

COTTON UNIVERSITY
DEPARTMENT OF ECONOMICS

SYLLABUS
FOR
4 YEAR UNDERGRADUATE PROGRAMME (FYUGP) IN ECONOMICS

Semester I

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 1	Fundamentals of Economics-I	100	4	4+0+0
Minor-I	Foundation of Economics-I	100	4	4+0+0
MDE-1	Economics of the Rural Sector	-	3	2+0+1
SEC 1	Introduction to Official Statistics in India	-	3	2+0+1
VAC	Modelling Solution to Environmental Problems	-	2	1+0+1

Semester II

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 2	Fundamentals of Economics- II	100	4	4+0+0
Minor-II	Foundation of Economics-II	100	4	4+0+0
MDE-II	Business Economics	-	3	3+0+0
SEC 2	An Introduction to Survey Research	-	3	2+0+1

Semester III

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 3	Microeconomics	200	4	4+0+0
Core 4	Mathematical Methods for Economics	200	4	4+0+0
Minor III	Microeconomics	200	4	4+0+0
MDE-III	Economics and Environmental Management	-	3	2+0+1

Semester IV

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 5	Macroeconomics	200	4	4+0+0
Core 6	Statistical Methods For Economics	200	4	4+0+0
Core 7	Indian Economy	200	4	4+0+0
Minor IV	Macroeconomics	200	4	4+0+0

Semester I

Core 1 Paper: Fundamentals of Economics-I

Credit: 4 (L+T+P=4+0+0)

Course Objective

This course aims to introduce the students to the preliminary concepts of macroeconomics and monetary economics, and inculcate in them a comprehensive understanding of the Indian economy.

Course Outcomes (CO):

- CO1: Understanding of the concepts of investment, inflation and unemployment, enabling them to analyze the status of the economy, its growth over time.
 CO2: Develop an understanding of business cycles, including the global recession.
 CO3: Learn the fundamentals of monetary economics.
 CO4: Develop an understanding of agricultural scenario of India and BOP situation in the economy.

Course outline

Unit 1: Investment: investment function; business fixed investment; residential investment and inventory investment; marginal efficiency of capital (10)

Unit 2: Inflation and unemployment: Inflation and its social costs; unemployment-inflation relationship- Phillips curve: concept, short-run and long-run Phillips curve (12)

Unit 3: Business cycle: characteristics, phases, measures to control; Asian financial crisis, 1997; Sub-prime mortgage crisis and Great Recession, 2008 (10)

Unit 4: Monetary Economics: quantity theory of money: Fisher and Cambridge; Liquidity preference theory by Keynes; money supply and theory of credit creation (12)

Unit 5: Introduction to Indian agriculture: Role and status of agriculture, rural credit, agricultural marketing, MSP (10)

Unit 6: BOP Situation of India: BOP situation in India; India's current foreign trade policy (10)

Readings

N. Gregory Mankiw, *Macroeconomics*, Cengage
 Eroll D'Souza, *Macroeconomics*, McMillan
 Dutta, G. and A. Mahajan. *Indian Economy*, S. Chand, 72nd Edition

Kapila, U. 2017. *Indian Economy: Performance and policies*, Academic Foundation, 18th edition

Government of India: Economic Survey (relevant issues) 2nd Ed OUP

Minor-I
Foundation of Economics-I
Credits=4 (L+T+P=4+0+0)

Course Objective

Introduce the students to the preliminary concepts of microeconomics, while at the same time, familiarising them with quantitative tools to develop skills for applications in various economic fields.

Course outcomes (CO)

CO1: Understanding of the process of optimal decision making in consumption and production processes.

CO2: Enable the interpretation of government interventionist procedures with regard to prices and fiscal matters.

CO3: Understanding of the basic quantitative skills essential for economic analysis.

Course outline

Unit 1: Microeconomics (22)

Basic concepts: Methodology of economics; the economic problem: scarcity and choice; the Edgeworth Box, the production possibility frontier; Allocation of resources; Concept of basic competitive model; Efficiency and perfect competition; Market failures: sources of market failures (concepts only)

Household sector: Indifference curve analysis: consumer's optimal position, decomposition of price effect, derivation of demand curve - ordinary and compensated; Engel's curve; labour supply and savings decision; controls on prices; taxes and the costs of taxation.

Business sector: Production process with two variable inputs: Isoquants, Characteristics of Isoquants, Marginal Rate of Technical Substitution, elasticity of substitution; Production function: Introduction to Linear, Fixed Proportions, Cobb-Douglas and CES production function.

Cost: opportunity cost, accounting vs. economic cost, cost minimizing input choice, producer equilibrium, expansion path and long run cost curve

Unit 2: Essentials of quantitative analysis- I (22)

Sets and set operations; relations; functions- Range; Domain; Limit and continuity of a function; Concept of Derivative, Basic rules of Differentiation (without proof) , Simple applications of Differentiation – Elasticity of Demand, cost and revenue functions, Derivation of marginal function from total function – cost and revenue functions, Relationship between AC and MC.

Unit 3: Essentials of quantitative analysis- II (20)

Population vs. sample, parameter vs. statistic, sample vs. complete enumeration;
 Measures of central tendency: arithmetic mean, median, mode and concept of geometric mean;

Measures of dispersion: standard deviation, quartile deviation and mean deviation.
Simple numerical problems

Readings

- Karl E. Case and Ray C. Fair, Principles of Economics, 9th Ed.; Pearson Education Inc.,
- Daniel Rubinfeld and Robert Pindyck, Microeconomics, Pearson Education; Eighth edition (latest edition)
- N. Gregory Mankiw, Economics: Principles and Applications, India edition by SouthWestern, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
- Hal R. Varian, Intermediate Microeconomics A Modern Approach, W. W. Norton & Company, Inc.
- Christopher Snyder & Walter Nicholson, Microeconomic Theory Basic Principles and Extensions, Cengage; 11th edition (2014)
- A. C. Chiang & K. Wainwright (2005) Fundamental Methods of Mathematical Economics, Mcgraw Hill Education.
- K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002.
- Prof. S. Barua, (2000), Basic Mathematics and its Economic Applications, Macmillan.
- D. Salvator: Mathematics and Statistics, Schaum's Series Tata McGraw Hill.
- S.P. Gupta *Statistical Methods*, Sultan Chand and Sons.
- S.C. Gupta and V.K. Kapoor,*Fundamentals of Applied Statistics* Sultan Chand and Sons.
- Murray R Spiegel,Larry J. Stephens(2007), *Schaum's Outline of Statistics* McGraw Hill Professional.
- Dominick Salvator, Derrick Reagle(2001) Schaum's Outline of Statistics and Econometrics.
- A. C. Chiang & K. Wainwright (2005) Fundamental Methods of Mathematical Economics, Mcgraw Hill Education.
- K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002.
- Prof. S. Barua, (2000), Basic Mathematics and its Economic Applications, Macmillan.
- R. Gibbons (1992). Game Theory for applied Economists, Princeton University Press; Reprint edition.

MDE-1 Economics of the Rural Sector

Credit= 3 (L+T+P=2+0+1)

Course Objectives:

This programme introduces the students to various issues prevailing in rural areas along with the prevailing socio-economic conditions. After completing the course, students are expected to devise solution to different rural problems.

Course Outcomes:

CO1: Introduction to the concept of rural development, rural economy and related issues.

CO2: Understanding of the theories of development and growth.

CO3: Analyse different rural development policies in India.

Course outline

Unit 1: Rural Development: Concept, Objectives and Indicators (10)

Rural Development: concept and objectives; Elements of rural development; Need for rural development; Rural-Urban Differences; Basic Indicators of Rural Development.

Unit 2: Theories of Economic Growth (12)

Rostow's stages of Growth, Lewis Theory of Development, Harris-Todaro model, and Gandhian Approach to Rural Development

Unit 3: Rural Development in India (10)

Rural development policy in India; Participatory approach; Panchayati Raj Institutions (PRIs) – functions, functionaries and funds.

Unit 4: Exploring village economy (project report required)

Mawlynnong/Rangsapara- cleanest villages; Fringe villages of any reserve forest/sanctuary/national parks etc.; Bell/Brass Metal Industry-Hajo/Sarthebari; village textile industry (any one).

Readings

Singh, K (2009) Rural Development Principles, Policies and Management, New Delhi: Sage

Bezbaruah, M.P (2010) Rural Development in India: The past experience and future

Perspective, in K. Singh (ed) Rural Development in India: Retrospect and Prospects. New Delhi: Concept Publishing Company

Website: <https://rural.nic.in>

Skill Enhancement Course (SEC)

Introduction to Official Statistics in India

Credit: 03 (L+T+P=2+0+1)

Course objectives

The course will give learners an exposure to official statistics related to Indian economy, process of economic census and the data on demographic indicators. It will also familiarize the learners with the challenges faced in the estimation of various economic aggregates.

Course Outcomes:

CO1: understand how the government of India collects data on different issues of the economy for policy making.

CO2: Apply official statistics for research studies

Course outline:

Unit 1: Estimation of national income in India and the challenges in estimation of state GDP; Economic Census (8)

Unit 2: Census in India: Demographic indicators; an overview of NFHS (8)

Unit 3: Surveys conducted by NSSO: Different rounds of NSSO surveys, challenges faced in survey (8)

Unit 4: Price statistics in India; Agricultural statistics in India (6)

Unit 5: Applications of the datasets (Each student will choose any topic related to Indian economy and study the same with anyone of the dataset mentioned above.)

Readings

- <https://censusindia.gov.in/census.website/>
- https://www.mospi.gov.in/sites/default/files/press_release/PressNoteNAD_28feb23final.pdf
- <https://www.mospi.gov.in/>
- <https://mospi.gov.in/29-price-statistics>
- <https://eands.dacnet.nic.in/>

(The Course instructor will just give an overview of the dataset and how it is collected. The instructor will also inform the students how to find the dataset. This course does not delve into the depth of data collection process. The study material will be of the choice of the instructor.)

Value Added Course (VAC)
Modelling Solution to Environmental Problems

Credits: 2 (L+T+P=1+0+1)

Course objectives

Environmental problems have been increasing over time with the growth of population, industrialization and urbanization. These problems started with industrial revolution of the 1700s. As a result, climate has changed with global warming. Environment is a public good but due to its scarcity caused by free riding problem economics has entered the realms of environmental studies. This course will train students to visualize environment as commodity and how to use it optimally. This is necessary for sustainable development of mankind.

Course outcomes:

CO1: Understand and identify environmental problems and their solutions

CO2: Understand and apply various tools for measuring the benefits of environmental decision making

Course outline

Unit I: Environmental problem and modeling solution to environmental problem (08)

Economics and the environment; fundamental concepts in environmental economics: causes of environmental damage and sources; identifying environmental objectives: environmental quality, sustainable development, biodiversity; modeling solution to environmental problems: The command and control approach and the market approach

Unit II: Assessing benefits for environmental decision making (07)

Environmental benefits: concepts and issues; approaches to measuring environmental benefits: Demand function approach, Contingent Valuation method, Hedonic pricing method and Travel cost method

Unit III: Practical application

Conduct a survey of your local environmental problem and apply a suitable method to control it as taught in unit I **or** conduct a case study assessing the benefits of environmental decision making by applying any one of the methods taught in unit II

Readings

Thomas, J.M. and S.C. Callan (2010). *Environmental Economics*, Cengage India

Charles D. Kolstad (2000) *Environmental Economics*, Oxford University Press

Pedagogy

The teacher will first introduce the students to various environmental problems. After this, they will be taught about techniques to control the menace. In the second unit, students will be given an idea about different methods of valuation of environmental decision making with practical examples so as to make them capable to apply in real world.

Semester II

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 2	Fundamentals of Economics- II	100	4	4+0+0
Minor-II	Foundation of Economics-II	100	4	4+0+0
MDE-II	Business Economics	-	3	3+0+0
SEC 2	An Introduction to Survey Research	100	3	2+0+1

Core 2: Fundamentals of Economics-II

Credits=4

(L+T+P=4+0+0)

Course Objective

Introduce the students to the preliminary concepts of microeconomics, while at the same time, familiarizing them with quantitative tools to develop skills for applications in various economic fields.

Course outcomes (CO)

CO1: Understanding of the process of optimal decision making in consumption and production processes.

CO2: Enable the interpretation of government interventionist procedures with regard to prices and fiscal matters.

CO3: Understanding of the basic quantitative skills essential for economic analysis.

Course outline

Unit 1: Microeconomics (22)

Basic concepts: Methodology of economics; the economic problem: scarcity and choice; the Edgeworth Box, the production possibility frontier; Allocation of resources; Concept of basic competitive model; Efficiency and perfect competition; Market failures: sources of market failures (concepts only)

Household sector: Indifference curve analysis: consumer's optimal position, decomposition of price effect, derivation of demand curve - ordinary and compensated; Engel's curve; labour supply and savings decision; controls on prices; taxes and the costs of taxation.

Business sector: Production process with two variable inputs: Isoquants, Characteristics of Isoquants, Marginal Rate of Technical Substitution, elasticity of substitution; Production function: Introduction to Linear, Fixed Proportions, Cobb-Douglas and CES production function.

Cost: opportunity cost, accounting vs. economic cost, cost minimizing input choice, producer equilibrium, expansion path and long run cost curve

Unit 2: Essentials of quantitative analysis- I (22)

Sets and set operations; relations; functions- Range; Domain; Limit and continuity of a function; Concept of Derivative, Basic rules of Differentiation (without proof) , Simple applications of Differentiation – Elasticity of Demand, cost and revenue functions, Derivation of marginal function from total function – cost and revenue functions, Relationship between AC and MC.

Unit 3: Essentials of quantitative analysis- II (20)

Population vs. sample, parameter vs. statistic, sample vs. complete enumeration;

Measures of central tendency: arithmetic mean, median, mode and concept of geometric mean;

Measures of dispersion: standard deviation, quartile deviation and mean deviation.

Simple numerical problems

Readings

- Karl E. Case and Ray C. Fair, Principles of Economics, 9th Ed.; Pearson Education Inc.,
- Daniel Rubinfeld and Robert Pindyck, Microeconomics, Pearson Education; Eighth edition (latest edition)
- N. Gregory Mankiw, Economics: Principles and Applications, India edition by SouthWestern, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
- Hal R. Varian, Intermediate Microeconomics A Modern Approach, W. W. Norton & Company, Inc.
- Christopher Snyder & Walter Nicholson, Microeconomic Theory Basic Principles and Extensions, Cengage; 11 edition (2014)
- A. C. Chiang & K. Wainwright (2005) Fundamental Methods of Mathematical Economics, McGraw Hill Education.
- K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002.
- Prof. S. Barua, (2000), Basic Mathematics and its Economic Applications, Macmillan.
- D. Salvator: Mathematics and Statistics, Schaum's Series Tata McGraw Hill.
- S.P. Gupta *Statistical Methods*, Sultan Chand and Sons.
- S.C. Gupta and V.K. Kapoor,*Fundamentals of Applied Statistics* Sultan Chand and Sons.
- Murray R Spiegel,Larry J. Stephens(2007), *Schaum's Outline of Statistics* McGraw Hill Professional.
- Dominick Salvator, Derrick Reagle(2001) Schaum's Outline of Statistics and Econometrics.
- A. C. Chiang & K. Wainwright (2005) Fundamental Methods of Mathematical Economics, McGraw Hill Education.
- K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002.
- Prof. S. Barua, (2000), Basic Mathematics and its Economic Applications, Macmillan.
- R. Gibbons (1992). Game Theory for applied Economists, Princeton University Press; Reprint edition.

MINOR II

Paper: Foundation of Economics-II

Credit 4

(L+T+P=4+0+0)

Course Objective

This course aims to introduce the students to the preliminary concepts of macroeconomics and monetary economics, and inculcate in them a comprehensive understanding of the Indian economy.

Course Outcomes:

- CO1: Understanding of the concepts of investment, inflation and unemployment, and business cycle enabling them to analyze the status of the economy, its growth over time in a compatible manner.
- C02: Develop an understanding of business cycles, including the global recession.
- C03: Develop an understanding of agricultural scenario of India
- C04: Learn the fundamentals of monetary economics.

Course outline

Unit 1: Investment: investment function; business fixed investment; residential investment and inventory investment; marginal efficiency of capital (10)

Unit 2: Inflation and unemployment: Inflation and its social costs; unemployment-inflation relationship- Phillips curve: concept, short-run and long-run Phillips curve (12)

Unit 3: Business cycle: characteristics, phases, measures to control; Asian financial crisis, 1997; Sub-prime mortgage crisis and Great Recession, 2008 (10)

Unit 4: Agriculture Sector in India: Agriculture in the national economy; crisis in agriculture; land reforms: need, types and appraisal; irrigation and other agricultural inputs; rural credit and its sources; agricultural marketing: present state and types, MSP. (12)

Unit 5: BOP Situation of India: India's BOP: India's BOP or current account, BOP crisis. BOP since 1991, India's current foreign trade policy. (10)

Unit 6: Monetary Economics: quantity theory of money: Fisher and Cambridge; Liquidity preference theory by Keynes; money supply and theory of credit creation (10)

References:

- N. Gregory Mankiew, *Macroeconomics*, TMH
- Eroll D'Souza, *Macroeconomics*, McMillan
- Dutta, G. and A. Mahajan. *Indian Economy*, S. Chand, 72nd Edition
- Kapila, U. 2017. *Indian Economy: Performance and policies*, Academic Foundation, 18th edition
- Government of India: Economic Survey (relevant issues) 2nd Ed OUP

MDE II

Business Economics

Credit 3 (L+T+P=3+0+0)

Course Objective:

The objective of this course is to encourage and prepare students to choose business and entrepreneurship as career choices. In this context the course contents have been so selected as to inculcate in the young minds the fundamentals required for entrepreneurship decision making.

Course Outcomes

CO1: Understand the basic concepts of costs and pricing that are vital in business ventures

CO2: Develop decision making skills for profitable ventures.

CO3: Learn to evaluate and compare among alternative business projects.

Course outline

Unit1. Fundamental concepts used in Business decisions and their implications (12):

Cost concepts-Opportunity Cost, cost-output relationship and its importance in production choices and decision making; Marginal principle, Incremental principle, the Equi-marginal principle; Time perspective in business decisions.

Unit2: Profit Analysis (10): Meaning of Profit; Accounting Profit Vs Economic Profit; Break-even Analysis-implications and problems; Break-even quantity and sales; Targeted Profit; Safety margin.

Unit3: Pricing Strategies (12): Cost-oriented pricing, Cost plus-pricing, Peak load pricing, multiple product pricing, Price over life cycle of product, Price skimming, price penetration. (Only concepts of various strategies required)

Unit4: Project evaluation (14): Laws of returns and their applications; Meaning and importance of Capital Budgeting; Concepts of Payback Period and Net Present Value; Technique of Cost-benefit analysis; Project evaluation, Project analysis; Case study of particular small-scale industries/start-ups.

Readings:

- Dominic Salvatore, *Managerial Economics, In a Global Economy*. 4th Edition. Thompson-South Western.2001
- Dominic Salvatore Adapted by Ravikesh Salvatore, *Managerial Economics Principles and Worldwide Applications*, 7th Edition. Oxford University Press.
- Sampat Mukherjee, *Business and Managerial Economics (in the Global Context)* NCBA
- D N Dwivedi, *Managerial Economics*. Vikas Publishing House Pvt Ltd
- E Mansfield: *Managerial Economics: Theory, Application and Cases*.1996. W W Norton & Co., New York.
- Allen, R.G.D: *Mathematical Analysis for Economists*. Macmillan, London,1956

Skill Enhancement Course (SEC)
An Introduction to Survey Research
Credit: 03 (L+T+P= 2+0+1)

Course objectives:

The course will give an idea about the process of data collection and its different methods. Students are expected to learn the methods of data collection. At the end of the course, a student is expected to construct a questionnaire/schedule to study a particular research problem.

Course Outcome:

CO1: understand and apply different survey methods

Course outline

Unit 1: Fundamental of survey research (10)

What is a survey; when is a survey best; prerequisites of success of survey research: questions and responses, sample survey and design, planning for data analysis, pilot testing, response rate, reporting results; choice between self-administered questionnaire and interview; a survey continuum: from specific to general use; ethical issues; children and survey ethics

Unit 2: Different types of survey methods (10)

Content; defining the terms; selecting information needs; types of survey questions and choice; rating scales

Unit 3: types of survey research (10)

Interviews; focus group discussion; panel survey; telephone survey; mail-in survey and online survey and kiosks survey

Unit 4: Application - Students will choose any topic and prepare a questionnaire/schedule. The student will also administer the same on a small group (to be determined by the instructor) and write a report.

Readings

de Leeuw, E. D., Hox, J. J., & Dillman, D. A. (Eds.). (2008). *International Handbook of Survey Methodology*. Taylor & Francis Group/Lawrence Erlbaum Associates

Fink, A. (2003). *How to Ask Survey Questions*. Sage Publications Inc (second edition)

(The course instructor may use any book of his/her choice. The instructor will explain different methods of data collection and related issues.)

Semester III

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 3	Microeconomics	200	4	4+0+0
Core 4	Mathematical Methods for Economics	200	4	4+0+0
Minor III	Microeconomics	200	4	4+0+0
MDE-III	Economics and Environmental management	--	3	3+0+0

Economics Core Course-3
MICROECONOMICS
Credits: 4
(L+T+P=4+0+0)

Course Objectives:

To put forth an understanding of the functioning of the product and input markets in order to train learners to analyse the strategic decision-making procedures in these markets. The learners will be apprised of the issues relating to general equilibrium to facilitate the recognition of the efficiency and welfare indicators in the economy.

Course Outcomes:

- CO1:** ability to decipher the functioning of and decision-making procedures in the different market types.
- CO2:** Familiarisation with theoretical aspects of input markets with regard to pricing and market behaviour in order to facilitate replication in practical fields.
- CO3:** understand and evaluate welfare implications of economic processes.
- CO4:** evaluate and assess market inefficiencies induced by externalities and asymmetric information.

Course outline

Unit 1: Perfect Competition (10)

Profit Maximisation; Short run profit maximisation by a competitive firm; Short run supply curve for competitive firm and market supply curve; long run profit maximisation, long run supply curve.

Unit 2. Markets with Imperfect Competition (22)

Monopoly: Equilibrium under monopoly, multi-plant monopoly, price discrimination (profitability and equilibrium), dumping, Regulation of monopoly
 Monopolistic competition: group equilibrium, equilibrium with selling costs, excess capacity, welfare issues.

Oligopoly: collusive oligopoly (cartels and price leadership), non-collusive oligopoly (the Cournot model); Game theory: competitive strategy, normal form and extensive form games, dominant and dominated strategy, prisoner's dilemma, Nash equilibrium.

Unit 3: Input Markets (12)

Labour markets –Marginal productivity theory of labour, marginal revenue product under conditions of imperfect competition; Euler's theorem; Demand for labour; input demand curves; shifts in input demand curves; competitive labour markets; bilateral monopoly; labour markets and public policy; Trade unions, Minimum wages - efficiency considerations.

Unit4: Market Failures (10)

Markets with Asymmetric Information (Concepts of Adverse Selection, Moral Hazard, Principal-Agent Problem); externalities (consumption and production)

Unit 5: General Equilibrium Analysis (10)

Equilibrium and efficiency in exchange and production; overall efficiency (input and output Markets); concepts of equity; Existence, uniqueness and stability of equilibrium; Walras's law; Welfare economics: Criteria of Social Welfare (concepts only), social welfare function and the theory of second best.

Readings:

- Henderson and Quandt, *Microeconomic Theory: A Mathematical Approach*, McGraw-Hill Inc.
- Hal R. Varian, *Intermediate Microeconomics, a Modern Approach*, 8th edition, W.W. Norton and Company/Affiliated East-West Press (India), 2010. The workbook by Varian and Bergstrom could be used for problems.
- C. Snyder and W. Nicholson, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.
- Karl E. Case and Ray C. Fair, *Principles of Economics*, Pearson Education Inc., 8th Edition, 2007.
- Rubinfeld and Pindyck, *Microeconomics*, Pearson
- N. Gregory Mankiw, *Economics: Principles and Applications*, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.

Core 4: Mathematical Methods for Economics

Credits 4

(L+T+P=4+0+0)

Course Objective:

The course has been designed to enable students to apply mathematical tools in economics.

Course Outcome (Cos)

CO1: Develop skills of using calculus in optimum decision making and evaluation of economic welfare issues.

CO2: Learn application of matrix algebra to economic problems involving simultaneous equation systems

Course outline

Unit 1: Differentiation and Unconstraint Optimization (20)

Partial and total Differentiation, Chain Rule of Differentiation, Applications of Partial Differentiation; Geometric interpretation of optimization ; Unconstraint optimization with single explanatory variable-economic applications; Cost Revenue, Tax Revenue, Profit and Firm's Equilibrium.

Unit2: Integration (22)

Integration of a function – Basic rules of Integration (Indefinite Integration), simple numerical problems and simple Economic applications of Indefinite Integrals ; Definite integrals; applications in the case of consumer's surplus and producer's surplus; Methods of integration - integration by parts, integration by substitution

Unit3: Matrix and Determinants (22)

Elements of Matrix algebra- Definition, Types of Matrices, Matrix operations- Addition of Matrices Subtraction of Matrices, scalar multiplication, Matrix multiplication, Transpose of a Matrix, Rank of a Matrix.

Determinants – Definition, Matrix Inversion, properties of Determinants – solution of simultaneous equation system- Cramer's Rule; Application to partial equilibrium market Model: Market models, Simple National Income Model.

Readings:

1. A. C. Chiang & K. Wainwright (2005) Fundamental Methods of Mathematical Economics, Mcgraw Hill Education.

2. K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002.
3. Prof. S. Barua, (2000), Basic Mathematics and its Economic Applications, Macmillan.
4. D. Salvator: Mathematics and Statistics, Schaum's Series Tata McGraw Hill
1. K.Sydsaeter P. Hammond, Mathematics for Economic Analysis , Pearson Educational Asia: Delhi,2002

MINOR 3

MICROECONOMICS

Credits: 4

(L+T+P=4+0+0)

Course Objectives:

To put forth an understanding of the functioning of the product and input markets in order to train learners to analyse the strategic decision-making procedures in these markets. The learners will be apprised of the issues relating to general equilibrium to facilitate the recognition of the efficiency and welfare indicators in the economy.

Course Outcomes:

CO1: ability to decipher the functioning of and decision-making procedures in the different market types.

CO2: Familiarisation with theoretical aspects of input markets with regard to pricing and market behaviour in order to facilitate replication in practical fields.

CO3: understand and evaluate welfare implications of economic processes.

CO4: evaluate and assess market inefficiencies induced by externalities and asymmetric information.

Course outline

Unit 1: Perfect Competition (10)

Profit Maximisation; Short run profit maximisation by a competitive firm; Short run supply curve for competitive firm and market supply curve; long run profit maximisation, long run supply curve.

Unit 2. Markets with Imperfect Competition (22)

Monopoly: Equilibrium under monopoly, multi-plant monopoly, price discrimination (profitability and equilibrium), dumping, Regulation of monopoly

Monopolistic competition: group equilibrium, equilibrium with selling costs, excess capacity, welfare issues.

Oligopoly: collusive oligopoly (cartels and price leadership), non-collusive oligopoly (the Cournot model); Game theory: competitive strategy, normal form and extensive form games, dominant and dominated strategy, prisoner's dilemma, Nash equilibrium.

Unit 3: Input Markets (12)

Labour markets –Marginal productivity theory of labour, marginal revenue product under conditions of imperfect competition; Euler's theorem; Demand for labour; input demand curves; shifts in input demand curves; competitive labour markets; bilateral monopoly; labour markets and public policy; Trade unions, Minimum wages - efficiency considerations.

Unit4: Market Failures (10)

Markets with Asymmetric Information (Concepts of Adverse Selection, Moral Hazard, Principal-Agent Problem); externalities (consumption and production)

Unit 5: General Equilibrium Analysis (10)

Equilibrium and efficiency in exchange and production; overall efficiency (input and output Markets); concepts of equity; Existence, uniqueness and stability of equilibrium; Walras's law; Welfare economics: Criteria of Social Welfare (concepts only), social welfare function and the theory of second best.

Readings:

- Henderson and Quandt, *Microeconomic Theory: A Mathematical Approach*, McGraw-Hill Inc.
- Hal R. Varian, *Intermediate Microeconomics, a Modern Approach*, 8th edition, W.W. Norton and Company/Affiliated East-West Press (India), 2010. The workbook by Varian and Bergstrom could be used for problems.
- C. Snyder and W. Nicholson, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.
- Karl E. Case and Ray C. Fair, *Principles of Economics*, Pearson Education Inc., 8th Edition, 2007.
- Rubinfeld and Pindyck, *Microeconomics*, Pearson
- N. Gregory Mankiw, *Economics: Principles and Applications*, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.

MDE-3**Economics and Environmental Management****Credits 3****(L+T+P): 2+0+1****Course Objective:**

The objective of the course is to acquaint the learners with role of economics in environmental management, market failure and its solution

Course Outcomes:

CO1: Understand the relation between environment and economics

CO2: Analyse market failure in allocating environmental resources

CO3: Discuss the remedial measures to the problem of market failure

Course outline**Unit 1: The Role of Economics in Environmental Management (10)**

Economics and environment: Circular flow model, Materials balance model, Understanding environmental damage, Climate change, Carbon emission and carbon trading (concepts only), Sustainable development, Biodiversity

Unit 2: Modelling Market Failure (10)

Environmental Problems: A market failure, Environmental Quality: A public good, characteristics of public goods, Modelling a public goods market for environmental quality

Environmental problems: Externalities, Modelling environmental damage as a negative; The absence of property rights: The Coase theorem

Unit 3: Solution to environmental problems (10)

Conventional Solutions to Environmental Problems: The command and control approach,

Economic solutions to environmental problems: The market approach and types of market instruments.

Readings

Hanley, N; Shogren, J. and White, B. (2006) Environmental Economics: In Theory & Practice, Second Edition 2nd ed., Palgrave, McMillan

Thomas, J.M and Callan, S.C. (2007). Environmental Economics, Cengage Learning

Semester IV

Paper	Paper Title	Level	Credits	Credit Distribution (L+T+P)
Core 5	Macroeconomics	200	4	4+0+0
Core 6	Statistical Methods For Economics	200	4	4+0+0
Core 7	Indian Economy	200	4	4+0+0
Minor IV	Macroeconomics	200	4	4+0+0

Core 5: Paper: Macroeconomics

Credit 4

(L+T+P=4+0+0=4)

Course Objectives (Co)

To impart knowledge of the macroeconomic growth theories and to enable students to analyze monetary and fiscal policies from theoretical points of view

Course Outcomes (COs)

CO1: Learn the important growth models in economics

CO2: Learn about what determines investment in an economy.

CO3: Learn the relationship between inflation and unemployment, and the role of expectations on it.

CO4: Be able to analyze the fiscal and monetary policies

Course outline

Unit 1: Economic Growth (20)

Harrod-Domar model; Solow model; golden rule; technological progress and elements of Endogenous growth

Unit 2: Expectation models (12)

Expectation models – Rational Expectation and Adaptive Expectation model; Automatic stabiliser (concept only)

Unit 3: IS-LM model (12)

Goods market vs. money market, Simultaneous equilibrium using IS-LM framework, Effects of fiscal and monetary policies on output level.

Unit 4: Fiscal and Monetary Policy (20)

Active or passive; monetary policy objectives and targets; rules versus discretion: time consistency; the government budget constraint; government debt and Ricardian equivalence. Monetary policy frameworks of India

Readings

A.P. Thirlwal, *Growth and Development*, McMillan

Eroll D'Souza, *Macroeconomics*, Pearson

Dornbush, Fischer and Startz, *Macroeconomics*, McGraw Hill

Core 6: Statistical Methods for Economics

Credit 4

(L+T+P=4+0+0=4)

Course Objective

To provide the basics of statistics and its applications in economics

Course Outcomes:

CO1: Provide a strong foundation of Probability Theory

CO2: Ability to analyze variable relationship and prediction using correlation, regression and time series analysis

CO3: Evaluate changes of economic phenomena and compatibility over space and time using Index Numbers.

Course Outline

1. Elementary Probability Theory (16)

Meaning and related concepts; sample spaces and events: different approaches to probability: classical approach, statistical approach and axiomatic approach; conditional probability and independence of events; theorems on probability-addition and multiplication

(Simple numerical problems);

2. Correlation (10)

Correlation: meaning, types, methods of studying correlation: scatter diagram, Karl

Pearson's coefficient of correlation; properties of correlation coefficient; Interpretation of correlation; coefficient of determination; rank correlation

3. Regression (12)

Meaning, linear and non-linear regression (concept only) regression lines, regression coefficients, properties of regression coefficients

4. Time Series Analysis (14)

Time series: meaning, components, fitting of a trend: least square method and moving average method.

5. Index Numbers (12)

Concept of an Index number; Laspeyres', Paasche's and Fisher's Ideal Index number; Time reversal, factor reversal and circular tests; Problems in the construction of an index number; Consumer's Price index number-concept and constructions: wholesale Price Index number (Concept only), uses of Index number.

Readings:

Jay L. Devore, Probability and Statistics for Engineers, Cengage learning, 2010

John E Freund, Mathematical Statistics, Prentice Hall, 1992

Richard J Larsen and Morris L. Marx, An Introduction to Mathematical Statics.

D. Salvator: Mathematics and Statistics, Schaum's Series Tata McGraw Hill.

S.P. Gupta Statistical Methods, Sultan Chand and Sons.

S.C. Gupta and V.K. Kapoor, Fundamentals of Applied Statistics Sultan Chand and Sons

Murray R Spiegel, Larry J. Stephens(2007), Schaum's Outline of Statistics McGraw Hill Professional.

Dominick Salvatore, Derrick Reagle(2001) Schaum's Outline of Statistics and Econometrics. McGraw Hill Professional

N G Das, Statistical Methods, McGraw Hills Publications, Latest Edition

Core 7: Indian Economy**Core-07****Credits 4****(L+T+P=4+0+0)**

Course objectives: This paper will introduce students to the basic issues of Indian economy and also enlighten them on the recent changes in policy initiatives taken by government.

Course outcomes

CO1: Develop an understanding of some basic issues of Indian economy

CO2: Assess the sectoral performance of Indian economy, along with the emerging issues and relevant policy measures

CO 3: Analyze the pattern of public expenditure and debt as well as their management

CO4: Gain an insight of India's development experiences and initiatives

Course Outline**Unit1: Basic issues of Indian Economy (10)**

Major issues of development: Population, poverty, income inequality, unemployment (concept and policy related issues), environmental issues of India: Forest degradation and land degradation

Unit 2: Policies and Performance in Agriculture (10)

New agricultural strategy, crop insurance, Liberalization of Indian agriculture; emerging issues of Indian agriculture, agricultural export, agricultural subsidies and role of WTO

Unit 3: Policies and Performance in Industry (10)

Policy reforms in industrial sector; performance since reforms; disinvestment in the public sector, expansion of private and the joint sector; MSMEs- growth and performance

Unit 4: India's Service Sector (10)

Growth and performance; trade in services; prospects and challenges

Unit 5: Public expenditure and public debt in India (10)

Growth of public expenditure in India, causes and policies

Magnitude of public debt, causes, consequences, remedial measures, liquidation of public debt

Unit 6: India's economic reforms (14)

Economic crises-background to economic reforms; policy response: the IMF resistance; policy reform measures: Structural reforms and macroeconomic stabilization measures; impact of economic reforms; the current government initiatives: Make in India, Skill India, Digital India, start up India, Pradhan Mantri Jan Dhan Yojana

Readings

Mukherjee, D. (2017). Indian economy since independence. New Central Book Agency

Puri, V.K and Misra, S.K (2015). Indian Economy. Himalaya Publishing House

Dutta, G. and A. Mahajan. *Indian Economy*, S. Chand, 72nd Edition

Kapila, U. 2017. *Indian Economy: Performance and policies*, Academic Foundation, 18th edition

Minor IV

Paper: Macroeconomics

Credit 4

$$(L+T+P=4+0+0=4)$$

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Course Outcomes (COs)

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Dornbush, Fischer and Startz, *Macroeconomics*, McGraw Hill