



## **Netaji Subhas Open University**

### **POST GRADUATE IN ECONOMICS (PGEC)**

**Eligibility: B.A./B.Sc in Economics /B.Com or Graduate of any other discipline with Mathematics (10+2+3)**

**Duration- 2 Years  
20 papers (4 credit each)  
Full marks: 1000**

**Learning Objectives:** This programme in Economics has been designed with the objective to develop in-depth knowledge of learners in frontier areas of economic theory and methods, so that they are able to use the knowledge to study real world economic problems. The programme has a strong focus on theoretical and quantitative skills and train learners in the collection and analysis of the data using their software skills and it also offers specialized optional courses, that allow learners to pursue their studies in their area of interest. The programme seeks to prepare learners to develop critical thinking to carry out investigation about various socio-economic issues objectively while bridging the gap between theory and practice. It also aims to equip the student with skills to analyze problems, formulate a hypothesis evaluate and validate results and draw reasonable conclusions thereof. The programme will help to prepare learners for pursuing research or careers that provide employment through entrepreneurship and innovative methods. Since today's unemployment problem can also be solved by developing the micro and small entrepreneurship, the programme prepares learners to develop own thinking /opinion regarding current national or international policies and issues and create awareness to become a rational and an enlightened citizen.

**Expected Learning Outcomes:** At the end of the programme, the learners will have adequate competency in the frontier areas of economic theories and methods. The learners will acquire additional specialization through optional courses. They will be able to use common software for analysis of economic data. Besides, learners will be able to execute in-depth analysis of economic issues based on their understanding of economic theory, which will not only widen their opportunities for employment, but also help them to pursue their doctoral studies. Keeping the programme objectives in view, the specific learning outcomes of Masters in Economics are: Understanding the basic assumptions in various economic theories and enhance capabilities of developing ideas based on them; to prepare and motivate learners for research studies in Economics especially by developing questionnaire, collecting primary data through field surveys and to provide knowledge of a wide range of econometric techniques using excel or other statistical software. Also, the programme aims to motivate learners to extract or utilize different websites for secondary data collection, generating concepts for various facets of economic studies and gather latest information as required by them.

## BASIC STRUCTURE: DISTRIBUTION OF COURSE

<b>Semester 1 : 50x5=250</b>	<b>Semester 2 :50x5=250</b>
Paper 1: History of Economic Thought	Paper 6: Microeconomic Theory
Paper 2: Statistics for Economics	Paper 7: Indian Economy- II (Reforms and Contemporary Issues)
Paper 3: Indian Economy-I (Problems & Policies)	Paper 8: Macroeconomic Theory
Paper 4: Mathematics for Economics	Paper 9: Basic Econometrics
Paper 5: Economics of the Social Sector	Paper 10: Development Economics (Monojit Sir)
<b>Semester 3: 50x5=250</b>	<b>Semester 4: 50x5=250</b>
Paper 11: Public Economics (Mainak Sir)	Paper 16: Project Work with Computer Applications
Paper 12: Financial Economics (Salim Sir)	<b>Special Paper (Either A or B)</b>
Paper 13: Environmental & Resource Economics (Monojit sir)	<b>A. Agricultural Economics</b> Paper 17A Agriculture and Economic Development
Paper 14: International Economics (Monojit Sir)	Paper 18A: Agricultural Production and Farm Management
Paper 15: Growth Economics (Mainak Sir)	Paper 19A: Contemporary Issues in Indian Agriculture
	Paper 20A Application of Statistics and Econometrics in Agricultural Economics
	<b>Or</b>
<b>Marks Distribution:</b> 2.5x4 (out of 6) = 10 5x4 (out of 6) = 20 10x2 (out of 4) = 20 ----- Total = 50	<b>B. Statistics &amp; Econometrics</b>
	Paper 17B Advanced Statistics
	Paper 18B Advanced Econometrics-I
	Paper 19B Advanced Econometrics-II
	Paper 20B Econometric Applications

## Semester-1

### Paper 1: HISTORY OF ECONOMIC THOUGHT

**Course objectives:** After completion of this paper, learners will be able to critically think about the development of economic ideas, searching into their origins, interrelations, and, in some cases, their results.

**Course outcome:** This paper will help learners to understand the origin of economics, how economic theories are shaped, and on what basis economic and political policies are structured.

### Course Contents:

## **Unit 1: BEFORE ADAM SMITH**

Mercantilism

Richard Cantillon (1680s-1734)

David Hume (1711-76)

Francois Quesnay and the Physiocrats

A.R. J. Turgot (1727-81)

## **Unit 2: ECONOMIC IDEAS OF ADAM SMITH (1723-90)**

Wealth of Nations

Adam Smith's Value Theory

The Returns to the Factors of Production

The Invisible Hand

The Invisible Hands and the Market Economy

International Trade

The Market and the State

Economic Growth

Division of Labour & Technological Progress

## **Unit 3: THE CLASSICAL SCHOOL: THOMAS ROBERT MALTHUS AND DAVID RICARDO**

Thomas Malthus (1776-1834)

The Theory of Population

Malthus and the so-called Corn Law

Malthus' friendship with David Ricardo

David Ricardo (1772-1823)

The Theory of Rent

The Theory of International Trade

The Theory of taxation

## **Unit 4: KARL MARX AS AN ECONOMIC THEORIST**

Life

The Communist Manifesto

Das Capital

Capitalism and Surplus Value

Marx's Labour Theory of Value

Economic Growth

The Falling Rate of Profit and the Breakdown of Capitalism

The Importance of Karl Marx

## **Unit 5: THE MARGINALIST REVOLUTION: THE DECADE OF 1870s AND BEYOND**

William Stanley Jevons (1835-82)  
Marginal Utility Theory  
Demand and Prices  
The Sunspot Theory  
Carl Menger (1840-1921)  
The Theory of Value  
Ernest Engel (1821-96)  
The Austrian School:  
Eugen Von Bohm-Bawerk  
Friedrich Von Wieser  
Leon Walras (1834-1910)  
Alfred Marshall and Partial Equilibrium Theory  
Marshall's Importance

## **Unit 6: THE MODERNIZATION OF ECONOMIC THEORY IN THE POST WAR PERIOD**

Keynes and the Keynesian Revolution  
John Hicks (1904-89) and General Equilibrium Theory  
Paul Samuelson (1915-2009) and Foundations of Economic Theory

### **References:**

1. Ahiakpor, J. C. (Ed.). (1998). *Keynes and the Classics reconsidered* (Vol. 63). Springer Science & Business Media.
2. Blaug, M. (1997). *Economic theory in retrospect*. Cambridge university press.
3. Cone, Carl (2017). *The Evolution of Modern Economic Theory And Other Papers on the History of Economic Thought*. Routledge.
4. Hunt, E. K., & Lautzenheiser, M. (2015). *History of economic thought: a critical perspective*. Routledge.
5. Marx, K. (1974): Works of Karl Marx.
6. Roll, Eric. (1947): *A History of Economic Thought*. New York: Prentice-Hall.
7. Sandelin, B., Trautwein, H. M., & Wundrak, R. (2014). *A short history of economic thought*. Routledge.
8. Sandmo, Agnar (2011): *Economics Evolving: A History of Economic Thought* Princeton University Press, Princeton & Oxford.
9. Schumpeter, J. A. (2006): *History of economic analysis*. Routledge.
10. Spiegel, H. W. (1991): *The growth of economic thought*. Duke University Press.
11. Staley, Charles E. (1991): *A History of Economic Thought: From Aristotle to Arrow*. Blackwell Publishers, USA.
12. Walker, Donald A. & Jan van Daal (2014): Leon Walras, *Elements of Theoretical Economics*, Cambridge University Press

## **Paper 2: STATISTICS FOR ECONOMICS**

**Course Objective:** After completion of the course the learner will be able to know the basic statistical applications necessary for economic data analysis.

**Course outcome:** This course will help learners understand and analyze data to make predictions, develop policies and study market forces.

**Course Contents:**

**Unit 1: MEASURES OF CENTRAL TENDENCY**

Averages and Measures of Central Tendency

The Arithmetic Mean

Weighted mean

Properties of the Arithmetic Mean

Arithmetic mean computed from grouped data

The Median

Median for ungrouped data

Median for grouped data

The Mode

Mode for ungrouped data

Mode for Grouped data

Empirical Relation Mean Median and Mode

The Geometric Mean

The Harmonic Mean

Relation between Arithmetic, Geometric and Harmonic Means

Quartiles, Deciles and Percentiles

**Unit 2: MEASURES OF DISPERSION**

Dispersion or variation

The Range

The Mean Deviation

The Quartile Deviation

Standard Deviation

The coefficient of variation

**Unit3: MOMENTS, SKEWNESS AND KURTOSIS**

Moments

Definition

Moments for Grouped Data relation between Moments

Computation of Moments for Grouped Data

Charlier's Check and Sheppard's Correction

Moments in Dimensionless form

Skewness

Definition

Different measures of Skewness

Kurtosis

Different Measures of Kurtosis

Population Moments, Skewness and Kurtosis

#### **Unit 4: CORRELATION & REGRESSION**

Correlation

Linear correlation

Measures of correlation

Product moment Formula for the linear correlation coefficient

Rank Correlation

Regression

Scatter Diagrams and Regression lines

Standard error of Estimate

Explained and Unexplained Variation

#### **Units 5: INDEX NUMBERS AND THEIR APPLICATIONS**

Price and Quantity Index Numbers:

Various Formulae

Tests for an index number,

Cost of living Index Number

Uses of index number

#### **Unit 6: INTRODUCTION TO THE THEORY OF PROBABILITY AND DISTRIBUTION**

Concept of probability

Probability Theorems, assuming two events only

Applications to the Theorems

Random Variables and related elementary concepts

Discrete and Continuous and Related concepts

Expectation and Variance of Random Variables

Probability Distributions

Discrete: Mean and Variance of Binomial and Poisson distribution

Continuous: properties of normal distribution

Concept of Moment Generating Function

#### **References:**

1. Larsen, R. J., & Marx, M. L: *An introduction to mathematical statistics and its applications* (Vol. 2). Englewood Cliffs, NJ: Prentice-Hall.,1986.

2. Goon, Gupta and Dasgupta: *Fundamentals of Statistics*, Vol I and Vol II, The World Press Pvt. Ltd. Calcutta.1983.
3. Goon, Gupta and Dasgupta: *Fundamentals of Statistics*, Vol I and Vol II, The World Press Pvt. Ltd. Calcutta.1983.
4. Das, N. G: *Statistical Methods (Part-I & II)* M." Das & Co., Calcutta .1977.
5. A. L. Nagar, & Das, R. K. *Basic statistics*. Oxford University Press.1983.
6. Kenney, J. F., & Keeping, E. S.: *Mathematics of statistics: Part One & two*. D. Van Nostrand Company.1953.
7. Bowen and Starr: *Basic Statistics for Business and Economics*: McGraw-Hill Companies,1982.
8. Michael Barrow: *Statistics for Economics, Accounting and Business Studies*, Pearson Education,2009
9. John Mounsey : *Introduction to statistical calculations*. English Universities Press, 1964.
10. Murray Spiegel, R.: *Theory and Problems of Statistics in SI Units*, IBC.Singapore1972

### **Paper 3: INDIAN ECONOMY-I (PROBLEMS AND POLICIES)**

**Course Objectives:** After completion of the course the learner will be able to: Know the current issues and problems facing Indian economy with additional knowledge on paradigm shifts and turning points.

**Course outcome:** This course will help learners understand the country's financial framework, market sizes and business motives. It will also help to understand the forces that drive the prices and markets in India.

#### **Course Contents:**

#### **Unit 1: INDUSTRIAL POLICY**

Policies Before 1990s

Industrial Policy Resolution 1948; Industrial Policy Resolution, 1956; Industrial Policy Statement, 1977;

Industrial Policy of 1980: Industrial Policy, 1985: A Move Towards Liberalization Measure

New Industrial Policy 1991 and After

A Note on Competition Commission of India

#### **Unit 2: LABOUR LAWS AND REGULATIONS**

Labour Policy Prior to Independence in India

Constitution and Labour Policy

Labour Policy after Independence

The Labour Laws and Regulations Relating to Working Conditions

The Labour Laws Regulating Employee Relations

Labour Laws and Regulations relating to Wages and Monetary Benefits

Labour Laws and Regulations relating to Social Security

Labour Reform Measures Recently Initiated

Labour Laws: What must be done?

### **Unit 3: POVERTY AND INEQUALITY**

Poverty line; Poverty Measures in India; Government Policy to Combat Poverty; Economic Reforms and Poverty

Concept of Inequality

Inequality Measures

Nature of Inequality in India

Reasons for the rise in Inequality in India and Government Measures

Role of inclusive growth

### **Unit 4: EMPLOYMENT AND SOCIAL SECURITY**

Employment trends

Different Types of Unemployment

Nature of Unemployment Problem

Causes of Unemployment

Extent and Magnitude of Unemployment

Issues of Measurement of Employment and Unemployment

Employment Policy of Government of India:

The Role of MGNREGS for gainful Employment in Rural Areas

Reforms and Employment

Informal Sector and Informalisation of Labour

Social Security Measures in India

### **Unit 5: FISCAL POLICY**

Objectives of Fiscal Policy

Fiscal Policy Reforms since 1991

Fiscal Responsibility in India: FRBM Act

Principles of Fiscal Federalism

Impact of Fiscal Reforms on Fiscal Consolidation

The Finance Commission

### **Unit 6: TRADE AND INVESTMENT POLICY**

Trade Policy

Import Substitution-based Industrialization; Export-led Growth; Current and Capital Account

Convertibility; Trade Policy prior to 1991; Trade Policy since 1991

FDI Policy

First Phase (1950-1980)

Second Phase (1980-91)

Third Phase (Post -1991)

FII Policy



## References

1. Bhagwati, J and Desai, P (1970): *India: Industrialisation*. Oxford University Press, Delhi.
2. Bhat T. P. (2013): *Growth and Structural Change in Indian Industries*, Institute for Studies in Industrial Development (ISID), 2013/2.
3. Rangarajan, C (2009): "Paradigm Shifts in Industrial Policy," in C. Rangarajan: *India: Monetary Policy, Financial Stability and Other Essays*, Academic Foundation, New Delhi
4. Shetty, S. L. (1978), Structural Retrogression in the Indian Economy since the Mid-Sixties, *Economic and Political Weekly*.
5. Thakur, B, Gupta, R. & Singh, R. (2012), Changing Face of India's Industrial Policies: A Look, *International Journal of Scientific and Research Publications*, Volume 2, Issue 12.
6. Uppal, J. S. (1975) *India's economic problems*. Tata McGraw Hill

## Paper 4: MATHEMATICS FOR ECONOMICS

**Course objectives:** After completion of the course the learner will be able to know the preliminary mathematical techniques required for economic analysis.

**Course outcome:** This course will help learners use mathematical tools to describe economic phenomena and make predictions including precise projections and analysis.

### Course Contents:

#### Unit 1: FUNCTIONS AND ITS DERIVATIVE OR DIFFERENTIATION

Definition & Types of functions  
Concept of derivative or differentiation  
Rules of differentiation  
Higher order derivatives  
Slope and curvature  
Multivariate functions and their derivatives  
Higher Order partial derivatives  
Total differential and its rules  
Total derivative  
Homogeneous function  
Euler's theorem  
Homothetic function

#### Unit 2: APPLICATIONS OF FUNCTIONS AND DERIVATIVES IN ECONOMICS

Average and marginal functions  
Elasticity of demand  
Marginal revenue, marginal Products and marginal cost  
Profit maximization  
Cost minimization  
Slope and curvature of indifference curve and iso-quant

Relation between price elasticity and total expenditure  
Unit elastic demand curve  
Relation among AR, MR, and price elasticity of demand  
Relation among TR, MR, and elasticity of demand –  
Elasticity of factor substitution and shape of iso-quant  
Properties of Homogenous production function  
Homogeneous production functions and returns to scale  
Cobb-Douglas production function  
Product exhaustion (or Adding up) theorem  
Properties of CES production function.

### **Unit 3: MAXIMA AND MINIMA (EXTREMA) OF FUNCTIONS**

Concepts of Maxima and Minima –  
Identification of Maxima and Minima –  
Points of inflexion  
Optimization of Multivariate function  
Unconstrained and constrained optimization  
Constrained optimization with Lagrange Multipliers  
Sufficient condition for constrained optimization  
Application of Maxima and Minima in Economics  
Relation between AP and MP  
Relation between AC and MC  
Profit maximization  
Utility maximization with budget constraint  
Output maximization with cost constraint  
Cost minimization with output constraint  
Sign of co-efficients of a cubic cost function

### **Unit 4: INTEGRATION AND ITS APPLICATION**

Definite integral: Properties  
Definite integral as an area under a curve  
Indefinite integral  
Rules of integration  
Application of integration in Economics:  
Finding out total function from marginal functions  
Demand function from elasticity of demand  
Indifference curve from MRS function  
Iso-quant from MRTS function  
Measurement of consumer's surplus and producer's surplus

### **Unit 5: MATRICES AND DETERMINANTS**

Definition

Matrix operations  
Different types of matrices  
Determinant of a matrix  
Properties of determinants  
Inverse matrix  
Solution of a system of linear equations by matrix inversion method  
Hessian determinant and Hessian- bordered determinant  
Application of matrix and determinant operations in Economics:  
Derivation of Slutsky equation  
Leontief static open model-  
Cramer's rule for solving IS– LM model

### **Unit 6: DYNAMIC ANALYSIS**

Difference Equation  
Solutions of first order and second order difference equation  
Differential equation – Solution of a first order differential equation  
Application of difference equation (First Order) in Economics  
Keynesian dynamic multiplier  
Cobweb model  
Multiplier and accelerator model of trade  
Application of differential equation in Economics  
Domar Model of Economic growth  
Dynamic Optimization and its Application

### **References:**

1. Blume, L. and Simon, C.: *Mathematics for Economists*, Norton, 1994.
2. Bradeley, Teresa: *Essential Mathematics for Economics and Business*. John Wiley & Sons, 2013
3. Chiang, A.C.: *Fundamental Methods of Mathematical Economics*, Third Edition, McGraw-Hill 2005.
4. Chiang, A.C. and Wainwright, K.: *Fundamental Methods of Mathematical Economics*, Fourth Edition, McGraw-Hill, 2005.
5. Chiang, A.C., *Elements of Dynamic Optimization*, McGraw-Hill, 1993.
6. Dixit, A: *Optimization in Economic Theory*, Oxford University Press, 1976.
7. Henderson, J.M. and Quandt, R.E.: *Microeconomic Theory: A Mathematical Approach*, 3rd Edition, McGraw-Hill Book Company, 1980.
8. Hoy, Michael, John Livernois, Chris McKenna, Ray Rees, and Thanasis
9. Stengos. *Mathematics for economics*. MIT press, 2011. Intrilligator: *Mathematical Optimization and Economic Theory*, Prentice Hall, 1971.
10. Sarkhel, Jaydeb and Anindya Bhukta: *An Introduction to Mathematical Techniques for Economic Analysis*. Book Syndicate, Calcutta, 2000
11. Shone, Ronald, *Economic Dynamics*, Cambridge University Press, 1997.
12. Sydsaeter, K. and Hammond, P.: *Mathematics for economic analysis*, Pearson Education, 2002.
13. Turkington, D. A. (2006): *Mathematical tools for economics*. Wiley-Blackwell.

## **Paper 5: ECONOMICS OF THE SOCIAL SECTOR**

**Course objectives:** After studying this paper learners will be able to understand that the ongoing process of economic reform in India is the emerging keen interest in social development and also will realize its mutuality with economic growth.

**Course outcome:** This paper will help learners understand how the world works, including how political decisions and current events are influenced by resources.

### **Course Contents:**

#### **Unit 1: IMPORTANCE OF SOCIAL SECTOR**

Why Study the Economics of Social Sector?  
Social Sector and Welfare

#### **Unit 2: SOCIAL DEVELOPMENT AND DEPRIVATION**

Development Indices  
Human Development Index (HDI)  
Inequality Adjusted HDI  
Gender Development Index (GDI)  
Gender Empowerment Measure (GEM)  
Deprivation Indices  
Uni-Dimensional Measure:  
Sen's Index  
FGT Index  
Multidimensional Deprivation:  
Human Poverty Index (HPI),  
Multidimensional Poverty Index (MPI)  
Human Development in an Unequal World

#### **Unit 3: ECONOMICS OF EDUCATION**

Education as an instrument for economic growth  
Demand for education — private demand and social demand  
Benefits of education — Direct and indirect benefits,  
Effects of education on poverty and income distribution  
Effects of education on employment  
Policy on Education in India since Independence

#### **Unit 4: ECONOMICS OF HEALTH**

Health dimensions of development  
Health Inequality and Socio-Economic Status  
Determinants of health — poverty, malnutrition and environmental issues

Major Initiatives of the Government

### **Unit 5: DEMOGRAPHY AND DEVELOPMENT**

Fertility decline

Theory of demographic transition

Demographic dividend

India's demographic dividend

### **Unit 6: ECONOMICS OF SOCIAL INFRASTRUCTURE**

Infrastructure as a public good

Social and physical infrastructure

Role of infrastructure Understanding

India's Progress in Social Infrastructure

### **References:**

1. Alkire, S. and Foster, J. (2009). Counting and Multidimensional Poverty Measurement. *OPHI Working Paper 32*. University of Oxford, UK.
2. Alkire, S. (2002): *Valuing Freedoms — Sen's Capability Approach and Poverty Reduction*, Indian Edition, Oxford University Press, New Delhi, 2002.
3. Banerjee, A. and E. Duflo (2011): *Poor Economics, Public Affairs*, 2011.
4. Bardhan., P. and C.Udry .(1999) Population Chapter (Section IV), *Development Microeconomics*, OUP
5. Birdsall, N. (1988): Economic Approaches to Population Growth in H. Chenery and T.N. Srinivasan (eds.) *Handbook of Development Economics*, Volume-I, Elsevier Science Pubs. B.V.
6. Canning, D., and Pedroni, P. (2004): The Effect of Infrastructure on Long Run Economic Growth, *Working Paper*, Harvard University. [web.williams.edu/Economics/wp/pedroniinfrastructure.pdf](http://web.williams.edu/Economics/wp/pedroniinfrastructure.pdf)
7. Cowell, F. (1995). *Measuring inequality* (2nd ed.). Prentice Hall.
8. Dinniwidy, C.L. and F. J. Teal. (1996): Principles of Cost-Benefit Analysis for Developing Countries, CUP.
9. Drèze, Jean, and Amartya Sen (2015). *An uncertain glory: India and its contradictions*. Princeton University Press, 2013.
10. Mehrotra, S. K., & Delamonica, E. (2007). *Eliminating human poverty: macroeconomic and social policies for equitable growth* (Vol. 1, No. 84277-84774), Zed Books.
11. Sitaprabhu, K and Sandhya S Iyre (2018): *Human Development in an Unequal World*. OUP.
12. Human Development Reports, Technical Notes: UNDP-various issues
13. India Development Report, IGIDR
14. India Infrastructure Report, OUP
15. India Social Development Report, Council for Social Development, OUP-Variou Issues.

## **Semester- 2**

### **Paper 6: MICROECONOMIC THEORY**

**Course Objectives:** After completion of the course the learners will be able to: Learn the basic idea of Microeconomics in particular and Economics in general.

**Course Outcome:** This course will help learners understand how individuals, families and businesses make decisions in the face of limited resources. Learners will understand how to use scarce resources efficiently to achieve economic growth, stability and prosperity.

### **Course Contents:**

#### **Unit 1: INTRODUCTION TO BASICS OF CONSUMPTION**

Budget Line  
Ordinal vs Cardinal Utility  
Indifference Curves  
Revealed Preference Theory  
Duality approach:  
Indirect Utility Function and its properties  
Expenditure Function  
Consumer surplus  
Equivalent and compensating variation  
Revealed preference Theory

#### **Unit 2: THEORIES OF PRODUCTION, COST AND PROFIT MAXIMISATION**

Production Function:  
Various types of Production Function  
Leontief Production function  
General Concept of Homogeneous production Function and its properties  
Cobb-Douglas as representative of Homogenous production function  
CES Production Function  
Homothetic production function  
Isoquants  
Properties of Isoquants  
Returns to Scale  
Finding the optimal Employment of inputs by isoquant and iso-cost lines  
Cost function:  
Various Types of cost function  
Relation between short run cost and long run cost curves  
Derivation of LRAC curve from SRAC curve  
Economies of scale and Diseconomies of Scale  
The learning Curve  
Application of duality Approach  
Market Structure:  
Perfect Competition  
Assumptions,  
The perfectly competitive firm as a price taker  
Short-run equilibrium under perfect competition  
Break-even point and Shut down point  
Supply curve of the firm under perfect competition

Long run Equilibrium under industry in perfect competition  
Monopoly: Basic Theory  
Sources of monopoly power  
Lerner's Degree of monopoly power  
Profit Maximization in the short- run  
Social Cost of monopoly  
Price Discrimination under Monopoly: different degrees  
Peak Load Pricing

### **Unit 3: ALTERNATIVE THEORIES OF THE FIRM**

Baumol's sales Maximisation model  
Williamson's model of managerial discretion  
Marris model of managerial enterprise  
Full cost pricing rule  
Behavioural theory of the firm

### **Unit 4: GAME THEORY**

Static Games of Complete Information –  
Solution Concepts-Pure and mixed strategy, Nash applications  
Dynamic Games of Complete Information and Solution Concepts  
Sub-game perfect Nash  
Backward induction  
Applications

### **Unit 5: GENERAL EQUILIBRIUM AND WELFARE**

Concept of General Equilibrium  
Walras Law: Existence, Uniqueness and Stability of General Equilibrium  
Two-sector General Equilibrium Models  
Compensation Principle:  
Kaldor -Hicks -Scitovsky tests  
Kaldor- Hicks criterion in terms of utility possibility curve  
Scitovsky double criterion  
Samuelson's criterion  
Little's criterion  
A.K. Sen's Approach  
Social Welfare Function  
Bergson frontier  
Arrow's social choice and individual values

### **Unit 6: ECONOMICS OF RISK AND UNCERTAINTY**

Von Neumann- Morgenstern Utility Function

Preferences over Lotteries  
Expected utility theorem— Applications and its critique  
Attitude towards Risk  
Measures of absolute and relative risk aversion  
Moral Hazard and Adverse selection

### References:

1. Hal R. Varian. *Microeconomic Analysis*, W.W. Norton and Company, 3 rd Edition, 1992.
2. Hal R. Varian : *Intermediate Microeconomics: A Modern Approach* (Eighth International Student Edition).2014.
3. H. Gravelle and R. Rees. *Microeconomics*, Pearson Education, 3 rd Edition, 2004.
4. F. Cowell. *Microeconomics*, Oxford University Press, 2006.
5. James M. Henderson and Richard E. Quandt. *Microeconomic Theory: A Mathematical Approach*. 3<sup>rd</sup> Edition, McGraw Hill Book Company 1980
6. C. Snyder and W. Nicholson, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.
7. W. Nicholson, *Microeconomic Theory*, The Dryden Press, Japan,1985.
8. Gibbons Robert: *Game Theory for applied economists*, 1992, Princeton University Press
9. E.Silberberg,: *The Structure of Economics: A Mathematical Analysis*, 1990, McGraw Hill, Second Edition.
10. Baumol,W.J. *Economic Theory and Operations Analysis*, PHI,1977.
11. J. Gans, King S, Stonecash R, Mankiw NG. *Principles of economics*, Cengage Learning; 2011
12. Von Neuman,J. and O. Morgenstern: *Theory of Games and Economic Behaviour*. Princeton University Press:1944.

## Paper 7: INDIAN ECONOMY-II (REFORMS AND CONTEMPORARY ISSUES)

**Course Objectives:** Building on the more aggregative analysis of trends in the Indian Economy, this course examines sector-specific trends in key indicators and their implications in the post-Independence period

**Course Outcome:** This course will help learners understand how the changes have led to economic growth and how these have benefitted our country in several ways.

### Course Contents:

#### Unit 1: INDIAN ECONOMY ON THE PATH OF REFORMS

Rationale of economic reforms in India  
Political economy aspects of reforms  
Typology of reforms

#### Unit 2: FINANCIAL SECTOR REFORMS IN INDIA



Reforms in Money Market  
Reforms in Capital Market  
Progress after Reforms

### **Unit 3: MONETARY POLICY**

Objectives of Monetary Policy  
The Evolution of Monetary Policy Operating Framework  
Globalization of Monetary Policy  
Changing Contours of Monetary Policy in India

### **Unit 4: INDIA'S EXTERNAL SECTOR**

General overview  
Contours of external sector reforms  
Joining hands with WTO and its impact on India  
Impact assessment of balance of trade and balance of payments position  
Impact of capital inflows  
Issues related to accumulation of foreign exchange reserves

### **Unit 5: INDIA'S SERVICES REVOLUTION**

Increasing Importance of the Services (or Tertiary) Sector  
Trend and Composition within the Tertiary Sector  
Growth in the Service sector  
Performance of India's services sub -sectors  
Factors Responsible for the Spurt in Services Growth  
Impact of Service Sector –driven growth on employment and poverty

### **Unit 6: INDIA'S GROWTH EXPERIENCE**

Seven Decades of India's Growth Experience  
Reforms as Catalyst to the Growth Process

### **References:**

1. Kapila, U. (ed.) *Indian economy since Independence*. 2015-16, Academic Foundation, 27th Rev.Ed.
2. Joshi, V. *India's long road, the search for prosperity*. 2017, Oxford University Press.
3. Bhagwati, J and A.Panagariya: *India's tryst with destiny*. 2014, Harper-Collins Publishers,2014
4. Dreze, J. and A. Sen *An Uncertain Glory: India and its contradictions*. 2014, Penguin, UK.
5. Reddy, Y.V., N. Valluri and P. Ray *Financial and fiscal policies: Crises and new realities*. 2014 Oxford University Press, New Delhi.
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## **Paper 8: MACROECONOMIC THEORY**

**Course objectives:** After the completion of the course the learner will be able to be equipped with the knowledge of basic functioning of a market economy at the macro level including understanding of national income accounting in both close and open economy

**Course Outcome:** This course will help learners to understand how the economy functions as a whole, including how national income and employment are determined. It will also help to understand economic fluctuations, inflation and deflation.

### **Course Contents:**

#### **Unit 1: KEYNESIAN AND POST-KEYNESIAN MACRO ECONOMIC MODELS**

Keynes vs. Classics

Neo-classical Synthesis of Keynes' General Theory: Hicks, Patinkin

Keynes in Walrasian framework

Transition to Disequilibrium Macroeconomics: Clower, Leijonhufvud, Barro-Grossman, Malinvaud, Benassy

#### **Unit 2: RATIONAL EXPECTATIONS AND NEW CLASSICAL MACROECONOMICS**

Imperfect Information Model:

Role of Expectations in Macroeconomics

Adaptive Expectation Hypothesis

Rational Expectation Hypothesis

Rational Expectation and Policy Ineffectiveness Proposition

Workers' Misperception Model

Phillips Curve Analysis

Short-run and long run Phillips curve; Samuelson and Solow— the natural rate of unemployment hypothesis; Lucas ‘surprise’ supply equation: Application to financial crisis of recent past

### **Unit 3: NEW KEYNESIAN MACROECONOMICS**

Sticky Price (Menu Cost Model); Efficiency Wage Model (A very simple formulation of Romer, 2005); Insider-Outsider Model of Lindbeck and Snower (1986)

### **Unit 4: REAL BUSINESS CYCLE (RBC) THEORY**

Main Features of RBCs

Simple Real Business Cycle Model

Technology shocks

How a technology shock will influence on aggregate output and employment

Policy Implications of Real Business Cycle Theory

Criticisms of Real Business Cycle Theory

### **Unit 5: BASICS OF INFINITE HORIZON MODEL & OVERLAPPING GENERATION MODEL (OLG)**

Ramsey Model — Command vs. Control Economy

Governments’ role in a decentralized economy

OLG basic model — two period & dynamic inefficiency

### **Unit 6: STRUCTURALIST MACRO MODELS**

Seminal ideas of Lewis and Kaldor

Kaldor’s agriculture- industry model & inter- sectoral Terms of Trade

Kaleckian Development Model

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## **Paper 9: BASIC ECONOMETRICS**

**Course Objectives:** After completion of the course the learner will be able to know the basics of econometrics

**Course outcome:** Studying econometrics will help learners develop skills that are useful in a variety of fields, including finance, business, government and academia. Learners will learn to analyze economic data and gain insights.

### **Course Contents:**

#### **Unit1: DEFINITION, SCOPE AND GOALS OF ECONOMETRICS**

What is Econometrics?

Relationship between Econometrics and Economic Theory

Econometrics and statistics

Branches of econometrics

Goals of econometrics

Methodology of Econometrics Research

#### **Unit 2: THE CLASSICAL LINEAR REGRESSION MODEL (CLRM)--I**

Introduction to Regression: the CLRM

The OLS method of Estimation

The assumptions of the CLRM

Properties of the OLS estimators -

- i. Linearity
- ii. Unbiasedness
- iii. Efficiency and BLUEness
- iv. Consistency

The overall goodness of fit

Problems associated with  $R^2$

#### **Unit 3 THE CLASSICAL LINEAR REGRESSION MODEL (CLRM)--II**

Multiple Regression

#### **Unit 4: VIOLATING THE ASSUMPTIONS OF THE CLRM-I**

Multicollinearity

Causes

Consequences

Types of Multicollinearity

Enhancement synergism  
Change in sign  
Tests and Remedies

### **Unit 5: VIOLATING THE ASSUMPTIONS OF THE CLRM -II**

Heteroskedasticity  
Causes  
Consequences  
Tests and Remedies

### **Unit 6: VIOLATING THE ASSUMPTIONS OF THE CLRM-III**

Autocorrelation  
Causes,  
Consequences  
Tests and Remedies

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### **Paper 10: DEVELOPMENT ECONOMICS**

**Course Objectives:** After completion of the course the learner will be able to know the current theoretical and empirical issues and problems concerning economic development.

**Course Outcome:** Through this course learners will understand how to improve economic, social and fiscal conditions of our countries and they will be able to improve their quality of lives.

### **Course Contents:**

#### **Unit 1: MACRO PERSPECTIVE OF DEVELOPMENT**

The idea of Vicious Circle of Poverty  
Industrialization and Balanced Growth  
The Problem of Coordination failures

## **Unit 2: RURAL ECONOMY**

Rural Employment  
Rural Credit: Credit Labour Interlinkage  
Agriculture and Rural Industrialization  
Non-farm Sector Growth  
Rural Credit and Microfinance  
Why Doesn't Microfinance Work?  
Factors to Future Success of Micro finance

## **Unit 3: OPEN ECONOMY DEVELOPMENT ISSUES**

Terms of Trade and Dependence  
Unequal Exchange  
FDI  
Transfer of Technology  
Role of World Bank  
Globalization and Development

## **Unit 4: INSTITUTION AND DEVELOPMENT**

A Framework for the Study of Institution:  
Vertical hierarchies and Horizontal/ circular networks  
Examination of Vertical Hierarchies  
Government and Corporation  
Role of State in Growth and Development

## **Unit 5: CAPABILITY APPROACH TO DEVELOPMENT**

The Capability Approach and its Potential  
What are capabilities?  
Equality of What?  
Capabilities and Functionings  
Freedom and agency  
Education in the capability approach

## **Unit 6: POVERTY AND INEQUALITY**

Trends in World Inequality  
Poverty and Inequality  
Multidimensional Poverty  
Implications for India

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## **Semester-3**

### **Paper 11: PUBLIC ECONOMICS**

**Course Objectives:** The course deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The subject encompasses a host of topics including public goods, market failures and externalities. The learners will be able to know the theory of public economics and its application in the Indian economy.

**Course Outcome:** This course will help learners understand the various functionalities of the government. Like how the government uses its resources to influence the economy, including taxation, spending and regulation and how the governments works for improving the welfare of its citizens.

#### **Course Contents:**

#### **Unit 1: PRINCIPLES OF PUBLIC FINANCE**

Principles of maximum Social Advantage  
Role of public finance in the developing economies  
Public Economics - Of allocation, distribution and stabilization — Functions.  
Market failure - Public goods and externalities  
Coase Theorem  
Public goods and free-rider problem

#### **Unit 2: PRINCIPLES OF TAXATION**

Meaning and type of taxes  
Requirements of a good tax structure  
Approaches to taxation  
Micro analysis of direct and indirect taxes  
Individual income tax  
Corporation income tax  
Sales tax including value-added tax and expenditure tax  
Incidence of taxes  
Nature of tax burden and principles of tax incidence  
Theories and measures of tax incidence  
Trade-off between equity and efficiency  
Optimal taxation



### **Unit 3: PUBLIC EXPENDITURE**

Wagner's law of increasing state activities  
Wiseman- Peacock hypothesis  
Pure theory of public expenditure  
Structure and growth of Public expenditure

### **Unit 4: ECONOMICS OF PUBLIC DEBT**

Sources of public debt  
Classical view of public debt  
Compensatory aspect of debt policy  
Burden of public debt  
Management of public debt

### **Unit 5: INDIAN PUBLIC FINANCES**

Indian tax system  
Revenue of the Union and States  
Major taxes in India  
Direct tax  
Indirect tax  
Goods and Services Tax (GST)  
Taxation on agriculture  
Expenditure tax  
Reforms in direct taxes  
Reforms in Indirect taxes  
Taxes on services  
Non-tax Revenue of the Centre and the States  
Trends in public expenditure in India  
Trends in Public debt in India  
Finance Commission in India—A note

### **Unit 6: FISCAL FEDERALISM**

Federalism—As a Form of Government  
Fiscal Federalism  
Vertical and Horizontal Imbalance  
Fiscal Transfers  
Competitive and Cooperative Federalism  
Devolution of resources and grants  
Resource transfer from Union to States  
Criteria for transfer of resources  
Centre – State Financial Relations in India

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## Paper 12: FINANCIAL ECONOMICS

**Course objectives:** After completion of this course, learners will be able to know about fair value, risk and returns, and the financing of securities and assets. Numerous monetary factors are taken into account, too, including interest rates and inflation.

**Course outcome:** Through this course learners will be able to understand the basics of investment and risk. They will also get to know the economics of inflation, deflation, unemployment, recession and boom

### Course Contents:

#### Unit 1: TIME VALUE OF MONEY

Time value of money and opportunity cost of capital  
Future Value of a cash flow: concepts of compounding  
Present value of a cash flow: concepts of discounting  
Valuing different types of cash flows  
Valuing level cash flows: different types of annuities & perpetuities  
Real versus nominal interest rate: Fisher's equation

## **Unit 2: ALTERNATIVE DECISION-MAKING RULES FOR INVESTMENT DECISION**

Payback method  
Accounting rate of return  
Net present value method  
Internal rate of return method  
Terminal value method

## **Unit 3: PORTFOLIO THEORY**

Mean Variance Criterion  
Systemic & Un-systemic risk  
Portfolio Diversification-  
Risk and Return\_ Markowitz analysis  
Capital Asset Pricing Model  
Arbitrage Pricing Theory

## **Unit 4: FINANCIAL MARKETS**

Analysis of Financial Markets  
Fundamental analysis,  
Technical analysis,  
Efficient Market Hypothesis  
Functioning of different Financial Markets:  
Money Market  
Capital markets and its components:  
Stock market  
Bond market  
Forwards Market,  
Futures & Options Market,  
Currency Futures & Currency Options Market  
Concept of Derivatives and its Classification

## **Unit 5: FACTORING AND FORFAITING**

Meaning and Concept  
Contract of Factoring  
Types of Factoring Services  
Modus operandi of Factoring

Forfeiting

## **Unit 6: FINANCIAL RISK**

The Growth of Modern Financial Markets

Market theory

How options work

Risk vs reward

Derivative and Leverage

Credit Risk in an interest-rate swap

Credit Risk in a currency swap

Operational risk

Insurance as a Risk management Technique

### **References:**

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## **Paper 13: ENVIRONMENTAL AND RESOURCE ECONOMICS**

**Course Objectives:** This course focuses on economic causes of environmental problems. Selected topics on international environmental problems are also discussed.

**Course outcome:** This course will help learners understand how to balance economic growth with environmental protection. Learners will learn about climate change, recycling and nuclear power.

## **Course Content:**

### **Unit 1: ECONOMY AND THE ENVIRONMENT**

Economy-Environment Interaction,  
The economics of the linkages between trade and the environment  
Environmental Externalities

### **Unit 2: POLLUTION CONTROL**

Market instruments for pollution control,  
Non-market instruments for pollution control,  
Relative effectiveness of Market and Non –Market instruments in developing countries

### **Unit 3: VALUATION OF ENVIRONMENTAL GOODS**

Contingent valuation  
Hedonic valuation  
Travel cost methods  
Is There a Role for Benefit-Cost analysis in Environmental Valuation?

### **Unit 4: ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT**

Economic Growth and Environmental Sustainability: The Prospects for Green Growth  
The Growth Illusion: How Economic Growth Enriched the Few, Impoverished the Many and Endangered the planet  
The Rise and Fall of Sustainable Development, 1992-2012.  
Ensuring a Sustainable and Inclusive Globalization  
National Income and Green Accounting

### **Unit 5: RENEWABLE RESOURCE AND EXHAUSTIBLE RESOURCES MANAGEMENT**

Common Property Resources  
Management of resources in a globalized world  
Implications for ‘sustainability’ of current resource use and management

### **Unit 6: ECONOMICS OF CLIMATE CHANGE**

The Stern Review  
Major Conclusion of the Stern Review  
The Brave New World of Carbon Trading  
Carbon Trading: Theory and Consequent policies

Managing “the Climate Change Problem through Emission Control, Sequestration, geo-Engineering, Mitigation and Adaptation  
To what extent Climate Change will impact on Development?

## References:

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2. Berck, P and G. Helfand, *The Economics of the Environment*, First Edition, Addison-Wesley, 2011.
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## **Paper 14: INTERNATIONAL ECONOMICS**

**Course objectives:** Learners of International Economics can make use of the skills and tools learned in a wide range of career paths, such as journalism, consultancy, government agencies and international institutions, while at the same time enjoying the ability to make sense of some of the most important and complex issues of our times.

**Course Outcome:** Through this course learners will get to know how people understand the world and how countries interact on a global scale by being economically independent through trade, investment and financial market.

### **Course Contents:**

#### **Unit 1: INTERNATIONAL TRADE AND DEVELOPMENT PARADIGMS**

Mercantilist Theory of Trade and Development  
 Classical Political Economists on Trade and Growth  
 The Post-World War II Debate on Free Trade vs. Trade Protection  
 Export Pessimism and Legacy of Inward-Looking Development Strategy  
 Recent development crises

#### **Unit 2: PROBLEMS OF TRADE IN PRIMARY COMMODITIES**

Prebisch-Singer Hypothesis of Unequal Distribution of Gains  
 Critique of Secular Deterioration of TOT  
 Unequal Exchange: Frank, Kay and Emmanuel

#### **Unit 3: UNEVEN DEVELOPMENT AND TRADE**

Structuralist Theories: Foreign Exchange, Savings, and Growth  
 Lewis-Nurkse Growth Process and Economic Dependence  
 North-South Trade

#### **Unit 4: TRADES, POVERTY AND INEQUALITY**

International trade and Globalization

Convergence debate and inequality among nations

### **Unit 5: CAPITAL MOBILITY AND LABOUR MIGRATION**

International capital mobility and economic growth

FDI, Growth and Welfare

Outsourcing

Role of MNCs

Labour mobility /Migration and its impact on economic development.

International trade in services

### **Unit 6: WTO AND THE MULTILATERAL TRADE AGREEMENTS**

Evolution, Structure and Functions of WTO

WTO Rules and Principles of Trade policy

Dispute Settlement Mechanism

The WTO Agreements on Services

Trade Rounds and the WTO

WTO and India

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## **Paper 15: GROWTH ECONOMICS**

**Course objectives:** The study of economic growth provides learners with both a theoretical and empirical understanding of how all these factors ('ingredients') combine together to provide the right recipe for a country's long-run growth.

**Course Contents:** Through this course learners will understand how a country can achieve long-term growth and how countries achieve higher real incomes which can improve people's well being.

### **Unit 1: EQUILIBRIUM GROWTH MODELS WITHOUT MONEY**

Concept of economic growth, the rate of growth and the equilibrium rate of growth  
Harrod- Domar model

### **Unit 2: THE NEOCLASSICAL GROWTH MODEL WITHOUT MONEY**

Solow Model: Basic Assumptions  
Dynamics and Equilibrium in Solow model (existence, uniqueness and stability of steady state): INADA Conditions  
Implication of Solow Model: Golden rule of capital accumulation  
Convergence

### **Unit 3: THE CAMBRIDGE MODEL OF ECONOMIC GROWTH**

Kaldor's model and its implications  
Pasinetti model

### **Unit 4: GROWTH AND TECHNICAL PROGRESS: DISEMBODIED TECHNICAL PROGRESS**

Harrod –neutral  
Solow- neutral  
Hicks- neutral

### **Unit 5: CONVERGENCE OF GROWTH**

Absolute vs Conditional Convergence  
 $\beta$  Convergence  
 $\sigma$  convergence

Implications

## Unit 6: MODERN THEORY OF GROWTH

Dissatisfaction with neoclassical theory

One sector models of endogenous growth: the AK model-

Endogenous growth and human capital formation: the Lucas model-

Endogenous growth and R& D- Romer model

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## Semester- 4

### Paper 16: PROJECT WORK WITH COMPUTER APPLICATIONS

**Course objectives:** One main reason for the use of computers in economic analysis and forecasting is the widespread availability of in expense, convenient microcomputers. For a small investment of time and effort one can now, perform various financial analyses more easily and quickly. The end result is increased productivity.

**Course outcome:** Through this course learners will gain clarity in the entire subject ny providing structure and clarity and empowering teams to work efficiently, meet deadlines and deliver successful outcomes,

**Project Report 40**

**Viva 10**

This course will be different from other courses as it visualises a fully computer lab-based teaching course. This course also provides a basic idea of how problem can be formulated, how to take up a research project and also the steps that need to follow in any primary data-based research study. The learners are expected

to acquire enough competence in handling application of computer packages so that they can use that knowledge in the preparation of the research Project Work.

### **Course Contents:**

#### **Unit 1: Essential Steps in Primary Data Collection:**

Problem selection,  
Testing of hypothesis and Inference  
Sample design  
Designing of questionnaire  
Pre-testing of questionnaire for collection of primary data,  
Introduction to secondary data sources.

#### **Unit 2: Estimation of descriptive statistics**

Mean  
Median  
Mode  
Measures of dispersion  
Skewness and kurtosis  
Simple correlation  
Rank correlation  
Graphical representation of data sets  
Pie chart  
Bar chart  
Linear and nonlinear curve fitting  
Introduction to probability theory  
Random sampling using random number table  
Chi-Square  
ANOVA based Tests.  
(The Software to be used will be STATA.)

#### **Unit 3: Regression Model**

Linear regression model  
Test for linear restriction on parameters test of heteroscedasticity  
Test for linear restriction on parameters test of autocorrelation  
Test for linear restriction on parameters test of multicollinearity  
Application of dummy variable models  
Simple models with limited dependent variable –  
Logit and Probit  
Examples from economic behaviours.  
(The Software to be used will be STATA.)

#### **Unit 4a: Basics of Time series**

Univariate Time Series Modelling - ARMA and ARIMA Process;  
Test of Stationarity –  
Unit Root Test,  
Augmented Dickey-Fuller Test;  
Non-Stationary Series:

Co-integration and Granger causality.  
(The software to be used will be E-Views.)

#### **Unit 4b: Basics of Panel Data Analysis**

Introduction to Panel Data  
The Random Effects  
Estimator vs. The Fixed Effects Estimator — The Hausman Test;  
(The Software to be used will be STATA.)

#### **Unit 5: Multivariate Analysis**

Multiple Regression  
Factor Analysis  
Discriminant Analysis  
Cluster Analysis.  
(The Software to be used will be SPSS.)

#### **Unit 6: Preparation of the Project Report:**

The learners are supposed to come up with a conclusive answer to a particular proposed research question. Finally, a report will have to be submitted by the student. Essential components are: they must apply computer packages

### **SPECIAL PAPER (EITHER A or B)**

#### **A. AGRICULTURALECONOMICS**

##### **Paper 17A: AGRICULTURE AND ECONOMIC DEVELOPMENT**

**Course objectives:** Agricultural economics plays a role in the economics of development, for a continuous level of farm surplus is one of the wellsprings of technological and commercial growth. In general, one can say that when a large fraction of a country's population depends on agriculture for its livelihood, average incomes are low.

**Course outcome:** This course will help learners understand that agriculture is the main driver of development in rural areas and it provides employment for a larger portion of the country's workforce.

#### **Course Contents:**

##### **Unit 1: AGRICULTURE AND ECONOMICDEVELOPMENT IN HISTORICAL PERSPECTIVE**

Interrelationships between Agriculture and Industry  
The problem of Balance  
Agriculture in Europe and Russia  
Agriculture's role in Asian Economic Development—  
The Japanese Experience  
The Chinese Experience  
The Case of India

## **Unit 2: CONTRIBUTION OF AGRICULTURE IN ECONOMIC DEVELOPMENT**

Measurement Problems in the Agricultural Sector  
The Product Contribution  
The Factor Contribution  
The Market Contribution  
Their Measurements

## **Unit 3: THEORY OF AGRICULTURE IN ECONOMIC DEVELOPMENT**

Disguised Unemployment in Agriculture  
Economic Theory and Agrarian Economics  
Balanced Growth between Agriculture and Industry

## **Unit 4: LANDS REFORMS AND ECONOMIC DEVELOPMENT**

The Historical Aspect  
The Economic Aspect  
The Demographic Aspect  
The Case of India

## **Unit 5: INTERNATIONAL COMMODITY AGREEMENTS**

Objectives of International Commodity Agreements  
Scope and Limitations of International Commodity Agreements  
A Brief History of Some Major International Commodity Agreements  
The Case of India

## **Unit 6: PEASANT ECONOMY**

Chayanov's Theory of Peasant Economy  
Different types of Peasants and their Adoption of suitable technology  
Intra-Household Relationship  
Role of women in agriculture

### **References:**

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11. Shiva, Vandana (1999): *Stolen Harvest: Hijacking of the World Food Supply*, South End Press, New Delhi
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## **Paper 18A: AGRICULTURAL PRODUCTION AND FARM MANAGEMENT**

**Course objectives:** Farm management is one of the most important resources in operating farms. Farm management determines how the farm-life will be organized, resources allocated and activities performed. It deals with various strategies and methods to keep a farm productive, sustainable, resistant and profitable.

**Course outcome:** This course will help learners understand the role of agriculture in society and how to manage farms efficiently. Learners will also get to understand how to start and run a successful agricultural business which includes about learning funding options, such as grants, loans and venture capital.

### **Course Contents:**

#### **Unit 1: DEMAND FOR AND SUPPLY OF AGRICULTURAL PRODUCTS**

Price Response of Marketable Surplus  
Elasticity of demand for Farm Products

#### **Unit 2: PRICING OF AGRICULTURAL PRODUCTS**

Function of Prices  
Instability in Agricultural Price  
Types of Agricultural Instability

#### **Unit 3: AGRICULTURAL MARKETING AND ITS PROCESS**

Agricultural Marketing  
Meaning, Role, Definitions and Significance of Agricultural Marketing  
Problems of Agricultural Marketing

Marketing of Agricultural Produce in India  
How to improve agricultural Marketing?  
Process of Agricultural Marketing: Three Processes  
Marketing Functions  
Marketing Efficiency  
Efficient Marketing  
Approaches to Marketing Efficiency Estimation  
Technical and Pricing Efficiency  
Most Common approaches to the Study of Marketing

#### **Unit 4: FARM MANAGEMENT**

Meaning  
Scope  
Definitions  
Objectives  
Farm Management Decisions  
Organizational Management Decisions  
Administrative Management Decisions  
Marketing Management Decisions  
Economic Principles Applied to Farm Management

#### **Unit 5: FARM PLANNING AND MANAGING FARM RISK**

Farm Planning  
Why Farm Planning is Necessary?  
Characteristics of Good Farm Plan  
Limitations of Farm Planning  
Farm Budgeting  
Sources of Farm Risk  
Production Risk  
Price Risk or Marketing Risk  
Financial Risk  
Measures to Manage Farm Risk  
Diversification  
Insurance  
Agronomic Practices  
Market Risk Management  
Financial Risk Management

#### **Unit 6: FARM EFFICIENCY MEASURES**

Physical Efficiency Measures  
Financial Efficiency Measure

Cost Concepts and Income Measures  
Management of Firm resources

**References:**

1. Barefield, Alan (1996): *Introduction to agricultural economics*. Prentice Hall, 1996.
2. Nair, R. D. (2010): *Farm Management*. Concept Publishing Company.
3. Rane, A. A., and Deorukhkar, A. C. (2007): *Economics of agriculture*. Atlantic Publishers & Distribution.
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**Paper 19A: CONTEMPORARY ISSUES IN INDIAN AGRICULTURE**

**Course objectives:** With the completion of the course, learners learn how our current economy embraces less energy intensive tools of agricultural production but also adopts smart farming systems. By eliminating the use of fossil fuels and reducing energy use, sustainable farming helps in reducing greenhouse gas emissions, thereby playing a significant role in combating climate change.

**Course outcome:** This course will help learners understand how agriculture plays a vital role embodying the thrust areas such as to promote inclusive growth, to enhance rural income and to sustain food security.

**Course contents:**

**Unit 1: EFFICIENCY, FARM SIZE AND PRODUCTIVITY IN INDIAN AGRICULTURE**

Trends in Agricultural productivity of India  
International Comparison  
Findings of Farm Management Survey on Farm Size and Productivity  
Probable Explanations

**Unit 2: GROWTH AND EQUITY IN INDIAN AGRICULTURE**

Growth Rate in Indian Agriculture  
Gap between growth Rates in Agriculture and Non-Agriculture Sectors  
Issues of equity in Indian Agriculture  
Growth of Agricultural Labourers

**Unit 3: ISSUES AND PRIORITIES IN INDIAN AGRICULTURE**

Debate on Institutional Reforms  
Debate on New Technology  
Issues on Agricultural Marketing  
Terms of Trade between Agriculture and Industry  
Policy on Agriculture  
Agricultural Price Policy



Agi- Marketing Policy  
Procurement Policy

#### **Unit 4: FOOD AND NUTRITION SECURITY IN INDIA**

Concepts of Food and Nutrition Security  
Prerequisites  
Globalization and Food Security  
Climate Change and Food Security  
Impact of Climate Change on the Poor  
WTO and Food Security  
Food Security in India  
Public Distribution System  
Cases for Targeted Public Distribution System  
National Food Security Act, 2013  
Role of ICDS and Mid-Day Meal Scheme  
Nutrition Security in India  
Is nutrition security in India at stake?  
What should be done to realize food and nutrition security  
for all the citizens of India?

#### **Unit 5: CROP INSURANCE, CONTRACT FARMING AND FDI IN AGRICULTURE**

Crop Insurance:  
Meaning and Need for Crop Insurance  
Implementation of Crop Insurance Schemes in India  
Problems and Prospects of crop Insurance in India  
Contract Farming  
Meaning of Contract Farming  
Cases for and Against Contract Farming  
Role of Government Agencies in the Context of Contract Farming  
FDI in Indian Agriculture: Issues and Prospect  
Role of FDI in the Growth of Indian Agricultural Sector since  
Liberalization  
Foreign Direct Investment in Agriculture: Land Grab or Food Security  
Improvement?  
Entry of Corporates in Agricultural sector of India  
FDI and Its Impact on Employment in Agriculture Sector of Indian Economy

#### **Unit 6: WTO AND INDIAN AGRICULTURE**

Agreement on Agriculture (AoA) under WTO System  
Developing countries and WTO  
Globalization and Priority Issues for Indian Agriculture  
Issues related to Market Access – Debate on Green Box and Blue Box  
subsidies  
Impact of WTO on Indian agriculture

## Will Indian Agriculture prosper under WTO Rules and Regulations?

### References:

1. Aswal, N. (2015): Foreign Direct Investment and Its Impact on Employment in Agriculture Sector of Indian Economy. *HCTL Open International Journal of Technology Innovations and Research (IJTIR)*, 14.
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## **Paper 20A APPLICATIONS OF STATISTICS AND ECONOMETRICS FOR AGRICULTURAL ECONOMICS**

**Course objectives:** Econometrics allows economists to convert economic theories into quantifiable metrics. Econometrics is also crucial for establishing trends between datasets. Based on these trends, economists can also forecast future financial or economic trends. It also helps them get a specific pattern or result from cluttered data.

**Course outcome:** Through this course learners will. Understand how statistics help to monitor trends in agricultural commodity market, which can help to support policies like price supports and tariffs.

### **Course contents:**

#### **Unit 1: DIFFERENT FORMS OF PRODUCTION FUNCTIONS AND ECONOMETRIC TECHNIQUES FOR ESTIMATING AGRICULTURAL PRODUCTION FUNCTION**

Different forms of Production Functions  
 Linear Production Function  
 Quadratic Production Function  
 Cobb-Douglas Production Function  
 CES Production Function  
 Estimating Agricultural Production Function

#### **Unit 2: ESTIMATION OF SUPPLY RESPONSE AND MARKETED SURPLUS FUNCTION**

Estimation of supply response function  
Nerlovian Supply response Model  
Estimation of marketed surplus function:  
Rajkrishna Model  
T.N.Krishnan Model  
Behrman Model

### **Unit 3: FORECASTING DEMAND**

Trend analysis for Demand Forecast  
Elasticities of demand

### **Unit 4: ESTIMATION OF DEMAND AND SUPPLY THROUGH SIMULTANEOUS EQUATIONS MODEL**

Exactly Identified demand function  
Exactly Identified supply function

### **Unit 5: MEASUREMENT OF INSTABILITY IN AGRICULTURAL PRICES**

Graphical Analysis  
Quantitative Approach  
Cobweb model  
Corn-Hogg Cycle

### **Unit 6: MEASURING IMPACT OF CLIMATE CHANGE ON AGRICULTURE**

Strategies to adapt to an uncertain climate change  
The impact of climate change on agriculture in developing countries  
Will Indian agriculture survive climate change?

#### **References:**

1. Balcombe, K. (2011). The nature and determinants of volatility in agricultural prices: an empirical study. *Safeguarding food security in volatile global markets*, 85-106.
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**OR**

## **B. STATISTICS & ECONOMETRICS**

### **Paper 17B: ADVANCED STATISTICS**

**Course objectives:** Statistical knowledge helps the learners to use the proper methods to collect the data, employ the correct analyses, and effectively present the results. Statistics is a crucial process behind how we make discoveries in science, make decisions based on data, and make predictions.

**Course outcome:** Learners will be able to handle complex data and make sense of it through graphs, tables and various diagrams. Learners will also learn to evaluate the quality of data analysis as presented by others.

#### **Course Contents:**

#### **Unit 1: THEORY OF PROBABILITY-I**

Various concepts and the Elementary ideas of Set Theory  
The definition of probability  
Probability Theorems, assuming two events only  
Applications to the Theorems

## **Unit 2: THEORY OF PROBABILITY-II**

Random Variables and related elementary concepts  
Discrete and Continuous and Related concepts.  
Expectation and Variance of Random Variables  
Moment Generation Functions and Various Moments of a  
Random variable (both discrete and continuous)

## **Unit 3: PROBABILITY DISTRIBUTIONS**

Discrete: Binomial and Poisson  
Continuous: Uniform or Rectangular and normal

## **Unit 4: STATISTICAL INFERENCE OR SAMPLE STATISTICS**

Various types of sampling  
Concepts  
Applications,  
Merits  
Demerits  
The Concept of a Statistic  
Statistic and Parameter  
Sampling distribution of a statistic  
Mean and proportion (Formulae only)

## **Unit 5: THEORY OF ESTIMATION**

Point Estimation and interval Estimation:  
Concepts,  
Properties  
Applications

## **Unit 6: HYPOTHESIS TESTING**

The Concepts of Hypothesis Testing: Various Concepts  
Type I error  
Type II error  
z test  
t test  
Chi- square test  
F test  
Test for goodness of fit  
Tests for independence of attributes

## **References:**

1. V. K. Rohatgi and A. K. M. E. Saleh, (2000): *An Introduction to Probability and Statistics*, 2nd Edition, Wiley
2. Jay L. Devore. (2010): *Probability and Statistics for Engineers*, Cengage Learning.
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## **PAPER 18B: ADVANCED ECONOMETRICS-I**

**Course objectives:** Econometrics is a very significant branch of Economics. For future researchers Econometrics provides a strong analytical background and prepare them for more advanced research activity, for future finance specialists a module in Econometrics provide specific and common skills useful in finance area.

**Course outcome:** Learners will extensively learn to forecast economic trends, conducting policy evaluation, and understanding the impact of various factors on the economy.

### **Course Contents:**

#### **Unit 1: DUMMY VARIABLES**

Use of dummy variable  
Estimation and Interpretation  
Dummy Variable Trap  
Interaction Effect  
Application of Dummy Variable

#### **Unit 2: DYNAMIC ECONOMETRIC MODELS**

Distributed lag model  
Autoregressive models

#### **Unit 3: SIMULTANEOUS EQUATION MODELS**

Basic definitions  
Consequences of ignoring simultaneity  
Identification Problem  
Estimation of simultaneous equation models  
Example

#### **Unit 4: LIMITED DEPENDENT VARIABLE REGRESSION MODELS-I**

The linear probability model  
The problems with linear probability model

#### **Unit 5: LIMITED DEPENDENT VARIABLE REGRESSION MODELS-II**

The logit model

#### **Unit 6: LIMITED DEPENDENT VARIABLE REGRESSION MODELS-III**

The Probit model

### **Paper 19B ADVANCED ECONOMETRICS-II**

**Course objectives:** Econometrics is a very significant branch of Economics. For future researchers Econometrics provides a strong analytical background and prepare them for more advanced research activity, for future finance specialists a module in Econometrics provide specific and common skills useful in finance area.

**Course outcome:** Through this course learners will get to learn how different policies like monetary tightening or fiscal stimulus affect important variables like GDP growth and unemployment.

#### **Course Contents:**

##### **Unit 1: TIME SERIES ECONOMETRICS-I**

Arima models and the box-Jenkins methodology  
An introduction to time series econometrics  
ARIMA Models  
Examples of ARIMA model  
Stationarity  
Autoregressive time series models  
The AR (1) model  
The AR ( $\rho$ ) model  
Properties of the AR models  
Moving average models  
The MA (1) model  
The MA(q) model  
Properties of the MA models  
ARMA models  
Box-Jenkins model selection

##### **Unit 2: TIME SERIES ECONOMETRICS-II**

Modeling the variance: arch-garch models



The Arch-model  
The Garch model  
Vector autoregressive models and causality tests  
Learning objectives  
Vector Autoregressive (VAR) models  
The VAR model  
Pros and cons of VAR models  
The Granger causality test

### **Unit 3: TIME SERIES ECONOMETRICS-III**

Non-stationarity and unit-root tests  
Unit roots and spurious regressions  
What is a Unit root?  
Spurious Regression  
Explanation of spurious regression problem  
Testing for Unit roots  
Testing for the order of integration  
The simple Dickey-Fuller (DF) tests for unit roots  
The augmented Dickey-Fuller (ADF) tests for unit roots  
The Phillips-Perron (PP) test  
Cointegration and Error-correction Models  
What is cointegration?  
Cointegration and error-correction mechanism (ECM)  
Testing for cointegration  
Cointegration in single equations: Engle-Granger (EG) approach  
Drawbacks of the EG approach

### **Unit 4: TIME SERIES ECONOMETRICS--IV**

Identification in Standard and Co integrated Systems  
Identification in Standard case  
The order condition  
The rank condition

### **Unit 5: PANEL DATA ECONOMETRICS-I**

Traditional Panel Data Models  
The advantages of Panel data  
The linear panel data model  
Different methods of estimation  
Dynamic Heterogeneous Models  
Bias in dynamic Panels  
Solutions to the bias problem  
Solutions to heterogeneity bias

## Unit 6: PANEL DATA ECONOMETRICS-II

Non-Stationary Panels

Panel unit-root tests

Panel co-integration Tests

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14. Wooldridge, J.W: *Introduction to Econometrics*, South-Western,Division of Thomson Learning; International ed edition, 2005.
15. Wooldridge, J. M: *Econometric analysis of cross section and panel data*. MIT press. 2010.

### Paper 20B: ECONOMETRIC APPLICATIONS

**Course objectives:** Econometrics allows economists to convert economic theories into quantifiable metrics. Econometrics is also crucial for establishing trends between datasets. Based on these trends, economists can also forecast future financial or economic trends. It also helps them get a specific pattern or result from cluttered data

**Course outcome:** Through this course learners will be able to understand economic issues and make informed decisions. By quantifying the impact of economic policies on the economy.

**Course Contents:**

## **Unit 1: CROSS SECTIONAL REGRESSION ANALYSIS**

Two variable linear models  
The linear specification;  
Basic assumptions  
Least square estimators and their properties  
Tests of goodness of fit  
Inference in the least square model  
General linear model:  
OLS Estimators and their properties  
Tests of goodness of fit;

## **Unit 2: SOME ECONOMETRIC PROBLEMS**

Multicollinearity, heteroscedasticity, and auto-correlation (basic concepts, problems and remedial measures only)  
Endogeneity problem and Instrumental Variable Techniques

## **Unit 3: MULTIVARIATE ANALYSIS**

Multiple Regression  
Factor Analysis  
Discriminant Analysis  
Cluster Analysis.

## **Unit 4: LIMITED DEPENDENT VARIABLE**

Introduction to LOGIT and PROBIT Models.

## **Unit 5: TIME SERIES ANALYSIS**

Univariate Time Series Modelling - AR, MA and ARIMA Process  
Test of Stationarity  
Unit Root Test,  
Augmented Dickey Fuller Test  
Non-Stationary Series:  
Integrated Series  
Co-integration and Error Correction  
Granger causality

## **Unit 6: PANEL DATA ANALYSIS**

Introduction to Panel Data  
The Pooled OLS Estimator  
The Random Effects Estimator

The Fixed Effects Estimator  
GMM estimation of panel models

**This course will follow Statistical Packages like STATA and Eviews mostly. While some portions require the applications of SPSS.**

**References:**

1. Dimitrios, Asteriou & Stephen G. Hall (2011): *Applied Econometrics*, palgrave macmillan, New York.
2. Enders, W. (2014): *Applied econometric time series*. John Wiley & Sons.
3. Smith, A. D., & Taylor, J. E. (2016): *Essentials of applied econometrics*. University of California Press.