Model Curriculum for Three/Four Year Degree Course (With Multiple Entry /Exit Option)

Based on NEP-2020

Economics

Odisha State Higher Education Council, Bhubaneswar
Government of Odisha

Semester	Name of the Papers
I	1. Basic Economics I
	2. Indian Economy I
II	3. Basic Economics II
	4. Indian Economy II
III	5. Microeconomics I
	6. Macroeconomics I
	7. Mathematical Methods for Economics I
IV	8. Microeconomics II
	9. Macroeconomics II
	10. Statistical Methods for Economics
V	11. Development Economics I
	12. Mathematical Methods for Economics II
	13. History of Economic Thought Or Money and Banking Or Economy of Odisha
VI	14. Introductory Econometrics Or Public Economics I Or Development Economics II
	15. Computational Methods in Economics Or Environmental Economics Or International Economics
VII (With Research)	16. Quantitative Methods
	17. Research Methodology
	18. Basic Econometrics
(Without Research)	16. Quantitative Methods
	17. Research Methodology
	18. Basic Econometrics
	19.Economics of Growth and Development
VIII (With Research)	20.Microeconomics III
	21.Macroeconomics III
	Dissertation
VIII (Without Research)	20.Microeconomics III
	21.Macroeconomics III
	22.Public Economics II
	23.Economics of Social Sector

BA Economics Programme Outcomes

On successful completion of the programme, a student will

- Gain an ability to understand economic theories and the functioning of basic microeconomic and macroeconomic systems.
- Be able to apply knowledge and skill in the field of Economics, research, statistics, and mathematics and will be able to have employability in these areas.
- Be ready for work in the Economic world like banking, industries, education, etc.
- Be poised to go for higher studies and engage in research in the field.

Core-I

1.

SEMESTER I
Basic Economics I

Course Description

This course is designed to expose the students to the basic principles of how the economy works at the microeconomic level with some basic concepts like markets, and consumer choice. in macroeconomics. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations. This course also discusses the preliminary macroeconomic concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, and GDP.

Course Outcomes (COs)

1. To expose the students to the introductory micro and macro-economic concepts.
2. To explain how to think like an economist and illustrate how microeconomic concepts can be applied to analyses of real-life situations.
3. To introduce preliminary macroeconomic concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, and GDP.
4. To examine the circular flow of income and expenditure in a 2, 3, and 4-sector economy.

Unit I: Exploring the Subject Matter of Economics, Markets and Welfare

The Ten Principles of Economics: How people make decisions; Working of the economy as a whole; Thinking Like an Economist: The Economist as Scientist – The scientific method: Observation, Theory and more observation; Role of Assumptions; Economic Models; Why economists disagree; Graphs in Economics; The Market Forces; Markets and Competition; The Demand and Supply curves – Market vs Individual curves, Shifts in Demand and Supply Curves; Market Equilibrium and changes therein; Price Elasticity of Demand – determinants and computation; Income and Cross Elasticity of Demand; The Price Elasticity of Supply – determinants and computation; Consumer and Producer Surplus.

LO: Upon completion of this module, students will get a basic idea about the basic underlying principles followed in economics and get a formative perspective to concepts of elasticity of demand and supply.

Unit II: Theory of Consumer Choice

The Budget Constraint; Preferences – representing preferences with indifference curves; Properties of Indifference Curves; Two extreme examples of indifference curves; Optimization – Equilibrium; Change in equilibrium due to changes in income, changes in price; Income and Substitution Effect; Derivation of Demand Curve; Three applications – Demand for Giffen goods, Wages and Labour Supply, Interest rate and Household saving.

LO: Upon completion of this module, the students can understand the problem of choice and decision-making by consumers and have a vivid understanding of optimization and equilibrium.

Unit III: Basic Concepts in Macroeconomics

Macro vs. Micro Economics; Limitations of Macroeconomics; Stock and Flow variables, Equilibrium and Disequilibrium, Partial, and General Equilibrium Statics – Comparative Statics and Dynamics; National Income Concepts – GDP, GNP, NDP, and NNP at market price, factor cost, real and nominal; Disposable Personal Income.

LO: Upon completion of this module, the students will be introduced to concepts of macroeconomic variables and the basic concept of National Income Accounting.

Unit IV: Measurement of Macroeconomic Variables

Output, Income and Expenditure Approaches; Difficulties of Estimating National Income; National Income Identities in a simple 2-sector economy and with government and foreign trade sectors; Circular Flows of Income in 2, 3 and 4-sector economies; National Income and Economic Welfare; Green Accounting.

LO: Upon completion of this module, the students will be familiarized with the estimation of National Income and understand the circular flow of income and expenditures in a closed and open economy.

Text Book:

- ✓ *Gregory N Mankiw: Principles of Economics, 6th Edition, Cengage Learning India Private Limited, New Delhi*
- ✓ *Gregory N. Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi*
- ✓ *Government of India (2012): National Accounts Statistics Sources and Methods, CSO, MOSPI*

Reference Book:

- ✓ *Karl E. Case and Ray C. Fair (2007): Principles of Economics, 8th Edition, Pearson Education Inc.*
- ✓ *Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.*

Core I 2. Indian Economy I

Course Description

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-independence period, with particular emphasis on paradigm shifts and turning points. Given the rapid changes taking place in India, the reading list should be updated annually.

Course Outcomes

1. To have an understanding of the evolution of the Indian economy from pre-colonial to modern times, and its current state as a developing economy.
2. To be able to explain the relationship between population growth, human development, and economic development in India.
3. To be able to assess the national income trends in India, including sectoral composition, regional disparities, and challenges like poverty, inequality, and unemployment.
4. To gain the ability to critically analyze the role of economic planning in India's development, including the evolution from Five-Year Plans to NITI Aayog.

Unit I: Basic Characteristics of Indian Economy as a Developing Economy

Indian Economy in the Pre-British Period; The Structure and Organization of Villages and Towns; Industries and Handicrafts in Pre-British India; Colonialism; Economic Consequences of British Rule; Decline of Handicrafts and Progressive Ruralization; The Land System and Commercialization of Agriculture; Industrial Transition; Colonial Exploitation and Impacts – Underdevelopment; Colonization and Modernization; State Policies and Economic Underdevelopment; The Current State of Indian Economy

LO: This module shall enable the students to gain an in-depth understanding of the pre-British Indian economy, including its structure, industries, colonial impacts, and modernization, and evaluate state policies and current economic conditions.

Unit II: Population and Human Development

Population Growth and Economic Development – size, growth and Future of Population; Causes of rapid Population Growth; Population and Economic Development; Population Policy; Demographic Issues– Sex and Age Composition of Population; Demographic Dividend; Urbanization and Migration; Human Resource Development – Indicators and importance of Human Resource Development; Education policy; Health and nutrition.

LO: Upon completion of this module, students will analyze the population trends and policies in India, understand their impact on economic development, and evaluate the importance of human development (education, health) for India's future.

Unit III: National Income in India: The Growth Story and Current Challenges

Trends in national and per capita income; Changes in sectoral composition of national income; Regional disparities in Growth and Income; Savings and Investment and Economic Growth – The Linkage; Poverty – Estimation and Trends, Poverty Alleviation Programs– MGNREGA, NRLM, SJSRY; Inequality –Measures and trends in India; Unemployment– Nature, Estimates, Trends, Causes and Employment Policy.

LO: Upon completion of this module, students will have an understanding of national income trends, sectoral contributions, regional inequalities, and challenges that India faces like poverty, inequality, and unemployment.

Unit IV: Economic Planning in India

Rationale, Features, Objectives, Strategies, Achievements and Assessment of Planning in India; Eleventh Five Year Plan– Objectives, Targets and Achievements; Twelfth Five Year Plan – Visionand Strategy; From Planning to NITI– Transforming India's Development Agenda.

LO: Upon completion of this module, students will be able to appreciate the rationale and features of economic planning in India, its objectives and strategies, evaluate its achievements, and describe the transition to NITI Aayog.

Text Book:

- ✓ *Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. HimalayaPublishing House, Mumbai*

Reference Books:

- ✓ *Dutt R. and Sundharam K. P. M: Indian Economy. S. Chand & Company Ltd., New Delhi.*
- ✓ *Datt and Sundharam, Gaurav Datt and Ashwani Mahajan, S Chand: Indian Economy, Publications, 7th Revised Edition*
- ✓ *Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, Revised Nineteenth Edition 2008-09*
- ✓ *Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi*
- ✓ *Basu, K. (2008): Oxford Companion to Economics in India, Oxford University Press*

SEMESTER II

Core I **3. Basic Economics II**

Course Description

This course is designed to expose the students to the basic principles of how the economy works at the microeconomic level with some basic concepts like production, firms and input markets. This course also aims to introduce the students to the basic macroeconomic concepts of money, inflation, and the theories of determination of income and employment in the aggregate economy.

Course Outcomes

- ✓ *To have a clear idea about the principles that govern the economy's running at the micro and macro levels.*
- ✓ *To understand about the working of the input market.*
- ✓ *To gain clarity about dynamic concepts of Inflation, Employment, money, and income.*
- ✓ *To understand of the theories of determination of income and employment in the aggregate economy.*

Unit I: The Firm and Market Structures

Cost concepts; Production and Costs; The various measures of cost – Fixed and Variable cost, Average and Marginal cost; Cost curves and their shapes; Costs in the short run and the long run; Economies and diseconomies of scale. Firms in Competitive Markets – What is a competitive market; Profit maximization and the competitive firm‘s supply curve; The marginal cost curve and the firm‘s supply decision; Firm‘s short-run decision to shut down; Firm‘s long-run decision to exit or enter a market; The supply curve in a competitive market – short run and long run

LO: Upon completion of this module, the students will have a clear understanding of the traditional theory of cost and different cost concepts, and be able to distinguish between short-run and long-run costs, and relate them to a firm's decision-making under competitive markets.

Unit II: The Input Markets

The Demand for Labour – The production function and the marginal product of labour; Value of the marginal product of labour and demand for labour; Shifts in labour demand curve; The supply of labour – the trade-off between work and leisure; Shifts in the labour supply curve; Equilibrium in the Labour Market; Other factors of production: Land and Capital; Linkages among factors of production

LO: Upon completion of this module, the students will get an insight into the analysis of demand and supply of inputs and the linkages among the factors of production.

Unit III: Money and Changes in its Value

Evolution and Functions of Money, Quantity Theory of Money – Cash Transactions, Cash Balances and Keynesian Approaches, Value of Money and Index Number of Prices

Inflation – Meaning, Causes, and Anti-Inflationary Measures; Classical, Keynesian, Monetarist and Modern Theories of Inflation, Inflationary Gap, Deflation- Meaning, Causes, and Anti-Deflationary Measurers, Depression and Stagflation; Inflation vs. Deflation

LO: Upon completion of this module, the students shall understand the evolution of money and the classical theories of money supply and be able to explain the causes of inflation and deflation in an economy and the impact and solution thereto.

Unit IV: Determination of National Income

The Classical Approach - Say's Law, Theory of Determination of Income and Employment with and without saving and Investment; Basics of Aggregate Demand and Aggregate Supply and Consumption- Saving – Investment Functions, The Keynesian Approach – Basics of Aggregate Demand and Aggregate Supply and Consumption, Saving, Investment Functions; The Principle of Effective Demand; Income Determination in a Simple 2-Sector Model; Changes in Aggregate Demand and Income- The Simple Investment Multiplier

LO: Upon completion of this module, the students shall get to know the classical and Keynesian theories of income and employment determination.

Text Book:

- ✓ Gregory N Mankiw: *Principles of Economics*, 6th Edition, Cengage Learning India Private Limited, New Delhi
- ✓ Gregory N. Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi
- ✓ Government of India (2012): *National Accounts Statistics Sources and Methods*, CSO, MOSPI

Reference Book:

- ✓ *Karl E. Case and Ray C. Fair (2007): Principles of Economics, 8th Edition, Pearson Education Inc.*
- ✓ *Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.*

Core I **4. Indian Economy II**

Course Description

This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list should be updated annually.

Course Outcomes

- To analyze the current state of Indian agriculture, including production trends, factors influencing production, and policy initiatives like land reforms and the green revolution.
- To evaluate the development of Indian industries, including historical industrial policies, challenges faced by small-scale industries, and the role of labor.
- To assess the contribution of the tertiary sector to the Indian economy, and understand the concept of Human Resource Development (HRD) and its role in India's development.
- To explain India's foreign trade scenario, including trade composition, export promotion strategies, and the role of foreign capital.
- To analyze the environmental policies implemented in India and the global response to climate change, considering India's specific situation.

Unit I: Agricultural Development in India

Indian Agriculture: nature, importance, trends in agricultural production and productivity, factors determining production, land reforms, new agricultural strategies and green revolution, rural credit; Agricultural marketing and warehousing.

LO: Students will be able to analyze the structure, challenges, and advancements in Indian agriculture, including policies, credit, and marketing.

Unit II: Industrial Development in India

Trends in industrial output and productivity; Industrial Policies of 1948, 1956, 1977, and 1991; Industrial Licensing Policies – MRTP Act, FERA, and FEMA; Growth and problems of SSIs, Industrial sickness; Industrial finance; Industrial labor.

LO: Students will know about industrial output and productivity trends, industrial policies, the impact of licensing policies, small-scale industries' growth, industrial finance, and labor issues in India.

Unit III: Tertiary Sector, HRD, and the External Sector

Tertiary Sector: growth and contribution of the service sector to GDP of India, share of services in employment; Human development – concept, evolution, measurement; HRD: indication, importance, education in India, Indian educational policy; Health and Nutrition. Foreign Trade: role, composition, and direction of India‘s foreign trade, trends of export and import in India, export promotion versus import substitution; Balance of Payments of India; India‘s Trade Policies; Foreign Capital – FDI, Aid and MNCs.

LO: Students will have an understanding of the growth of India's service sector, human development strategies (education & health), and international trade dynamics (exports, imports, foreign investment)

Unit IV: Indian Economy and Environment

Environmental Policies in India: The Environment (Protection) Act 1986, The Environment (Protection) Rules 1986, The National Forest Policy 1988, Policy statement for Abatement of

Pollution 1992, National Conservation Strategy and Policy Statement on Environment and Development 1992, The National Environment Appellate Authority Act 1997, National Environmental Policy 2006; Global deal with Climate Change: Introduction, Intergovernmental Panel for Climate Change (IPCC), Impact of Climate Change on India, Global Response on Climate Change, Possible Role of India.

LO: Students will be able to analyze key environmental policies in India, the global deal on climate change, IPCC's role, climate change impacts, and global responses to India's role.

Text Book:

- ✓ *Mishra, S. K. and Puri V. K. Indian Economy — Its Development Experience. HimalayaPublishing House, Mumbai*

Reference Books:

- ✓ *Dutt R. and Sundharam K. P. M.: Indian Economy. S. Chand & Company Ltd., New Delhi.*
- ✓ *Datt and Sundharam, Gaurav Datt and Ashwani Mahajann: Indian Economy, S Chand Publications, 7th Revised Edition*
- ✓ *Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, RevisedNineteenth Edition 2008-09*
- ✓ *Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi*

SEMESTER III

Core I **5. Microeconomics I**

Course Description

The course is designed to provide sound training in microeconomic theory to formally analyze the behavior of individual agents. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts; this course looks at the behavior of the consumer and the producer and also covers the behavior of a competitive firm.

Course Outcomes:

- To develop an understanding of preferences and consumer choice and formally analyze the behavior of individual agents
- To be able to use mathematical tools to facilitate understanding of the basic concepts of Economics.
- To understand the behavior of the consumer and the producer.
- To understand the behavior of a competitive firm.

Unit I: Consumer Theory I

Preferences and Utility, Axioms of Rational Choice, Utility, Trades and Substitutions, Indifference curves; Mathematics of Indifference curves, Utility functions for specific preferences, the many good cases; Utility Maximization and choice: the 2-good case (graphical analysis), the n-good case, Indirect utility function, the Lump sum principle, Expenditure minimization, properties of the expenditure function

LO: This module will enable the students to understand the basic concepts in consumer behavior like utility, choice, optimization, and Indifference curves using mathematical tools; and differentiate between direct and indirect utility, and explain expenditure function and its properties.

Unit II: Consumer Theory II

The Income and Substitution Effects: Demand function, changes in income, changes in goods price- Direct and Indirect Approaches (Slutsky), the Individual‘s Demand Curve, Compensated (Hicksian) demand curves and functions, demand elasticity, Consumer Surplus, Demand relationships among goods, the 2-good case, substitutes and complements, Net (Hicksian) substitutes, and Complements, Substitutability with many goods

LO: This module will enable the students to analyze the effects of changes in income and prices on demand; differentiate between Ordinary and compensated demand; explain the concepts of price and income elasticities, and substitutability between goods; and understand the concept of Consumer Surplus

Unit III: Production Theory and Costs

Production Functions: Marginal productivity, Production with One Variable Input (labour) and with Two-Variable Inputs, Isoquant Maps and the Rate of Technical Substitution, Returns to Scale, Elasticity of Substitution, Some Simple Production Functions: Linear, Fixed Proportions; Technical Progress. Definition of Cost and its properties, Cost minimizing input choices (Optimization principles, Expansion Path), Cost Functions and Shift in Cost Curves, Long-Run versus Short-Run Cost Curves

LO: This module will enable the students to understand concepts like production function in the short run and the long run, isoquants, and substitution between inputs; and explain concepts of cost, and optimization in the short run and long run

Unit IV: Profit Maximization

The Nature and Behaviour of Firms, Marginal Revenue – Relationship between Average and marginal revenue, Short-Run Supply by a Price-Taking Firm, Profit Functions and its Properties, Profit maximization – General conditions, Input demands

LO: This module will enable the students to understand the behavior of the competitive firm and concepts like average and marginal revenue; and learn the conditions for profit maximization, properties of profit function

Text Book:

- ✓ *C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India*

Reference Books:

- ✓ *H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition,W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems*

Core I **6. Macroeconomics I**

Course Description
This course introduces the students to formal modelling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as long run, and the role of policies in this context.

Course Outcomes:

- To understand the basics of consumption function and its relation with income, and factors influencing consumption function.
- To get a knowledge about various types of investment spending and evaluate the impact of investment through multiplier and accelerator in economies.
- Discuss the various approaches to demand and supply of money.
- Analyse and interpret the IS-LM model as a step toward understanding economic fluctuations.

Unit I: Consumption
Consumption – Income Relationship, Propensities to Consume and the Fundamental Psychological Law of Consumption; Implications of Keynesian Consumption Function; Factors Influencing Consumption Function; Measures to Raise Consumption Function; Absolute, Relative, Permanent, and Life-cycle hypothesis

LO: This module shall enable the students to find out how consumption is affected by income and other factors.

Unit II: Investment
Autonomous and Induced Investment, Residential and Inventory Investment, Determinants of Business Fixed Investment, Decision to Invest and MEC, Accelerator and MEI, Theories of Investment: The Accelerator and Tobin‘s theory

LO: Students will gain an understanding of different forms of investment spending and theories of investment

Unit III: Demand for and Supply of Money
Demand for Money – Classical, Neoclassical, and Keynesian Approaches, The Keynesian Liquidity Trap and its Implications, Supply of Money – Classical and Keynesian Approaches, The Theory of Money Supply Determination and Money Multiplier, Measures of Money Supply in India, RBI approach to money supply, Determination and Money multiplier. High-powered money and money multiplier

LO: Students will be able to understand the workings of money in an economy.

Unit IV: Aggregate Demand and Aggregate Supply
Derivation of Aggregate Demand and Aggregate Supply Curves in the IS-LM Framework; Nature and Shape of IS and LM curves; Interaction of IS and LM curves and Determination of Employment, Output, Prices and Investment; Changes in IS and LM curves and their Implications for Equilibrium

LO: This module shall help to gain knowledge about the way the goods market and money market serve as a basis for the determination of employment, output, price, and investment.

Text Readings:

- ✓ *N. Gregory Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi.*
- ✓ *Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.*

Reference Book:

- ✓ *Snowdon, B. and Vane H. R. (2005). Modern macroeconomics –its Origins, Development and Current State. Edward Elgar Publishing Limited, Cheltenham, UK.*
- ✓ *Ahuja H. L. (2019). Macroeconomics- Theory and Policy. 20th Edition, S Chand publication.*
- ✓ *Dwivedi, D. N. (2018): Macroeconomics -Theory and Policy. 5th Edition, Tata McGraw Hill.*

Core I **7. Mathematical Methods for Economics I**

Course Description

This is the first of a compulsory two-course sequence. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends,but the means for illustrating the method of applying mathematical techniques to economic theoryin general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Course Outcomes:

- To use mathematical techniques in analyzing economic problems
- To get a fair idea about the number system, set theory, and different types of functions.
- Evaluate and use the concept of derivative of functions involving single variables to link the total and marginal concepts in Economics.
- Understand major concepts of Linear Algebra

Unit I: **Preliminaries and Functions of One Real Variable**

Sets and set operations; Cartesian product; relations; functions and their properties; Number systems. Types of Functions: constant, polynomial, rational, exponential, logarithmic; Graphs and graphs offunctions; Limit and Continuity of functions; Limit theorems.

LO: This module will enable the students to know the theory of sets, ordered pairs, and Cartesian products; and learn the concepts of relation and function and limit and continuity of functions.

Unit II: Derivative of a Function

Rate of change and derivative; Derivative and slope of a curve; Continuity and differentiability of a function; Rules of differentiation for a function of one variable; Application- Relationship between total, average and marginal functions.

LO: This module will enable the students to know the concept of the derivative and the rules for derivatives; and about the economic applications of differentiation in establishing the relationship between total, marginal, and average functions in Economics.

Unit III: Functions of two or more Independent Variables

Partial differentiation techniques; Geometric interpretation of partial derivatives; Partial derivatives in Economics; Elasticity of a function – demand and cost elasticity, cross and partial elasticity.

LO: This module will enable the students to find out partial derivatives of multivariate functions; and calculate elasticities of multivariate functions.

Unit- IV: **Matrices and Determinants**

Matrices: concept, types, matrix algebra, transpose, inverse, rank; Determinants: concept, properties, solving problems using properties of determinants, solution to a system of equations - Crammer‘s rule and matrix inversion method.

LO: This module will enable the students to understand different types of matrices and determinants; and learn about the matrix operations and solve systems of linear equations using matrices.

Text Book:

- ✓ C. Chiang and K. Wainwright (2005): *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition

Reference Book:

- ✓ *K. Sydsaeter and P. J. Hammond (2002): Mathematics for Economic Analysis. PearsonEducational Asia*
- ✓ *Edward T Dowling (2004): Introduction to Mathematical economics, Tata McGeaw-Hill, Third Edition.*
- ✓ *Taro Yamane (1995): Mathematics foe Economists: An elementary survey. New Delhi Prentice Hall. Second Editio*

Semester IV

Core I **8.Microeconomics II**

Course Description

This course is a sequel to Microeconomics I. The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers the Market, general equilibrium and welfare, imperfect markets, and topics under information economics.

Course Outcomes:

- To understand short-run and long-run supply decisions of a competitive firm & industry equilibrium
- To have a basic understanding of concepts of Pareto efficiency in consumption & production; general equilibrium, and welfare theorems
- To develop an understanding of imperfect markets such as Oligopoly
- To understand basic concepts of game theory.

Unit I: Firm Supply and Equilibrium

Supply decision of a competitive firm and Exceptions; Inverse Supply Function; Profits and Producer‘s Surplus; Long Run Supply Curve of a Firm; Long Run Average Costs; Short Run and Long Run Industry Supply; Industry Equilibrium in Short and Long Run; Meaning of Zero Profits; Economic Rent

LO: Upon completion of this module, students will understand the short-run and long-run supply decisions of a competitive firm and the concept of industry equilibrium; and gain an idea about long-run average costs, zero profit, and economic rent

Unit II: General Equilibrium, Efficiency and Welfare

The Edgeworth Box; Trade; Pareto Efficient Allocations; Existence, Stability and Uniqueness of equilibrium; Walras Law; The Welfare Theorems and their implications; The Firm; Production and the Welfare Theorems; Production possibilities, comparative advantage and Pareto efficiency

LO: This module shall help to understand concepts like Pareto efficiency, and general equilibrium in consumption and learn welfare theorems, comparative advantage, production possibilities, and general equilibrium in production

Unit III: Market Imperfections: Monopoly and Monopolistic Competition

Barriers to Entry, Profit Maximization and Output Choice, Monopoly and resource Allocation, Price Discrimination, Degrees of Price Discrimination, Regulation of Monopoly, Dynamic Views of Monopoly. Monopolistic competition – product differentiation, Selling costs and excess capacity

LO: This module shall aid in understanding the nature of monopoly markets and the role of barriers to entry and explain price discrimination; and to explain features of monopolistic competition and the question of economic inefficiency in equilibrium

Unit IV: Oligopoly and Game Theory

Non-collusive oligopoly models: Cournot, Bertrand, Stackelberg, Sweezy, Chamberlin, Collusive oligopoly models: Cartels, Price leadership. The Payoff Matrix of a Game; Nash Equilibrium, Pure and Mixed Strategies, The Prisoner‘s Dilemma, Repeated Games, Tit-for tat strategy, Enforcing a cartel, Sequential Games, A Game of entry deterrence

LO: Upon completion of this module, students will be able to understand and explain the features of oligopoly and learn different models thereof; and the meaning and use of game theory in oligopoly; understand concepts like Nash equilibrium and different types of games, especially Prisoner's dilemma.

Text Book:

- ✓ *H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition,*
- ✓ *W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems.*
- ✓ *Koutsoyiannis, A (1979): Modern Microeconomics,2nd Ed, ELBS/Macmillan*

Reference Book:

- ✓ *C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India.*
- ✓ *Robert S. Pindyck and Daniel Rubinfeld: Microeconomics, 8th Edition, Pearson*
- ✓ *H. L. Ahuja (2018): Advanced Economic Theory. Twenty-First Edition, Sultan Chand Publication*

Core I **9. Macroeconomics II**

Course Description
This paper deals with growth models and the classical school of thought, and its evolution into Keynesian economics. The students are introduced to long-run dynamics in growth and technical progress. This paper also familiarizes about the open economy and its dynamics.

Course Outcomes:

- To emphasize on conceptual understanding and some applications of important growth models.
- To enable critical appreciation of the classical school of thought and the evolution of Keynesian economics.
- To understand the theoretical underpinnings of economic policy in open economies, such as monetary and fiscal policy, the basic Mundell-Fleming model, and nominal and real exchange rate determination.
- To understand the trade-off between Unemployment and Inflation; get a critical understanding of Long-run and Short-run Phillips Curve, unemployment, and Expectations.

Unit I: Economic growth model:
Accumulation of capital in the basic Solow model; supply and demand for goods, growth in the capital stock and the steady state, Golden rule level of capital, comparing steady states, transition to the golden rule steady state with too much and too little capital, population growth technological progress – Solow version

LO: The module shall enable the students to get conceptual clarity and strengthen theoretical foundations of the Solow growth model

Unit II: Classical and Keynesian Macroeconomic thought
Classical macroeconomics, Employment and output determination: Say‘s law; the quantity theory of money, Keynes General theory: Keynes main propositions, Analysis of the labour market, Keynes critique of Says law and Quantity Theory of Money, the orthodox Keynesian school, underemployment equilibrium in the Keynesian model.

LO: This module shall help students in developing a clear, comprehensive understanding of how and in what ways the Classical and Keynesian schools of economic thought differ from each other.

Unit III: Open Economy and Macroeconomic policies
Balance of payments –concepts, meaning of equilibrium and disequilibrium in Balance of payments measures to correct disequilibrium. Determination of foreign exchange rate- the balance of payments theory, fixed versus flexible exchange rate; the short run open economy model: The basic Mundell-Fleming model: Macroeconomic policies – Fiscal policy - Crowding-out and Crowding-in; Monetary policy and instruments, the Transmission Mechanism, Effectiveness of macroeconomic policies in the open and closed economies.

LO: This module will enable students to get clarity on macroeconomic theories and models in the context of open economies, the interdependent nature of key macroeconomic variables, sectors, and markets, and the dynamics of responses to exogenous domestic and international economic shocks

Unit IV: Inflation, Unemployment and Expectations

Inflation – Unemployment trade-off and the Phillips curve – short run and long run analysis, Adaptive and Rational expectation hypothesis. The policy ineffectiveness debate. Phillips curve and orthodox Keynesian school. Solow and Tobin's modified Philips curve.

LO: Upon completion of this module, students shall be able to derive the Phillips Curve from the Aggregate Supply Curve, the short-run and long-run Phillips curve, and understand the role of adaptive expectations and rationale expectations.

Text Readings:

- ✓ *Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.*
- ✓ *N. Gregory Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi.*

Suggested References:

- ✓ *Levacic R and Rebmann A (1982): Macroeconomics –An introduction to Keynesian – neoclassical controversies*
- ✓ *Edward Shapiro (2001): Macroeconomics Analysis- Galgotia Publication Private Limited, 5th Edition, New Delhi.*
- ✓ *Dwivedi, D. N. (2018): Macroeconomics -Theory and Policy. 5th Edition, Tata McGraw Hill.*
- ✓ *Blanchard, O. (2013): Macroeconomics. 7th edition, Pearson Edn*

Core 1 **10. Statistical Methods for Economics**

Course Description:
This is a course on statistical methods for economics. It begins with some basic concepts and terminology that are fundamental to statistical analysis and inference. It is followed by a study and measure of the relationship between variables, which are the core of economic analysis. This is followed by a basic discussion on index numbers and time series. The paper finally develops the notion of probability, followed by probability distributions of discrete and continuous random variables, and introduces the most frequently used theoretical distribution, the Normal distribution.

Course Outcomes:

- To summarize data effectively using measures of central tendency, dispersion, and graphical techniques.
- To analyze relationships between variables through correlation and regression analysis.
- To understand and interpret time series data by identifying trends and seasonality.
- To apply probability theory and sampling techniques to solve statistical problems and assess data validity.

Unit I: Data Collection and Measures of Central Tendency and Dispersion
Basic concepts: population and sample, parameter and statistics; Data Collection: primary and secondary data, methods of collection of primary data; Presentation of Data: frequency distribution; cumulative frequency; graphic and diagrammatic representation of data; Measures of Central Tendency: mean, median, mode, geometric mean, harmonic mean, their relative merits and demerits; Measures of Dispersion: absolute and relative - range, mean deviation, standard deviation, coefficient of variation, quartile deviation, their merits, and demerits; Measures of skewness and kurtosis.

LO: At the end of this module, students will be able to distinguish between population and sample, collect and organize data, and calculate measures of central tendency and dispersion to understand a data set's characteristics.

Unit II: Correlation and Regression Analysis
Correlation: scatter diagram, sample correlation coefficient - Karl Pearson‘s correlation coefficient and its properties, probable error of correlation coefficient, Spearman‘s rank correlation coefficient. Two variable linear regression analysis - estimation of regression lines (Least square method) and regression coefficients - their interpretation and properties, standard error of estimate.

LO: This module shall help students master the techniques to measure the strength and direction of relationships between variables (correlation) and use linear regression analysis to model and predict those relationships.

Unit III: Time Series and Index Number
Time Series: definition and components, measurement of the trend- freehand method, methods of semi-average, moving average and method of least squares (equations of first and second degree only), measurement of the seasonal component; Index Numbers: Concept, price relative, quantity relative and value relative; Laspeyer‘s and Fisher‘s index, family budget method, problems in construction and limitations of index numbers, test for ideal index number.

LO: Upon completion of this module, students will be able to analyze time series data for trends and seasonality, and construct and interpret index numbers to measure price and quantity changes.

Unit IV: Probability Theory and Sampling

Probability: Basic concepts, addition, and multiplication rules, conditional probability; Meaning of Sampling, Types of Sampling: Probability Sampling versus Non-Probability Sampling; Simple Random Sampling and its selection, Systematic Sampling, Multi-stage Sampling, Quota Sampling; Error: Sampling and Non-sampling.

LO: Upon completion of this module, students will be able to calculate probabilities, understand different sampling methods (probability vs. non-probability), and identify potential errors associated with sampling.

Basic Readings and Textbooks:

- ✓ *S. C. Gupta (2017): Fundamentals of Statistics, Himalaya Publishing House, Delhi*

Reference Book:

- ✓ *Murray R. Speigel (2017): Theory & Problems of Statistics, Schaum's publishing Series.*
- ✓ *A L Nagar & R K Das (1983): Basic Statistics. Oxford University Press.*

SEMESTER V

Core I 11. Development Economics I

Course Description:
This is the first part of a two-part course on economic development. The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored. The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Course Outcomes:

- The course will enhance the understanding of concepts of development and the need for it.
- It helps students learn about aggregate models of growth.
- It examines the axiomatic basis for inequality measurement and explores the connections between growth and inequality.
- It familiarizes the students with the socio-economic and political institutions while showing their contribution to economic development.

Unit I: Study of Economic Development
Conceptions of Development economic growth and economic development; Alternative measures of development, documenting the international variations in these measures, comparing development trajectories across nations and within them–measures of economic development – national and per capita income, basic needs approach, capabilities approach, three core values of development, PQLI, HDI, HPI, MDPI, GDI; Happiness Index

LO: Upon completion of this module, students learn the alternative concepts associated with the development and the changes in the measurement of development over time.

Unit II: Theories of Economic Growth and Development
Classical theory, Marxian theory; Schumpeterian theory; Rostow's stages of economic growth; Harrod-Domar model, Solow model and convergence with population growth and technical progress.

LO: Upon completion of this module, students gain an elaborate knowledge about the growth theories put forth by different Schools of Economics.

Unit III: Poverty, Inequality, Agriculture, Industry and Development:
Measuring poverty: Head Count Ratio, Poverty Gap Ratio, Squared Poverty Ratio, FGT Ratio; Measuring Inequality – Lorenz curve and Kuznets' inverted U hypothesis; Growth, poverty and inequality; Policy options – some basic considerations
Agriculture, Industry and Economic Development: Interdependence between agriculture and industries – A model of complementarities between agriculture and industry; terms of trade between agriculture and industry; functioning of markets in agrarian societies; interlinked agrarian markets

LO: This module shall help the leraners to understand different measures of poverty and inequality in an economy and gain an insight into the role of agriculture and industry in economic development and the dynamic complementarity between the two sectors.

Unit IV: Institutions and Economic Development:

Role of institutions in economic development; Characteristics of good institutions and quality of institutions; The pre-requisites of a sound institutional structure; Different measures of institutions – aggregate governance index, property rights and risk of expropriation; The role of democracy in economic development; Role of markets and market failure; Institutional and cultural requirements for operation of effective private markets; Market facilitating conditions; Limitations of markets in LDCs; Corruption and economic development – tackling the problem of corruption

LO: Upon completion of this module, students get to know the importance and role of institutions in the process of economic development.

Text book:

- ✓ *Todaro, Michael P and Stephen C Smith (2006): Economic Development, 8th Edition, Pearson*

Reference Books:

- ✓ *Debraj Ray (2009): Development Economics, Oxford University Press.*
- ✓ *Thirlwall, A P (2011): Economics of Development, 9th Edition, Palgrave Macmillan*

Core I 12. Mathematical Methods for Economics II

Course Description:
This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theoryin general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Course Outcomes:

- To use mathematical techniques to analyze economic problems.
- To have an understanding of the input-output models.
- To be able to use second and higher-order derivatives and integration to analyze the nature of functions.
- To develop the ability to optimise objective functions subject to satisfaction of constraints.

Unit I: **Linear models:**
Input-Output Model: Basic concepts and structure of Leontief's open and static Input-Output model; Solution for equilibrium output in a three-industry model; The closed model.

LO: This module will enable the students to get an idea of the static input-output model in its closed and open versions, which are of great practical importance in Economics.

Unit II: Second and Higher Order Derivatives and Integration:
Technique of higher order differentiation; Interpretation of second derivative; Second order derivative and curvature of a function; Concavity and convexity of functions; Points of inflection, Derivative of Implicit Function; Higher Order Partial Derivative. Indefinite Integrals; Rules of Integration; Techniques of Integration: Substitution Rule, Integration by parts, and Partial Fractions; Definite Integral – Area Interpretation.

LO: This module will enable the students to know the concept of higher-order derivatives and integration, definite and indefinite; and the applications of higher-order derivatives and integration in Economics.

Unit III: Single and Multivariable Optimization:
Optimum values and extreme values; Relative maximum and minimum; Necessary versus sufficient conditions - First and Second derivative tests (using Hessian Determinants); Economic applications thereof, First and second order condition for extrema of multivariable functions; Convex functions and convex sets.

LO: This module will enable the student to learn the concept of optimization of single and multi-variable functions.

Unit IV: Optimization with Equality Constraints:
Effects of a constraint; Finding stationary value – Lagrange-Multiplier method (Two variable singleconstraint case only): First and second order condition; The Bordered Hessian determinant.

LO: This module will enable the student to understand the meaning and definition of constraint optimization, and the use of the Lagrange multiplier method and the Bordered Hessian determinant to optimize an objective function with respect to a constraint.

Text Reading:

- ✓ *A. C. Chiang and K. Wainwright (2005): Fundamental Methods of Mathematical Economics, McGraw Hill International Edition.*

Reference Book:

- ✓ *K. Sydsaeter and P. J. Hammond (2002): Mathematics for Economic Analysis. PearsonEducational Asia*
- ✓ *Edward T Dowling (2004): Introduction to Mathematical economics, Tata McGeaw-Hill, Third Edition.*
- ✓ *Taro Yamane (1995): Mathematics foe Economists: An elementary survey. New Delhi Prentice Hall. Second Edition.*

Core I 13. History of Economic Thought

Course description
This course provides a perspective to our intellectual history, development of economic thought and helps relate this to the current thinking. It introduces the students to the philosophers and economists who developed economic reasoning and modeling of economic activities. It also helps create critical abilities and attitudes.

Course Outcomes:

- Understanding economic theories from Mercantilism to the Classical Economists of the eighteenth century and allowing the study of particular economic ideas and theories in considerable depth.
- To facilitate an understanding of economics effectively and comparing different theories of economists from the classical to Marxism.
- Exploring the contrasting theoretical approaches of different economists.
- Understanding the historical evolution of Indian economic thought and its comparison with Western economic thought.

Unit I: Introduction and Early Economic Thought
Mercantilism-main characteristics, Thomas Mur's views; Physiocracy- main features, Tableau Economique, taxation; Early Classicism: Adam Smith- Theory of Value, Division of labour, capital accumulation, distribution, views on trade and economic progress; David Ricardo-theory of value, theory of rent, distribution, ideas on international trade and development.

LO: This module summarizes the contributions of Adam Smith, David Ricardo, and Thomas to the field of economics.

Unit II: Classicism Vs Marxism
Thomas Malthus- population theory, glut theory; Karl Marx-dynamic of social change, theory of value, surplus value, theory of profit, crisis of capitalism, Johns Stuart Mill- ideas on value, distribution, views as a synthesizer.

LO: This module shall enable the students to get general insights into the two schools of thought, namely the Classical and Marxian.

Unit III: The Marginalists' Revolution
Economic ideas of Jevons, Walras and Menger, Bohm-Bowerk, Wicksell ; Marshall – Role of time element in price determination, ideas on consumer surplus, Marshal as a synthesizer.

LO: This module will help the students in gaining knowledge and understanding of the development of ideas within the field of economics and get a deeper understanding of the Marginalists' Revolution.

Unit IV: Indian Economic Thought
Main themes of Kautilya's Arthasashtra; Modern Economic Ideas: Dada Bhai Naoroji, M.K. Gandhi, village swaraj, non-violence, machines and labour, cottage industries; Comparison of Indian Economic thought with western Economic thought.

LO: This module aids the student in evaluating the relevance and applicability of Indian economic thought in

contemporary times.

Text Books

- ✓ *Gide, Charles and Rist, Charles (1973): A History of Economic Doctrines, Oxford University Press.*
- ✓ *Dasgupta, A K (1986): Epochs of Economic Theory, Oxford University Press, New Delhi.*

Reference Book:

- ✓ *O'Brien, D P (1975): Classical Economists, Oxford, Clarendon Press.*
- ✓ *Ekelund, Robert B. and Robert F. Hebert (1990): A History of Economic Theory and Method, third edition, New York: McGraw Hill.*
- ✓ *Henry W. Spiegel (1991): The Growth of Economic Thought, 3rd ed. Durham: Duke University Press*
- ✓ *Tom Bottomore (1980): Dictionary of Marxist Thought, Basic Blackwell Publishers.*
- ✓ *Roll, Eric, History of Economic Thought, Faber and Faber Ltd.*
- ✓ *L N Rangarajan (1992): Kautilya: The Arthasastra, edited, rearranged, translated and introduced; Penguin Books, New Delhi.*

Or

Money and Banking

Course Description

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Course Outcomes:

- Understanding money and its types along with their functions and different measures of money supply.
- Understanding the basic concepts of banking, and its functions and to examine the banking scenario in India.
- To gain knowledge of the functions of central banks and monetary policies and how they have evolved.
- Get an understanding of the conceptual framework of the financial market and institutions of India.

Unit I: Money

Definition and functions of money; Types of money: legal tender money and bank money, near money; Value of money and index number; construction of index number; WPI, CPI, PPI, GDP deflator, Cost of living index. Demand for money- Classical and Keynesian approaches, Patinkin and the Real Balance Effect; Friedman's Quantity theory of money. Supply of Money- Measures of money supply: M_1, M_2, M_3 and M_4 ; High powered money and money multiplier.

LO: This module will enable students to understand various concepts of money and money substitutes, functions of money, and monetary aggregates.

Unit II: Commercial Banking

Meaning and types; Functions of commercial banks; the process of credit creation and its limitations; Balance sheet and portfolio management, Banking sector reforms in India; Lessons from Global Financial Crisis and Policy Response in India.

LO: This module will make the students aware of basics of commercial Banking and Finance.

Unit III: Central Banking

Functions of a central bank; Quantitative and qualitative methods of credit control; Central Bank's Supervision and prudential measures for financial stability; current monetary policy of India, liquidity adjustment facility (LAF) through Repo and reverse repo operation, MSF.

LO: Upon completion of this module, students will be able to appreciate the effects of the major policy tools and understand how central banks affect the financial system of the economy.

Unit IV: Financial Markets

Financial Market, Meaning, Types, Money market and Capital Market, Primary and Secondary Market, Stock Exchanges, SEBI; Role of Financial Markets for Economic Development. Financial Instruments: Government securities, derivatives, futures and options, bond, debentures.

LO: This module shall help students to understand the nature of financial instruments and their usage.

Text Book

- ✓ *Bhole, L. M. (2017): Financial institutions and Market, 6th Ed, Tata McGraw hill, New Delhi.*
- ✓ *Mishkin, F. S. & Eakins S. G (2017): Financial Market and Institutions, 8th Ed, PE, New Delhi.*

Reference Book

- ✓ *Suraj. B. Gupta (2010): Monetary Economics: Institution, Theory and Practice, S. Chand.*
- ✓ *Gorden & Natrajan (2023): Financial Market and institutions, 3rd Ed, Himalaya Publishing house*

Or
Economy of Odisha

Course description
Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in Odisha in pre- and post-Independence period, with particular emphasis of paradigm shifts and turning points. Given the rapid changes taking place in Odisha, the reading list will have to be updated annually.

Course Outcomes:

- To obtain a basic overview of the economy of Odisha in the pre-Independence period.
- To analyze the strengths and weaknesses of the macroeconomic scenario of Odisha's economy.
- To gain an understanding of the important economic sectors of Odisha and the challenges faced by them in recent times.
- To grasp the current economic problems in Odisha.

Unit I: Odisha Economy before 1947
Orissa's Economy in the Nineteenth Century: Benevolence or Exploitation, Forces of Nature, Animal Power, The Company Steps in, Public Works and Public Health, Education, Disintegration of Village Economy, New Social Environment, Changing Position of Social Classes, The Moneylenders, The Borrowers, Money-flows from Village to Metropolis, Pauperization of Peasantry, The Wage Earners, Demographic Changes, Profiting from Rural Adversity; Diarchy in 1919 and Separation of Provincial Finances from Central Government in 1937; Emergence of Federal Finance.

LO: This module will ensure that the students understand the features of Odisha's economy in the pre-independence period.

Unit II: Macro Economy of Odisha
A macro glance of Odisha economy: aggregate income, broad sectoral decomposition, performance of districts, employment, child labour and bonded labour, employment programmes, consumption expenditure, cost of living; Odisha State public finances.

LO: This module presents the ground realities of Odisha's macro-economic situation to the students.

Unit III: Agriculture, Industry, Infrastructure and Environment in Odisha
Agriculture: land ownership and land tenure, agricultural wages and rural unemployment, production and productivity of major crops, agricultural inputs, agricultural policy; Animal Husbandry; Fisheries
Industry: Investment, industrial policy, and the growth of large industries, mining and quarrying; Construction; tertiary sector: tourism, transport and power; Water Resources, Forest Resources

LO: Upon successful completion of this module, students will be able to appreciate the importance and contribultion of two important sectors, agriculture and industry, to Odisha's Economy.

Unit IV: Social Sector in Odisha

Poverty: income poverty and inequality; health sector: outcomes, infrastructure, finance, public health, NRHM; education: Literacy, Primary education, secondary education, higher education, SSA; human development

LO: This module presents the salient features of the social sector in Odisha to the students.

Text Readings

- ✓ *Nayak, P., Panda, S. C., Pattanaik, P. K. (2016): The Economy of Odisha: A Profile, Oxford University Press, New Delhi*
- ✓ *GoO (latest): Economic Survey, Planning and Coordination Directorate of Economic and Statistics, Bhubaneswar*

Additional Reading

1. GoO (2004): *Human Development Report 2004 Orissa*, Planning and Coordination Department, GoO, Bhubaneswar
2. Mahapatro, S. B. (1980): Inter-Industry Wage Differentials in Orissa: An Empirical Analysis, *Indian Journal of Industrial Relations*, 15(4): 525-536.
3. Vyasulu, V. and Arun, A. V. (1997): Industrialisation in Orissa: Trends and Structure, *Economic and Political Weekly*, 32(22): M46-M53.
4. Das, Binod S. (1976): Orissa's Economy in the Nineteenth Century, *Social Scientist*, 4(11): 32-46.
5. Das, Binod S. (1976): Orissa's Economy in the Nineteenth Century: Part Two, *Social Scientist*, 4(12): 38-50.
6. Mohanti, K. K. and Padhi, S. (1995): Employment Situation of Tribal Population in Orissa: 1981 Census Data, *Economic and Political Weekly*, 30(29): 1879-1882.
7. Nair, K. R. G. (1993): New Economic Policy and Development of Backward Regions: A Note on Orissa, *Economic and Political Weekly*, 28(19): 939-941.
8. Mohanty, B. (1993): Orissa Famine of 1866: Demographic and Economic Consequences, *Economic and Political Weekly*, 28(1/2): 55-66.
9. Haan, A. de and Dubey, A. (2005): Poverty, Disparities, or the Development of Underdevelopment in Orissa, *Economic and Political Weekly*, 40(22/23): 2321-2329.
10. Samal, K. C. (1998): Poverty Alleviation after Post-Liberalisation: Study of a Tribal Block in Orissa, *Economic and Political Weekly*, 33(28): 1846-1851
11. Nayak, P. and Chatterjee, B. (1986): Disguised Unemployment in Agriculture: A Case Study of Rural Orissa, *Indian Journal of Industrial Relations*, 21(3): 310-334.

SEMESTER VI

Core I 14. Introductory Econometrics

Course Description:
This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

Course Outcomes:

- To have a comprehensive introduction to basic econometric concepts and techniques.
- To gain an understanding of the statistical concepts of hypothesis testing, estimation, and diagnostic testing of simple and multiple regression models.
- To gain knowledge about the consequences, tests, and remedies of violation of Least Square assumptions.

Unit I: Introduction
Definition, Nature and scope of econometrics; Theoretical Probability Distributions: Binomial, Poisson and Normal distributions: their properties. Theory of Estimation: Estimation of parameters; properties of estimators – small sample and asymptotic properties; point and interval estimation.

LO: This module will enable the students to know about some common discrete and continuous theoretical probability distributions; and to know about estimators, point and interval, and the desirable properties of point estimators.

Unit II: Hypothesis Testing
Testing of hypotheses: defining statistical hypotheses; Simple and composite hypotheses; Null and alternative hypothesis; Type I and Type II errors, Critical region; Neyman-Pearson lemma; Power of a test; Test statistics: z, chi square, t and F.

LO: This module will enable the student to gain knowledge about statistical hypotheses and the procedure of testing of hypothesis; and have an understanding of type I and type II errors in the procedure of hypothesis testing.

Unit III: Linear Regression Analysis
Two variable linear regression model – Assumptions; Least square estimates, Variance and co-variance between Least square estimates; BLUE properties; Standard errors of estimates; Co-efficient of determination; Inference in a two variable linear regression model; ANOVA; Forecasting. Introduction to multiple regression models.

LO: This module will enable the students to understand the concept and usefulness of regression analysis and differentiate between Linear and non–linear relations; understand the difference between simple & multiple linear regression models and their estimation as well as inference drawn therefrom.

Unit IV: Violation of Classical Assumptions
Heteroscedasticity, Multicollinearity and Auto-correlation: Meaning, consequences, tests and remedies.

LO: This module will enable the student to understand the consequences, tests, and remedies of violation of Least Square assumptions.

Text Book:

- ✓ *Gujarati, D & Sangeetha (2007); ―Basic Econometrics‖, McGraw Hill Book Co.*

Reference Book:

- ✓ *Wooldrige, J. M. (2022): Introductory Econometrics: A modern Approach, 7th Ed, Cengage Publication*

Or

Public Economics I

Course description:
Public economics is the study of government policy from the points of view of economic efficiency and equity. The paper 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.

Course Outcomes:

- The course will familiarize the students with the relevance, responsibilities, and sources of receipts of the government.
- Students will be able to understand the rationale behind the public provision of specific goods and services and what can be left to market for provision.
- Students will be able to understand the normative ideas behind public expenditure, taxation, and public debt as well as the budget of government and its impact on the economy.
- Students will be able to understand the methods of fiscal management by the government in India.

Unit I: Introduction to Public Finance and Public Budgets
The concept of Pareto Optimality. Pareto improvement and potential Pareto improvement. Public good verses private good; Free riding and public Good provision. Maximum Social advantage. Market failure and role of government; Public Budget: kinds of budget, economic and functional classification of the budget; Balanced and unbalanced budget; Balanced budget multiplier; Budget as an instrument of economic policy

LO: This module will give an idea of the goods to be provided by the government and market and the challenges faced by the government to provide public goods; and will also teach about different types of budgets and their implications for the economy.

Unit II: Public Expenditure
Meaning, classification, principles, cannons and effects, causes of growth of public expenditure, Wagner‘s law of increasing state activities, Peacock-Wiseman hypotheses. Pareto Optimality Criterion, social Allocation

LO: This module will educate on the principles behind public expenditure and the causes behind the rise in the public expenditure.

Unit III: Public Revenue
Sources of Public Revenue; Taxation - meaning, cannons and classification of taxes, impact and incidence of taxes, division of tax burden, the benefit and ability to pay approaches, taxable capacity, effects of taxation, characteristics of a good tax system, major trends in tax revenue of central and state governments in India, Introduction of GST in India. Issues and Challenges relating to GST.

LO: This module will educate on the sources of receipts for the government, theoretical ideas behind taxation, and implementation of GST in India.

Unit IV: Public Debt

Sources, effects, debt burden – Classical/ Ricardian views, Keynesian and post-Keynesian views; shifting - intergenerational equity, methods of debt redemption, debt management, tax verses debt.

LO: This module will give a fair idea of different aspects of the implications of public debt on the economy

Text Books:

- ✓ J. Hindriks and G. Myles (2006): *Intermediate Public Economics*, MIT Press.

Reference Book:

- ✓ R. A. Musgrave and P. B. Musgave (1989): *Public Finance in Theory and Practices.* McGraw Hill
- ✓ Bhatia H L (2018): *Public Finance.* Vikas Publishing House.

Or

Development Economics II

Course Description:

This is the second Module of the economic development sequence. It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development.

Course Outcomes:

- This course shall provide an introduction to basic demographic concepts and their evolution during the process of development.
- It will instill the ability to present a new interpretation of the dualistic structure of an economy and its implication for economic development.
- Thecourse will give an in-depth understanding of environmental economics and application of economic principles to resolve specific environmental problems and issues.
- It will equip the students with an ability to explain the phenomenon of globalization, the economics, and the politics of international agreements, trade, and production patterns.

Unit I: Population and Development

Demographic concepts: birth and death rates, age structure, fertility and its determinants, the Malthusian population trap and the microeconomic household theory of fertility; costs and benefits of population growth and the model of low-level equilibrium trap; rural-urban migration – the Harris Todaro migration model and policy implications.

LO: Upon successful completion of the module, the students will learn about the basic demographic concepts of birth and death rates, age structure, fertility and mortality, demographic transition and development, fertility choices and human capital formation, and migration models.

Unit II: Dualism and Economic Development

Dualism – geographic, social and technological; the theory of cumulative causation (Myrdal); the regional inequalities in the context of economic development; the inverted U relationship; international inequality and the centre periphery thesis; dependency, exploitation and unequal exchange; the dualistic development thesis and its implications.

LO: This module shall provide an understanding of the various concepts of dualism and the manner it has hindered the development of developing countries.

Unit III: Environment and Development

Basic issues of environment and development – Development and environment inter-linkage; Poverty, environmental degradation and externalities; common property resources, renewable and non-renewable resources; concept of sustainable development; basics of climate change.

LO: This module shall help students getting an idea about the global perspectives on contemporary environmental and natural resource issues and appropriate economic concepts for analyzing them.

Unit IV: International Trade and Economic Development and Financing Economic Development

Trade and economic development; export-led growth; terms of trade and economic growth – the Prebisch Singer Hypothesis; trade strategies for development – import substitution vs. export promotion; international commodity agreements; trade vs aid; Foreign finance, investment and foreign aid – controversies and support Modalities.

LO: The learners shall acquire an understanding of the linkage between International Trade and Economic Development, and trade strategies for development.

Text Book:

- ✓ *Todaro, Michael P and Stephen C Smith (2006): Economic Development, 8th Edition, Pearson*

Reference Book:

- ✓ *Thirlwall, A P (2011): Economics of Development, 9th Edition, Palgrave Macmillan.*

Core I 15. Computational Methods in Economics

Course Description
This course introduces the students to understand uses of computers and their applications in economics. After completion of the course, students will develop professional competency in working with MS Office.

Course Outcomes:

- To understand the uses of computers and their applications in Economics.
- To develop professional competency in working with MS Office.
- To get hands-on use of Microsoft Office applications- Word, Excel, PowerPoint, and Access.
- To gain basic soft skills in handling data, creation, and formatting of Word documents, and making presentations.

Unit I: Computer Fundamentals
The basic architecture of CPU and its functions – Input device and output device – Primary and secondary memory. Operating systems - concept and types, Windows- concepts and components; Basics of a computer network: LAN, WAN, and MAN; Introduction to internet and its applications; booting process, Machine language, and assembly language; Applications of computer in Economics, other fields.

LO: This module shall make the students understand the basics of computers – parts, memory, network, and internet.

Unit II: MS Word, PowerPoint, and Access Applications
MS Word: Word basics, creation of a document, use of tables, pictures, and charts; editing, formatting, and printing documents; MS PowerPoint: Features, Creation of Slides for presentation, Types of view, Slide master, Templates and Slide transition; MS-Access: Data Field, Record, Database file, Types of files, Types of records, Data type, Database evolution, Data transfer from Excel to Access

LO: Upon completion of this module, students shall be able to create text documents using MS Word, create interesting and appealing presentations using MS PowerPoint, and apply Database Management Software (DBMS) like MS Access to manage data of businesses and enterprises.

Unit III: Worksheet & MS Excel
Basics of worksheet –creating a worksheet, entering data into a worksheet, sorting data, autofill, saving & protecting a worksheet, Formatting of a worksheet. Previewing & Printing worksheet; Create an Excel chart; Drawing charts: Area, Bar, Column, Line, Pie, Scatter, etc. Move and Resize your chart; Charts Styles and Layouts; Chart Titles and Series Titles; Format chart Panel; Add labels to a Chart; Format chart segments; Format Axis titles; Format your Axis titles

LO: Upon completion of this module, students shall develop the ability to arrange data in spreadsheets using

graphing tools, pivot tables, and formulas.

Unit IV: MS-Excel Basic Function

Basic calculations: Sum, Sqrt, Max, Min, Count, Averages, Rank; Conditional and logical functions: IF, AND, OR; Estimation of correlation and regression; Hypothesis testing: t-test, F-test and Z-test Excel Pivot Tables; The LOOKUP Function; The VLOOKUP Function in Excel; Hyperlinks in Excel

LO: This module shall enable the learner to analyze data using MS Excel functions.

Text Books:

- ✓ *New Perspectives Microsoft Office Excel 2016, Comprehensive Enhanced Edition, by Parsons, et al, Nelson Publisher.*
- ✓ *Sinha, P. K. (2004): Computer Fundamentals, 6th Ed, BPB Publications, New Delhi.*

Reference Book

- ✓ *Raja Raman.V. (2014): Fundamentals of Computers, 6th Ed, PHI, New Delhi.*
- ✓ *Kerns R. L.(1992): Essentials of Microsoft Windows, Word and Excel, PHI.*
- ✓ *Alexis Leon & Mathews Leon: Introduction to Computers with Ms-Office, TMH.*

Or

Environmental Economics

Course Description

This course introduces the students to the basics of environmental economics to understand the fundamentals of environmental concerns and develop insights into valuation of environment.

Course Outcomes:

- To understand the basic concepts/principles of Environmental Economics
- To be able to analyse and apply the concepts to understand specific case studies.
- To develop insights into the valuation of the environment.
- To become capable to execute/create the Project or field assignment as per the knowledge gained in the course.

Unit I: Economy and Environment

Concepts of Environmental Economics, Natural Resource Economics, and Ecological Economics. Important environmental Problems (Air pollution, water pollution, deforestation, climate change and global warming), Economy-Environment inter-linkages, Role of environment for economic development, Effect of economic development (industrialization, urbanisation, modernization of agriculture) on environment, Consequences of environmental degradation on the economy and the wellbeing of the people and other living beings, concept of Environment-Kuznets Curve hypothesis.

LO: This module will aid in acquiring knowledge of the concepts related to Environmental Economics and in understanding the Environment-Economy interlinkage.

Unit II: The Economics of Pollution and Climate change

Environment and Market Failure, Nature of environment quality (Non-rivalry and non-excludability), Pollution as public bad, Pollution as negative externality. Pigouvian tax for optimal pollution, Property rights and bargaining for optimal pollution (Coase Theorem), Government‘s Command and Control method for controlling pollution. Climate change as market failure (Green house gas externality, lack of incentives for developing low carbon technology), policy measures for mitigations of climate change (carbon taxes and tradable carbon rights).

LO: This module will be useful for the students in understanding the nature of pollution and getting knowledge of pollution control and climate change mitigating tools.

Unit III: Valuation of Environment

Difficulties of valuation of eco-system services, Concepts of Economic value of environment (Use and non- use value, Option value, Existence value); Willingness to pay (WTP) and willingness to accept (WTA) compensation for improvement/deterioration of environment quality, Revealed Preference Method of valuation of environment (The hedonic price approach, Travel Cost approach)

Contingent Valuation method.

LO: Upon completion of this module, the learner shall gain knowledge of the different methods of valuing environmental services.

Unit IV: Natural Resources and Sustainable Development

Natural resources; renewable and exhaustible; management of exhaustible resources and the Hotelling's rule; management of renewable resources (case of fishery only) optimally, Concept of carrying capacity of Environment (related to resource use and pollution), Issues of irreversibility, uncertainty in the natural resource use and waste disposal, Sustainable Development: Concepts and Components (Social, Economic and Environmental), Daly's operational principles for sustainability, Sustainable Development Goals (SDGs).

LO: This module shall initiate an understanding of the limits of the use of natural resources from the point of view of their sustainability and Sustainable development.

Text Book:

- ✓ *Bhattacharya, R. N. (2002): Environmental Economics: An Indian Perspectives, OUP, New Delhi*

Reference Book:

- ✓ *Kolstad, C.D (1999): Environmental Economics. Oxford University Press, New Delhi*

Or
International Economics

Course Description
This course introduces the students to international trade and finance to understand the theories of international trade and develop insights into trade policy and balance of payments. The course also develops insight into the international financial system and the trade policy of India.

Course Outcomes:
- To understand the basic concepts/principles of International Trade and Finance.
- To acquire the ability to analyse the concepts to understand specific case studies and practical issues.
- To develop insights into trade policy and balance of payments.
- To develop an insight into the international financial system and the trade policy of India.

Unit I: Importance of Trade and Trade Theories
Importance of the study of International Economics; Inter-regional and international trade; Theories of Trade-absolute advantage (Adam Smith), comparative advantage (David Ricardo) and Opportunity cost (Haberler); Heckscher-Ohlin theory of trade – assumptions (Irreversible Factor intensity of goods, Perfect competition with homogeneous products, Constant returns to scale, equal access to technology to producers of all countries, difference in factor endowment between the countries), factor abundance, factor intensity and limitations (Leontief Paradox); Factor Price Equalization theorem.

LO: This module shall endow the knowledge of the different trade theories to the learners.

Unit II: Trade Policy
Concepts of terms of trade; Doctrine of reciprocal demand – Offer curve technique; Gains from trade, types; Free Trade vs Protected Trade, Tariffs- types, effects under partial and general equilibrium analysis; Quotas- effects its impact in partial equilibrium analysis; General Equilibrium analysis of tariff; the concept of optimum tariff.

LO: Upon successful completion of the module, students shall get an understanding of the different tools used by the Government to intervene in trade and their welfare implications.

Unit III: Exchange Rate and International monetary system
Concept and Types of Exchange Rate (bilateral vs. trade-weighted exchange rate, cross exchange rate, spot, forward, futures), Demand for and Supply of foreign exchange, Exchange Rate Determination: Mint Parity Theory, Purchasing-Power Parity Theory, Fixed versus Flexible exchange rate; IMF: Objectives of IMF, IMF‘s assistance to member countries (Rapid Financing

Instrument, Rapid Credit Facility Stand only) for BoP deficit correction., World Bank and WTO; Their achievements and failures; Their Role from the point of view of India

LO: This module will be useful for the students in getting to know about the exchange rate and theories relating to its determination and gaining knowledge of the different international financial institutions.

Unit IV: Balance of Payments

Concepts and components of balance of trade and balance of payments; deficit and surplus in the balance of payments, Disequilibrium in balance of payments; Various measures to correct deficit in BOPs (Expenditure switching and expenditure reducing policies, Direct control), Depreciation Vs. Devaluation; Elasticity approach to devaluation, Foreign trade multiplier.

LO: This module shall enable an understanding of the concept of disequilibrium in Balance of Payment (BOP) and the different measures for correcting the same.

Text Book:

- ✓ *Mannur H. G (2018), International Economics, Vikash Publishing/Sultan Chand*

Reference Books:

- ✓ *Salvatore Dominick (2016), International Economics, Wiley India.*
- ✓ *Sodersten Bo and Reed J (1994), International Economics, McMillan Publisher*
- ✓ *Dwivedi D. N. (2013), International Economics: Theory and Policy, Vikash Publishing.*

SEMESTER VII

Core I **16. Quantitative Methods**

Course description

This course is a continuation of the Mathematical methods for Economists courses in semesters IV and V. It aims to train the students to use the techniques of mathematical and statistical analysis, which are commonly applied to understand and analyze economic problems. It aids in learning the classical techniques involving functions and calculus, to gain knowledge about the elements of Game Theory as applicable to real life economic analysis and to initiate students into sampling tools and techniques, data collection, analysis, theory of estimation and hypothesis testing

Course Outcomes:

- To use the techniques of mathematical and statistical analysis, which are commonly applied to understand and analyze economic problems.
- Learning the classical techniques involving functions and calculus.
- Gaining knowledge about the elements of Game Theory as applicable to real-life economic analysis.
- To make use of sampling tools and techniques, data collection, analysis, theory of estimation, and hypothesis testing.

Unit I

Functions: Multivariable functions – Production functions; Partial derivatives; Total differential; Total derivatives; Jacobian and functional dependence. Quadratic forms; Optimization – Hessian and constrained optimization – bordered hessian- Economic applications;

LO: This module will enable the student to understand and apply the concept of multivariate functions to analyze production functions; and optimize functions with and without constraints.

Unit II

Game theory - Concept of Game, Types of Game, Two-persons-zero sum game, Nash Equilibrium, Prisoner‘s dilemma. Maximin - minimax principle; Saddle point solution, Dominant Strategy, Mixed Strategies; Graphical solution of 2 x n and m x 2 Games; Linear programming – Graphical solution to a linear programming

LO: This module will enable the student to know basic concepts of the Theory of Games, Nash equilibrium, saddle points for a two-person zero-sum game, and hence the value of the game. It will explain the concepts of mixed strategy technique using the probability approach; Linear Programming Problems, basic components, and assumptions; the notions of formulating a Linear Programming Problem with its economic applications and graphical solutions thereof.

Unit III

Random variable and its probability distribution, probability mass function and probability density function, expectation and variance of a random variable, laws of expectation and variance.

Theoretical probability distributions: Binomial, Poisson, and Normal probability distributions and their properties; Normal approximation to Binomial; Joint, marginal, and conditional probability distributions, independence of random variables, covariance, results on expectation and variance.

LO: This module will enable the students to understand random variables, discreet and continuous, and their probability distribution; and understand specific theoretical distribution and their applications.

Unit IV

Concept of an estimator and its sampling distribution; desirable properties of an estimator; Interval estimation; statistical hypotheses- null and alternative; Type I and Type II errors; power of a test, confidence intervals and hypothesis testing based on z, t, chi-square and F-distributions.

Methods of estimation of non-linear equations: parabolic, exponential, modified exponential, Gompertz and logistic relationships

LO: This module will enable the student to understand the concepts of estimation, point, and interval, as well as estimators and hypothesis testing; and methods of estimation of specific non-linear equations.

Text Reading:

- ✓ *Chiang, A. C. (1986): Fundamental Methods of Mathematical Economics, McGraw Hill.*

Suggested References:

- ✓ *Gupta, S. C. (1993): Fundamental Methods of Applied Statistics, S. Chand & Sons.*
- ✓ *Speigel, M.R. (1992): Theory & Problems of Statistics, McGraw Hill Book Co*
- ✓ *Yamane, Taro (1975): Mathematics for Economists, Prentice Hall of India, New Delhi.*
- ✓ *Mukherji & Guha (2011): Mathematical Methods & Economic Theory, Oxford University Press*

Core I 17. Research Methodology

Course description
The course intends to develop a research orientation among the students and to acquaint them with fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific social research methods and their approach. It includes discussions on sampling techniques, research designs and techniques of analysis.

Course Outcomes:

1. Getting initiated into Social Science Research and research process, and the theoretical perspectives in social science research.
2. Addressing the issues inherent in selecting a research problem, selecting an appropriate research design, and applying them in research/ project work.
3. Acquiring the knowledge on methods of collection of data and measurement of variables in a broad structural sense.
4. Having an idea of basic ethical principles for conducting scholarly research and acquiring the skills of writing research reports and implementing research projects/studies.

Unit I: Basics of Research
Introduction to Research: Meaning, Objectives, Motivation, Types, Approaches, Methods and Methodology, Significance, Research Process, Criteria of Good Research; Qualities of a Good Researcher, Research as a Career.

LO: This module introduces the basic concepts of research methodology in social science.

Unit II: Research Problem
Defining the Research Problem: What is a Research Problem? Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem; Research Design: Meaning, Need, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs.

LO: This module will help the learner to select an appropriate research problem and research design.

Unit III: Issues in Research
Measurement in Research, Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Techniques of Measurement Tools, Scaling and Important Scaling Technique Research Ethics: codes and ethics, permissions to research, responsibilities, confidentiality, feedback, participatory research; Research Proposal and literature review: research proposal, review

of literature: stages of review, using the library and internet, abstracting, word processing, plagiarism, Concept of IPR.

LO: Upon completion of this module, the students shall have the basic knowledge of the concept of measurement in research, ethical principles of research and ethical challenges, and review of literature.

Unit IV: Actions in Research

English in report writing: words, sentences, paragraph, writing style; The Report: improvingquality, sections, drawing conclusions, evaluation checklists, persistence; Common Citation Styles

LO: This module shall enable the learner to write good-quality research reports.

Text Book:

- ✓ *Kothari, C. R. (2004): Research Methodology: Methods and Techniques, New Age International Private Limited Publishers, New Delhi*.

Reference Books:

- ✓ *Guthrie, G. (2010): Basic Research Methods, Sage Publications India Private Limited, New Delhi*

Core I 18. Basic Econometrics

Course description

This course intends to further the Introductory Econometrics course of semester VI and revisit the Classical Linear Regression Models and regression diagnostics. It will help the students to develop an intuitive understanding of the material that will allow these econometric tools to be utilized effectively and creatively. On successful completion of this Course, students will be able to learn various basic econometric methods, estimation methods and related econometric theories and apply these methods to data or econometric modeling techniques.

Course Outcomes:

1. To further the Introductory Econometrics course of semester VI and go into greater details of the Classical Linear Regression Models and regression diagnostics.
2. Helping the students to develop an intuitive understanding of the material that will allow these econometric tools to be utilized effectively and creatively.
3. Learning various basic econometric methods, estimation methods, and related econometric theories and apply these methods to data or econometric modeling techniques.

Unit I

Meaning and scope of econometrics; Two variable linear regression model – its assumptions, estimation of parameters and properties of estimators; Gauss Markov Theorem, Coefficient of determination; Analysis of Variance of two variable LRM.

LO: This module will enable the student to apply the method of least squares to estimate the two-variable linear regression model and assess the results thereof.

Unit II

K–Variable LRM: Estimation of parameters, properties of estimators, Gauss–Markov theorem; Testing of significance of single co-efficient, Subset of Coefficients: ANOVA; Adjusted coefficient of determination.

LO: This module will enable the student to apply the method of least squares to estimate the general multi-variable linear regression model and test the statistical significance of the results.

Unit III

Prediction in two-variable and K–Variable LRM; Multicollinearity: Nature, detection, consequences, and remedy. Specification Errors and Measurement errors. Heteroscedasticity: Meaning, Consequences, detection, and remedy

LO: This module will enable the student to understand prediction in a two and multi-variable linear regression model; and gain an idea about the consequences and solution to violation of the least square assumptions like the absence of multicollinearity, correct specification of the model, correct measurement of variable, and homoscedasticity.

Unit IV

Generalized Least square and weighted least square estimation; Auto-correlation: Meaning, Detection, Consequences and remedy. Dummy variable models: Estimation; Testing the structural stability of regression models; Interaction effects; Seasonal analysis; Piecewise Linear regression

LO: This module will enable the student to gain an idea about the consequences and solution to violation of the least square assumption of absence of autocorrelation among errors; and understand dummy variables and their usage in regression analysis.

Text Reading

- ✓ *Johnston (1991): Econometric Methods, Mc Graw Hill Book Co*

Suggested References

- ✓ *Koutsoyiarnis, A. (1992): Introduction to Econometrics, OUP*
- ✓ *Dougherty, C. (1992): Introduction to Econometrics, OUP.*
- ✓ *Kmenta, J. (1997): Elements of Econometrics, University of Michigan Press*
- ✓ *Gujarati, D & Sangeetha (2007): Basic Econometrics, Mc Graw Hill Book Co.*

Core I **19.Economics of Growth and Development**

Course description

This course shall help the students learn the neoclassical growth models of Solow; Meade; Robinson; Kaldor and Pasinetti; render them capable of discussing Cambridge's criticism over the measurement of capital and understand the importance of endogenous growth theories which highlight human capital as an essential component for a country like India. It also aids in analyzing the investment decisions through investment criteria along with their merits and demerits.

Course Outcomes:

1. Understanding the transition of growth theories across schools of thought, and developing an insight into the non-economic factors influencing growth.
2. To equip students to critically analyze selected models of endogenous growth and delve into their theoretical, empirical, and analytical framework.
3. Examining the important contribution of capital & technology to the process of growth and development.
4. Understanding the dynamics of development policies.

Unit I

Theories of Economic Growth: Neo-Classical Growth Models of Solow and Meade; Mrs. Joan Robinson's Growth Model; Cambridge Criticism of Neo-Classical Analysis of Growth – Controversy on the Measurement of Capital.

LO: This module helps in a critical understanding of the growth and development theories and making a comparative analysis of the models of growth.

Unit II

Endogenous Growth, Intellectual Capital, Role of Learning, Education and Research, Optimal Savings and Ramsay Model, Two Sector Growth Model of Ujawa

LO: This module helps in understanding how investment made in education and research and development can lead to the creation of new ideas, technologies, and innovations that can propel economic growth.

Unit III

Growth Models of Kaldor and Pasinetti; Technological Progress – Embodied and Disembodied; Hicks- Harrod Neutrality Approach. Golden Rule of Capital Accumulation.

LO: Upon completion of this module, the student acquires the ability to appreciate Pasinetti's and Kaldor's contributions and the role of capital accumulation along with its implication in the progress of the economy.

Unit IV

Production Function Approach to Economic Growth; Total Factor Productivity; Growth Accounting; Transitional Dynamics; Convergence Hypothesis; Inequality and Development Reasons for a direct relation; reasons for an inverse relation; empirical studies. Human decision-making and development policy.

LO: This module makes the learner capable of understanding the way Total Factor Productivity growth contributes significantly to a country's transition and examines the growth-inequality relationships.

Text Reading

- ✓ *Todaro, M. P. (1994): Economic Development, Longman Publishing, New York.*
- ✓ *Acemoglu, D. (1995): Introduction to Modern Economic Growth, Princeton University Press.*
- ✓ *Jones, C. I. (2001): Introduction to Economic Growth, W. W. Norton & Company, New York.*
- ✓ *Thirwal, A.P. (2003): Growth and Development: With special reference to Developing Economies, Palgrave MacMillan, New York.*
- ✓ *Jones, H. G. (1984): Economic Growth, V. N. Reinhold Company, Ltd. England.*
- ✓ *Barro, R. J. & Sala – I – Martin, X. (2004): Economic Growth, PHI, New Delhi.*
- ✓ *Vanden–Berg, H. (2001): Economic Growth and Development, Mc Graw Hill, New York.*
- ✓ *Basu, Kaushik (2003): Analytical development economics: The less developed economy revisited, MIT Press Cambridge.*
- ✓ *World Development Report 2015: Mind, Society, and Behaviour*

SEMESTER VIII

Core I **20. Microeconomics III**

Course description

This course shall help the students in having a theoretical understanding of consumer behavior and decision-making and to get acquainted with recent advances in microeconomic theory and acquire the skills to apply the theoretical knowledge in research. It shall explore the Consumers‘ choice involving risk and uncertainty; Production function: types and properties; Theories of Cost and general equilibrium theory. The course also shall impart theoretical knowledge on distribution and welfare aspects of economic activities.

Course Outcomes:

1. To have an understanding of the basic tools of reasoning applied to analyze consumer behaviour and explore the Consumers‘ choices involving risk and uncertainty.
2. Getting a deeper knowledge about the paradigm of neo-classical economics.
3. Critically analyzing the marginal analysis.
4. To gain a fair knowledge about the distribution and welfare aspects of economic activities.

Unit I

Utility Function, Lexicographic Ordering, Price & Income elasticities of demand, Slutsky Equation, Homogeneous and Homothetic utility functions; Theory of Revealed Preference, Strong Axiom of revealed preference; The Substitution effect; Consumers‘ choice involving Risk and Uncertainty: N – M Utility Function, Utility – Expenditure duality, Inter-temporal consumption

LO: This module shall impart on the students an understanding of concepts like utility function, preference ordering, elasticity, Slutsky equation, Revealed preference theory, N-M Utility theory, duality in consumer theory, and inter-temporal consumption.

Unit II

Homogeneous production function, Cobb-Douglas, CES Production functions and their properties, multi-product firm and its equilibrium, Kuhn-Tucker conditions, duality in production, production under uncertainty, linear production functions

LO: This module shall help the students examine the commonly used production functions and firm’s equilibrium

Unit III

Critical evaluation of marginal Analysis: Baumol's sales Revenue maximization, Williamson's model of managerial discretion, Marris model of managerial enterprise. Theories of cost and pricing: full cost**,** average cost and Marginal cost pricing theories. Limit pricing theory of Bain and its recent developments including Sylos-Labinis model.

LO: This module shall provide a critical understanding of marginal analysis and explore modern theories of cost and pricing.

Unit IV

Neo-classical Approach, Product exhaustion theorem, Euler's theorem, distribution theories in imperfect product and Factor markets. Pareto optimal conditions; B-S Social welfare function, Compensation criteria, optimum welfare under market imperfections and externality.

LO: This module shall ensure that the learner is ableto understand and explain Euler's theorem and theories of distribution in product and factor markets; and develops an understanding of concepts of social welfare function, the compensation criteria, and optimum welfare under externality and market imperfections.

Text Books

- ✓ *Henderson, J. M. & Quandt, R.E. (1980): Micro Economic Theory – A Mathematical Approach, Mc Graw Hill Co.*
- ✓ *Koutsoyiannis, A: Modern Microeconomics, ELBS/Macmillan*
- ✓ *Gravelle, H & Rees, R (2004): Micro Economics, 3rd Edition, FT Prentice Hall, Pearson*
- ✓ *Mankiw, (2006): Principles of Micro Economics, Cengage Learning India, New Delhi*
- ✓ *Landsburg, S. E. (2008): Pricing, Cengage Learning India, New Delhi*

Reference Books

- ✓ *Varian, H. R. (1992): Micro Economic Analysis, WW Norton & Co., New York.*
- ✓ *Maddala, G.S. & Miller, E (2004): Micro Economics: Theory and Application, Tata Mc Graw Hill, New Delhi.*
- ✓ *Baumol, W. J. (1977): Economic Theory & Operation Analysis, Prentice Hall of India, New Delhi.*
- ✓ *Bilas, R. A. (1985): Micro Economic Theory, McGraw Hill Publishers.*
- ✓ *Michael Z. Wetzstein (2013): Microeconomic Theory: Concepts and Connections, 2nd Edition, Routledge*
- ✓ *Snyder, C & Nicholson, W (2008): Fundamentals of Micro Economics, Cengage learning, New Delhi.*

Core I **21. Macroeconomics III**

Course description

This paper aims to analyze and establish the functional relationship between economy level variables and aggregates. It provides a proper understanding of macroeconomic theoretical structure. It tries to educate the students on an extended and advanced IS-LM framework with the explanations on trade cycles and the new classical approach along with policy implications.

Course Outcomes:

1. Enhancing the understanding of wage-price flexibility with dynamic stochastic settings on an extended and advanced IS-LM framework.
2. Gaining conceptual clarity about the theoretical aspects, foundations, and principles of the trade cycle theories.
3. Having a critical understanding of a new school of thought called _new classical approach to macroeconomics and its policy implication‘.
4. Gaining an insight into and understand theories and practices relating to financial intermediation.

Unit I: Extended IS-LM

Keynesian views on interest. The IS-LM model; Change in general Equilibrium: a change in investment, a change in the money supply, Extension of IS-LM model with government sector (government spending, taxation); Relative effectiveness of monetary and fiscal policies; Extension of IS-LM models with flexible wage and flexible prices, Wage-Price flexible with Pigou Effect and other effects.

LO: This module shall impart clarity regarding wage-price flexibility in an extended IS-LM framework along with the effectiveness of monetary and fiscal policies.

Unit II: Trade Cycle Theories

Meaning and Characteristics of Trade Cycles; its different phases; Theories of Trade cycle: Schumpeter, Kaldor, Samuelson, Hicks, Goodwin‘s model of Trade Cycle, Hawtrey‘s Monetary Theory,Hayek‘s Over-investment Theory and Keynes‘ views on Trade Cycles Control of business cycle

LO: This module shall help the learner in developing a clear and comprehensive understanding of the fluctuations in a nation’s real GDP over time.

Unit III: New classical approach

The new classical critique of micro foundations, the new classical approach; Policy implications of new classical approach – empirical evidence. Lucas Critique and the need for microfoundations; the Dynamic General Equilibrium (DGE) approach to macro analysis: optimization problem of a representative household; optimization problem of a representative.

LO: Upon completion of this module, the learners shall be able to bring out the implications of Lucas' critique and examine the microeconomic foundations of macroeconomic models.

Unit IV

Financial intermediation – a mechanistic model of bank deposit determination; A behavioural model of money supply determination, a demand determined money supply process; RBI approach to money supply; money supply and open economy; control of money supply.

LO: This module shall impart an integrated overview of both theoretical and practical issues related to modern financial intermediation on the students.

Text Reading

- ✓ *Dornbusch, Fisher and Starz (2018): Macroeconomics, 13th Edition, Mc Graw Hill*
- ✓ *Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.*
- ✓ *Edward Shapiro (2001): Macroeconomics Analysis- Galgotia Publication Private Limited, 5th Edition, New Delhi.*
- ✓ *Gregory N. Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi*

Reference Books:

- ✓ *R. Levacic and A Rebmann: Macro Economics - An Introduction to Keynesian-Neo-Classical Controversies*
- ✓ *Dwivedi, D. N. (2018): Macroeconomics -Theory and Policy. 5th Edition, Tata McGraw Hill.*
- ✓ *Romer, D (2012): Advance Macroeconomics, New York, McGraw Hill*
- ✓ *Acemoglu, D. (2009): Introduction to Modern economic Growth, Princeton University press.*

Core I **22. Public Economics II**

Course description

This course aims to provide the students with thorough analytical understanding to analyze public goods, externalities, market failures; economics of government expenditure, taxation and public borrowing. It helps to critically analyze fiscal policies/finance and its implication in Indian Economy. On successful completion of this course, the students will be able to apply the principles of public economics in analyzing various government policies.

Course Outcomes:

- To understand the evolutionary roles of government and the challenges to derive the social preferences.
- Getting education about the theories of taxation, and optimal direct and indirect taxes.
- To have an understanding of ways the governments select public projects through cost-benefit analysis.
- Learning why and how powers should be decentralized for the effective provisioning of public goods and the role of the finance commission in India in transferring funds from the Union to state and local governments.

Unit I: Role of Government

Role of government and fiscal functions-Allocation, Distribution and Stabilization branch; Private and public mechanism for allocating resources; Problems for allocating resources. Arrow's impossibility theorem; Median Voter Theorem

LO: This module will teach students the normative roles of the government and the challenges in aggregating the preferences of individuals to arrive at social preferences.

Unit II: Public Revenue

Optimal Taxation: Optimal commodity taxes, Optimal income taxes, Principles of tax equity– Benefit principle of taxation, Ability to pay principle, Efficiency of taxation- Excess burden and deadweight loss, Incidence of taxation- incidence under perfect competition- partial and general equilibrium analysis, incidence under monopoly. Gender Budgeting, Outcome Budgeting.

LO: This module will teach students about the optimal theories of direct and indirect taxes, gender budgeting, and

outcome budgeting.

Unit III Evaluation of Public Expenditure

What is cost-benefit analysis, cost benefit analysis and externalities, and consumer surplus, Shadow pricing, Disco Moduleng and the cost of capital. Effects of public expenditure on production, distribution and economic activities; public sector pricing policy-average cost and marginal cost pricing, Criteria for public investment- Social cost benefit analysis

LO: This module will educate students about the decision-making process in case of public sector projects and the implications of government spending on the economy

Unit IV: Budget and Fiscal federalism

Principles of multi-Module finance; The decentralisation theorem, Theory of club goods, Tiebout hypothesis: Voting with your feet, Fiscal federalism in India- Vertical and horizontal fiscal imbalances, corrective measures; Constitutional provisions; Theory of Grants- matching vs non matching grant, general vs earmarked grants Latest Finance Commission Recommendations, Devolution of resources and grants; Resource transfer from Union to States – Criteria for transfer of resources

LO: This module will teach students about the theoretical arguments for multitier government and their optimal size. It will also teach the role of the finance commission in India in transferring funds from union to state and local governments.

Text Reading

- ✓ *Cullis, J. & Jones, P. (2009): Public Finance and Public Choice. Oxford University Press.*
- ✓ *Musgrave, R. A. & Musgrave, P. B. (2004): Public Finance in Theory and Practice. Fifth edition, TATA McGraw-Hill*
- ✓ *Herber, B. P. (1967): Modern Public Finance. Richard D. Irwin, Homewood.*
- ✓ *Stiglitz, J. E (2000) Economics of the Public Sector. W W Norton*
- ✓ *Rangarajan, C. and D. K. Srivastava (2011) _Federalism and Fiscal Transfers in India'. Oxford University Press, New Delhi.*

Core I 23. Economics of Social Sector

Course Description

The course aims to acquaint and familiarize students with the economics of the social sector. The modules incorporated in this course provide an analysis of issues at the theoretical level and also with regard to the specificity of issues prevailing in the Indian context. The prime objective of the course is to expose the students to the issues and concerns of various social sectors in India

Course Outcomes:

1. To explore the relationship between education and the economy and identify the major ways education contributes to economic growth.
2. To develop an understanding of planning, financing, and cost-benefit analysis of education.
3. To get introduced to the use of economic models to understand the behaviors of actors in the healthcare sector.
4. To gain a general overview of India‘s Healthcare Sector.

Unit I: Introduction to Economics of Education

Economics of Education: definition, methods, evidence and policy, Classical Economists and Education; Human Capital: historical root, uses, sources, values, investment in human capital; education and economic growth: dimensions, sources, contribution

LO: This module shall enable the students to understand how education is related to the economy.

Unit II: Investment in Education

Education Production Function: concept, estimation, role in policy analysis; Costs of Education: direct and indirect; Benefits of Education: types, measurement; Returns to Education: meaning, type, estimation

LO: This module shall explain how expenditure on education can looked upon as an investment and discuss the rationale for cost analysis in education.

Unit III: The Demand for and supply of Health and Health Services

Demand for Health and health care: concept, a theoretical and empirical investigation, determinants;

Economics of moral hazards; Supply of health and health care: concept, determinant; Health Production: concept and estimation; Health and Development: theory and evidences;

LO: This module shall provide an overview on basic economic theories and models applied to health care provider and shall correlate health with development.

Unit IV: Overview of India's Health Sector

Features of Indian Health Sector; Health Care System in India: history, structure, programs, infrastructure, health information system; Public Health in India: Health Sector Reform in India.

LO: Upon completion of this module, the learner will get exposed to India's health care system and public health.

Text Reading

- ✓ *Cohn, Elchanan (1972):* ***The Economics of Education****, Lexington Books, D. C. Heath and Company, Lexington.*
- ✓ *Blaug, M. (1970):* ***An Introduction to the Economics of Education****, Allen Lane The Penguin Press, London*
- ✓ *Zweifel, P., Breyer, F. and Kifmann, M. (2009):* ***Health Economics****, Springer-Verlag Berlin Heidelberg*
- ✓ *Rout, H. S. ((2011):* ***Healthcare Systems: A Global Survey****, New Century Publication, New Delhi*

Additional Reading

- ✓ *Tu, P. N. V. (1969): The Classical Economists and Education, Kyklos, 22(4): 691-716.*
- ✓ *Blaug, M. (1985): Where are We Now in the Economics of Education?, Economics of Education Review, 4(1): 17-28.*
- ✓ *Levin, H. (1989): Mapping the Economics of Education. An Introductory Essay, Educational Researcher, 18(4):13–73.*
- ✓ *Machin, S. (2008): The New Economics of Education: Methods, Evidence and Policy, Journal of Population Economics, 21(1): 1-19.*
- ✓ *Schultz, T. W. (1961): Investment in Human Capital, American Economic Review, 51(1): 1-17.*
- ✓ *Kiker, B. F. (1966): The Historical Roots of the Concept of Human Capital, Journal of Political Economy, October 1966, 481-99*
- ✓ *Sweetland, S. R. (1996): Human Capital Theory: Foundations of a Field of Inquiry, Review of Educational Research, 66(3): 341-59.*
- ✓ *Kiker, B. F. (1969): Von Thunen on Human Capital, Oxford Economic Papers, 21(3): 339- 43.*
- ✓ *Becker, G. S. (1962): Investment in Human Capital: A Theoretical Analysis, Journal of Political Economy, 70(5): 9-49.*

Three Year Degree Course with Single Major and Two Minor

Semester	Core-I	Core-II	Core-III	Multi-disciplinary	AEC	SEC	VAC	Community Engagement & Services/ Field work /Internship	Total Minimum Credit
I	**2X4=8**	**1X4=4**		**1X3=3**	**1X4=4** Odia		**1x3=3** Environmental Studies and Disaster management		**22**
II	**2X4=8**		**1X4=4**	**1X3=3**	**1X4=4** English	**1X3=3**			**22**
									44
III	**3X4=12**	**1X4=4**		**1X3=3**			**1X3=3**		**22**
IV	**3X4=12**		**1X4=4**					**1x4=4**	**20**
									42
V	**3X4=12**	**1X4=4**				**1x3=3**	**1x3=3**		**22**
VI	**2X4=8**		**1X4=4**			**1x3=3**	**1x3=3**		**18**
									40
Total	**15X4=60**	**3X4=12**	**3X4=12**	**3X3=9**	**2X4=8**	**3x3=9**	**4x3=12**	**1x4=4**	**126**

In case a student opts for NCC and clears 'C' certificate additional 16 Credit shall be awarded and total credit shall be 126+16 = 142 Credit

***The BOS in each subject has to design a course for improving skill in their field.**

****Principles of Management can be offered as an option.**