (real life examples)

Meaning and significance of the measure of dispersion - Measurement and applications of Range, quartile deviation, mean deviation, standard deviation, variance and coefficient of variation (real life examples), measures of skewness and curtosis, scatter diagram

Numerical examples for all modules

REFERENCES:

Chiang, A. C. and Wainwright, K., "Fundamental Methods of Mathematical Economics", McGraw Hill/Irwin, 4th Edition, 2005.

Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.

Allen R.G.D., (2015) Mathematical Analysis for Economists, Macmillan.

Bose D., (2003) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.

Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.

Dowling, E. T., "Introduction to Mathematical Economics", McGraw-Hill, 2001.

Hoy, M., Livernois, J. McKenna, C, Rees, R. and Stengos, T., "Mathematics for Economics", MIT Press, 3rd Edition, 2011Gupta S P. (2012) *Statistical Methods,* S. Chand and Company, New Delhi.

A L Nagar and R K Das (1983): Basic Statistics, Oxford University Press

Anderson, Sweeney & Williams, (2002) *Statistics for Business & Economics,* Thomson South-Western, Bangalore.

Daniel and Terrel: Business Statistics for Management and Economics; Hoaghton Mifflin Co., Boston, Toronts, 7th Edition, 1995, PP 1 to 972 + 6 Appendices

Medhi, J., Statistical Methods: An Introductory Text, Wiley, 1992

Morris H. Degroot and Mark J. Schervish, "Probability and Statistics", 4th edition, 2012.

Teresa Bradley, Essential Statistics for Economics, Business and Management, John Willey Publisher, 2007

ECS 425: BASIC ECONOMETRICS

Total Teaching Hours Per Semester: 75

Number of Credits: 5

Number of Teaching Hours Per Week: 5

COURSE OBJECTIVES:

- To provide an exposure to econometric theory
- To provide a basic understanding of empirical analysis for testing economic theories

MODULE I: NATURE AND SCOPE OF ECONOMETRICS (2 Hours)

Meaning of Econometrics, Statistical relationship and deterministic relationship; Concept of regression, causation and correlation; Nature and sources of data for Econometric analysis.

MODULE II: TWO VARIABLE REGRESSION ANALYSIS (10 Hours)

The basic two Variable Regression model: Estimation, Statistical Inference and Prediction. Extensions of two variable regression models - regression through origin, Scaling and units of measurement.

MODULE III: MULTIPLE REGRESSION ANALYSIS (13 Hours)

The problem of Estimation- Notation and assumptions, R^2 and adjusted-R^2, Interpretation of Multiple Regression equation. The Problem of Inference- The normality assumption, Hypothesis testing about Individual Partial Regression coefficients, Hypothesis testing about Individual Partial Regression coefficients, testing the overall significance of the sample regression, testing the equality of two regression coefficients, testing for structural stability of regression models, Functional form of regression.

MODULE IV: RELAXING THE ASSUMPTIONS OF THE CLASSICAL REGRESSION MODEL (25 Hours)

Problems of Multicollinearity, Heteroscedasticity and Autocorrelation; Examining the nature of the problem; Consequences on the OLS estimator, Detection, and Remedial Measures for common assumption violations. Introduction to Endogeneity, Instrumental variables

MODULE V: INTRODUCTION TO QUALITATIVE MODELS (25 Hours)

The nature of Dummy variables, regression on one quantitative variable and one qualitative variable, regression with more than two classes, Interaction effects; Chow Test; piecewise linear regression.

General approach of method of MLE; Dummy dependent variable models such as Linear Probability Model, Logit, Probit, etc.

Note: Econometric applications will be given/discussed by the resource person for each module; Statistical packages may be used to aid learning outcomes.

References

1. Dougherty, C. (1992) Introduction to Econometrics. New York: Oxford University Press.

2. Studenmund, A (2016): Using Econometrics A Practical Guide, 7th edition, Pearson

3. Wooldridge, J.M. (2003), Introductory Econometrics: A Modern Approach, 2nd edition, Thomson South-Western.

4. Gujarati, D (2003) Basic Econometrics, 4th Edition, New York: McGraw Hill.

5. Maddala, G (1992) Introduction to Econometrics, 2nd ed., New York: MacMillan.