



# **UNIVERSITY OF CALCUTTA**

## **Notification No. CSR/61/2024**

It is notified for information of all concerned that in terms of the provisions of Section 54 of the Calcutta University Act, 1979, (as amended), and, in the exercise of her powers under 9(6) of the said Act, the Vice-Chancellor has, by an order dated 16.08.2024 approved the complete syllabus (semester-1 to 6) of Economics (4-year Honours & Honours with Research and 3-year MDC), under CCF, Syllabus for semester-1 & 2, as Published in CSR/13/2023, dt. 12.07.2023, remains same.

The above shall take effect from the odd Semester Examinations, 2024 and onwards.

**SENATE HOUSE**

**Kolkata-700073**

**30.08.2024**

A handwritten signature in blue ink, appearing to be 'D Das', with the date '30/8/2024' written below it.

**Prof.(Dr.) Debasis Das**

**Registrar**

REGISTRAR  
UNIVERSITY OF CALCUTTA

University of Calcutta  
Economics Syllabus (1st Sem – 6th Sem)  
Major – Minor – MDC

**Sem1**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC1	ECOM	Microeconomics (I)	3+1	3
SEC1	ECOM	Introductory Statistics & Application (I)	3+1	6
MN1	MECO	Microeconomics (I)	3+1	3
CC1/CC2	MECO-MDC-CC	Microeconomics (I)	3+1	3
SEC1	MECO-SEC	Economic Data Analysis and Report Writing	3+1	8
SEC1	MECO-SEC	Entrepreneurship and Development	3+1	10
IDC1	ECOD	Elementary Economics	2+1	12

**Sem2**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC2	ECOM	Macroeconomics (I)	3+1	15
SEC2	ECOM	Introductory Statistics & Application (II)	1+3	17
MN2	MECO	Macroeconomics (I)	3+1	15
CC1/CC2	MECO-MDC-CC	Macroeconomics (I)	3+1	15
SEC2	MECO-SEC	Economic Data Analysis and Report Writing	3+1	8
SEC2	MECO-SEC	Entrepreneurship and Development	3+1	10
IDC2	ECOD	Elementary Economics	2+1	12

**Sem 3**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC3	ECOM	Microeconomics (II)	3+1	19
DSCC4	ECOM	Development Economics (I)	3+1	22
SEC3	ECOM	Data Analysis and Research Methodology	2+2	24
MN3	MECO	Microeconomics (I)	3+1	3
CC1/CC2	MECO-MDC-CC	Development Economics (I)	3+1	22
MDC_m 1	MECO-MDC-Minor	Microeconomics (I)	3+1	3
SEC3	MECO-SEC	Economic Data Analysis and Report Writing	3+1	8
SEC3	MECO-SEC	Entrepreneurship and Development	3+1	10
IDC3	ECOD	Elementary Economics	2+1	12

**Sem 4**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC5	ECOM	Mathematical Economics (I)	3+1	27
DSCC6	ECOM	Macroeconomics (II)	3+1	30
DSCC7	ECOM	Statistics for Economics	3+1	33
DSCC8	ECOM	Indian Economics (I)	3+1	36
MN4	MECO	Macroeconomics (I)	3+1	15
CC1/CC2	MECO-MDC-CC	Indian Economics (I)	3+1	36
CC1/CC2	MECO-MDC-CC	Sustainable Development	3+1	39
MDC_m 2	MECO-MDC-Minor	Macroeconomics (I)	3+1	15

**Sem 5**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC9	ECOM	Microeconomics (III)	3+1	41
DSCC10	ECOM	Macroeconomics (III)	3+1	43
DSCC11	ECOM	Mathematical Economics (II)	3+1	45
DSCC12	ECOM	Econometrics (I)	3+1	47
MN5	MECO	Development Economics (I)	3+1	22
CC1/CC2	MECO-MDC-CC	Economic History of India (1857-1947)	3+1	49
CC1	MECO-MDC-CC	Public Finance	3+1	51
MDC_m 3	MECO-MDC-Minor	Development Economics (I)	3+1	22
MDC_m 4	MECO-MDC-Minor	Indian Economics (I)	3+1	36

**Sem 6**

<b>Paper</b>	<b>Course</b>	<b>Name of the Paper</b>	<b>Credit</b>	<b>Pg. no.</b>
DSCC13	ECOM	International Economics (I)	3+1	53
DSCC14	ECOM	Environmental & Resource Economics (I)	3+1	56
DSCC15	ECOM	Public Economics (I)	3+1	58
Internship	ECOM	Summer Internship	3	-
MN6	MECO	Indian Economics (I)	3+1	36
CC2	MECO-MDC-CC	Public Finance	3+1	51
CC1/CC2	MECO-MDC-CC	Rural Development	3+1	60
MDC_m 5	MECO-MDC-Minor	Sustainable Development	3+1	39
MDC_m 6	MECO-MDC-Minor	Economic History of India (1857-1947)	3+1	49

# 1 Microeconomics (I)

## Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

### 1.1 Exploring the subject matter of Economics

5 lecture hours

- Scope and Method of Economics: Wants, Scarcity, Competing Ends and Choice - Defining Economics, Thinking like an economist: Basic Economics Questions, Households and firms, Demand and Supply, Basic concepts of Utility, basic concepts of production- Production function, Definition of Average and Marginal Product, Microeconomics and Macroeconomics, Normative Economics and Positive Economics
- Principles of Microeconomics – principles of individual decision making and principles of economic interactions – trade off, opportunity cost, efficiency, marginal changes and cost-benefit, trade, market economy, property rights, market failure, externality and market power.
- Interdependence and the Gains from Trade- production possibilities frontier and increasing costs, absolute and comparative advantage, comparative advantage and gains from trade.

### 1.2 Utility Theory

20 lecture hours

(Focus on intuitive explanation and diagrams. Learning to analyze without using calculus is a must.)

- Cardinal and Ordinal Approach.
- Utility in Cardinal Approach- Utility and choice, Total Utility and Marginal Utility, Utility and choice-maximization, marginal utility, theory of demand
- Ordinal utility: Assumptions on preference ordering, Indifference curve (IC), Marginal rate of substitution and convexity of IC, Budget constraint, Consumers 'equilibrium-interior and corner,

### 1.3 Demand and Supply: How Markets Work

8 lecture hours

- Elementary theory of Demand: Factors influencing household demand and market demand, the demand curve, movement along and shift of the demand curve
- Elementary theory of Supply: factors influencing supply, the supply curve, movement along and shift of the supply curve
- The Elementary theory of market price: Determination of equilibrium price in a competitive market.

## 1.4 Market and Adjustments

4 lecture hours

- The Evolution of Market Economies, Price System and the Invisible Hand
- The Decision-takers - households, firms and central authorities
- The Concepts of Markets- individual market, separation of individual markets, interlinking of individual markets. Difference among markets- competitiveness, goods and factor markets, free and controlled markets. Market and non-market sectors, public and private sectors, economies- free market, command and mixed.
- Different goods: Public goods, Private goods, Common resources and Natural Monopolies.

## 1.5 Market Sensitivity and Elasticity

8 lecture hours

- Importance of Elasticity in Choice-Decisions
- Method of Calculation- Arc Elasticity, Point Elasticity-definition
- Demand and supply Elasticities-types of elasticity and factors affecting elasticity, Demand Elasticity and Revenue, Long run and Short run elasticities of Demand and Supply
- Income and Cross Price Elasticity
- Applications: Case studies – OPEC and Oil Price

### **Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### **Texts/ References:**

1. G.Mankiw. 2007, Economics: Principles and Applications, India edition by South Western, Cengage Learning
2. R.G. Lipsey. An Introduction to Positive Economics, ELBS (6th edition)
3. Lipsey, R. and Chrystal, A. 2007 Economics, OUP
4. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson

5. G.S.Maddala and E. Miller, 1989, Microeconomics, Prentice Hall, McGraw Hill International Editions
6. Karl e Case and Ray C Fair, Principles of Economics, Pearson Education, 8th Edition, 2007
7. P Samuelson and W.Nordhaus, Economics, McGraw hill International Edition (14th edition or later edition)
8. J.E.Stiglitz and C.E.Walsh, Principles of Economics, WW Norton and Company, NY, (3rd edition or later edition)
9. Hal. R Varian , Intermediate Microeconomics, A modern Approach, WW Norton and Company, 8th edition, 2010 (T)
10. Gravelle, H. and Rees,R. , Microeconomics, Prentice Hall
11. Ryan, W.J.L. and Pearce : Price Theory and Applications , Macmillan Education, UK
12. Ferguson, C.E. and Gould, J.P. : Microeconomic Theory, Aitbs Publishers and Distributors, New Delhi.
13. Satya Chakrabarty, Microeconomics, Allied Publishers
14. Gould, J.P and E.P. Lazear: Microeconomics Theory, McGraw-Hill

## 2 Introductory Statistics and Applications (I)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

### 2.1 Introduction and Overview

Lecture hours 10

- Subject matter of Statistics
- Basic Steps in Statistical Methods – Collection, Presentation and Analysis of Data
  - Collection of Data – Primary and Secondary sources – their comparison, methods of Collection of data
  - Concepts – Variable and Attribute (categorical variable) – Discrete, Continuous and Categorical Variables, Complete Enumeration Survey and Sample Survey, Population and Sample
  - Presentation of data – Textual, Tabular, Diagrammatic
  - Frequency Distribution – Construction of Ogives, Column diagram, Frequency Polygon, Histogram, Frequency Curve
  - Analysis of Data – Univariate and Bivariate Analysis (Concepts only)

[References: Gun, A. M., M.K. Gupta and B. Dasgupta (GGDG) (2022), Fundamentals of Statistics, Volume One, World Press Private Limited Kolkata – Chapter on ‘Collection and Presentation of Data’; Chapter on ‘Frequency Distributions’]

### 2.2 Descriptive Statistics

Lecture hours 35

- **Central Tendency** Lecture hours 10
  - Measures of central tendency for ungrouped and grouped data – arithmetic mean, geometric mean, harmonic mean, median and mode–Composite measures; Comparison of different measures, Quartiles, Deciles and Percentiles
  - Index numbers – Price Index Numbers – problems of construction, methods of construction – aggregative (simple and weighted) and averaging price-relatives (simple and weighted), Laspayre’s, Paasche’s index numbers, Fisher’s Index Number, Quantity Index Numbers, Tests of Index Numbers, Fixed Base and Chain Base, Wholesale price index and cost of living index, Uses of index numbers
- **Dispersion** Lecture hours 10
  - Absolute measures of dispersion for ungrouped and grouped data – range, quartile deviation, mean deviation, standard deviation –Composite SD; Comparison of different measures
  - Relative measures - coefficient of variation, coefficient of mean deviation, coefficient of quartile deviation
  - Distribution of income and wealth – Lorenz curve, Gini Coefficient, Theil’s Index

• **Skewness and Kurtosis** Lecture hours 5

- Moments – central and non-central – computation, conversion
- Measures of skewness – Bowley’s measure, coefficient of quartile deviation, measure based on moments
- Measure of kurtosis – measure based on moments

• **Bivariate Analysis** Lecture hours 10

- Bivariate data – scatter diagram, Simple correlation coefficient – computation, limitations, and properties
- Simple linear regression – Least squares technique – Properties

[Ref: GGDG ,Volume One – Chapter on ‘Measures of Central Tendency’, Chapter on ‘Measures of Dispersion’, Chapter on ‘Moments and Measures of Skewness & Kurtosis’, Chapter on ‘Bivariate Frequency Distributions’, Volume Two – Chapter on ‘Index Numbers’; Sen, A. On Economic Inequality – Chapter on ‘Measures of Inequality’, OUP 1973]

**Additional References**

1. Freund, John E., Mathematical Statistics, Prentice Hall, 1992.
2. Mood, A. M., F. A. Graybill and D. C. Boes, Introduction to the Theory of Statistics, McGraw Hill, 1974.

**Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.



### 3 Economic Data Analysis and Report Writing (EDARW)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

#### 3.1 Tabular and Graphical representation of Statistical Data

10 lecture hours

- Tabular representation of data for analysis
- Graphical representation of data-use of line diagram, bar chart, divided bar chart, pie chart
- etc.
- Frequency distribution table: uses and implications
- Pictorial descriptions of frequency table: frequency polygon, histogram, ogive etc.

#### 3.2 Basic Descriptive Statistics and its role in Data Analysis

25 lecture hours

- Measures of Central Tendency
  - Concept of arithmetic mean, geometric mean and harmonic mean-their uses (explicit mathematical proof of the properties of different types mean are not required).
  - The concept of median and mode-their uses in analyzing economic data.
  - Comparison of mean, median and mode as measures of central tendency
- Measures of dispersion:
  - Range, mean deviation, standard deviation and quartile deviation.
  - Properties of various measures and their implications (explicit proof of properties is not required).
  - Comparison of various measures of dispersion.
  - Significance of the concept of coefficient of variation.
  - Use of range, standard deviation and coefficient of variation in measuring income inequality.
  - Basic concept of Gini coefficient and Lorenz curve.
- Introductory ideas of correlation and regression analysis.

#### 3.3 Elements of Report writing

10 lecture hours

- Locating the basic issues- theme based literature survey and motivation behind any study-objectives of the study-development of writing skills
- Methodological issues: Use of tables and graphs. Use of various measures of central tendency and dispersion in analyzing the results.

- Insertion of footnotes or end notes.
- Preparation of Bibliography

### References

1. Goon, A. M, Gupta, M. K, and Dasgupta, B. Fundamentals of Statistics (Volume One), The World Press Private Ltd.
2. A.L. Nagar and R.K. Das : Basic Statistics, 2nd edition, Oxford University Press.
3. C.R. Kothari: Research Methodology: Methods and Techniques (second revised edition), New Age India (P) Ltd Publishers.

### **Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

- Project/ Term Paper/ Essay writing on any topic from the syllabus in consultation with the concerned teachers.
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

## 4 Entrepreneurship and Development (ED)

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

### 4.1 Basic issues of Entrepreneurship and Economic Development

15 lecture hours

- Basic features of Entrepreneurship
- Entrepreneurship and its linkages with economic development
- Growth of entrepreneurship in India—Role of Entrepreneurship in Economic Development.
- Planning Commission's guidelines for formulating a project report by an entrepreneur
- Problem of Rural entrepreneurship in India

### 4.2 Financial resources for new ventures of an entrepreneur

10 lecture hours

- Sources of finance—capital structure.
- Institutional support to enterprises—national small industries board – state small industries development corporation— district industries center— industrial estates-Indian experience

### 4.3 Growth strategies in small business

10 lecture hours

- Stages of growth,
- Types of growth strategies-Expansion, Diversification, Joint Venture, Merger and Sub-contracting

### 4.4 Sickness in Small Business

10 lecture hours

- Concept of industrial sickness
- Symptoms of sickness in small business
- Causes and consequences of sickness in small business

### Tutorial

Marks: 25, Credit: 1

No. of Lecture hours (Tu): 15

- Project/ Term Paper/ Essay writing on any topic from the syllabus in consultation with the concerned teachers.
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]

- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### References

1. S.S Khanka— Entrepreneurial Development, S.Chand & Company Ltd
2. Rajeev Roy— Entrepreneurship, 3E , Oxford University Press
3. Bill Bolton and John Thompson —- Entrepreneurs: Talent, Temperament and Technique, Butterworth and Heinemann.
4. David .H Holt—Entrepreneurship New Venture Creation
5. Poornima M. Charantimath: Entrepreneurship Development and Small Business Enterprises (2nd Edition) Pearson.
6. Misra D. and Puri K. Indian Economy, Himalaya Publishing House
7. Datt and Sundharam (Revised by G.Datt and A. Mahajan) , Indian Economy, 70th edition, S. Chand

## 5 Elementary Economics

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

### 5.1 Elementary Microeconomic Concepts:

10 Lecture Hours

- Theory of Demand and Supply–Determinants, Law of demand and supply, Demand and supply curves
- Elasticity of Demand and Supply–Concepts of Price and income elasticity and implications
- Theory of Production and Cost—Production function—Concepts of TP, AP, MP, short run-long run and different cost curves-social and external costs
- Market–Different forms-TR, AR and MR– Pricing and Output Decisions under Perfect competition and monopoly–features and equilibrium ( diagrammatic representation only)

### 5.2 Elementary Macroeconomic Concepts:

10 Lecture Hours

- National Income Accounting –Circular flow– concepts of GNP, GDP, NNP, NDP, National Income
- Money and Banking–Different measures of money supply, Difference between central and commercial bank and their functions
- Inflation –Definition, types and anti-inflationary policy
- Fiscal Policy & Monetary Policy -Objectives and Instruments
- International Trade and contemporary issues–Balance of Payments (BOP)–Concepts autonomous and accommodating transactions, Functions of IMF, World Bank, WTO Exchange Rates—PPP (Concepts only)

### 5.3 Elementary Economic Development Concepts:

5 Lecture Hours

- Growth vs. Development
- Development Indicators - Human Development Index (HDI), Gender (GDI), Poverty (MPI), Inequality (GINI) Indices—India's rank
- Sustainable development–concepts and Goals

**5.4 Elementary Concepts of Indian Economics:**

5 Lecture Hours

- Economic Reforms in India—Background, Basic steps of trade, industry and financial sector reforms
- NITI AYOJ-Structure and objectives

**Tutorial****Marks: 25, Credit: 1****No. of Lecture hours (Tu): 15**

- Project/ Term Paper/ Essay writing on any topic from the syllabus in consultation with the concerned teachers.
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**References:****Unit-1**

1. G.Mankiw. 2007, Economics: Principles and Applications, India edition by South Western, Cengage Learning
2. R.G. Lipsey. An Introduction to Positive Economics, ELBS (6th edition)
3. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson
4. G.S.Maddala and E. Miller, 1989, Microeconomics, Prentice Hall, McGraw Hill International Editions
5. Ferguson, C.E. and Gould, J.P. : Microeconomic Theory, Aitbs Publishers and Distributors, New Delhi.

**Unit-2**

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 2010.
3. Branson,William, Macroeconomic Theory and Policy, East West Press
4. Salvatore, D, Internaional Economics, John Wiley and sons
5. Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press.
6. <https://www.imf.org/en/Home>
7. <https://www.worldbank.org/en/home>

8. <https://www.wto.org/>

**Unit-3**

1. Thirlwall, A.P, Growth and Development, Fourth Edition, ELBS
2. Todaro, M.P, Economic Development, Sixth Edition, AWL

**Unit-4**

1. Puri, V.K & Mishra, S.K, Indian Economy, Himalaya Publishing House
2. Dutt & Sundharam, Indian Economy, S. Chand

## 6 Macroeconomics (I)

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

### 6.1 National Income Accounting

Lecture hours 12

- Macroeconomic data- Basic concepts of National Income accounting. The circular flow (three sector).
- Concepts of GNP, GDP, NNP, and NDP at market price and at factor cost- Real and Nominal, -Implicit deflator.
- The measurement of National Income. The problem of double counting.
- The role of Government. Concepts of Corporate Income, Corporate Savings, Personal Income, Personal Disposable Income and Personal Savings.
- Saving-Investment gap and its relation with budget deficit and trade surplus. National Income accounting and cost of living.

### 6.2 Income Determination in the Short Run (Part-I):

Lecture hours 12

#### The Simple Keynesian Model in a Closed Economy

- Consumption Function; the Keynesian Saving Function; stability of equilibrium; the concept of effective demand- the concept of demand-determined output
- Equilibrium Income determination in SKM; the Simple Keynesian Multiplier ; the paradox of thrift; the SKM in a Closed Economy with Government; Government expenditure and Tax
- Balanced Budget Multiplier

### 6.3 Basic theory of Investment

Lecture hours 3

- Investment function: Determinants of investment. -Concepts of Marginal productivity of capital
- Marginal efficiency of capital (MEC) and Marginal efficiency of investment (MEI).

### 6.4 The Classical system

Lecture hours 12

- Basic ideas of Classical Macroeconomics; Say 's Law and Quantity Theory of Money
- Loanable fund theory



- The Classical Theory of Income and Employment determination
- Full Employment and wage-price flexibility; Neutrality of Money
- Classical Dichotomy (Basic Concept).

## 6.5 Inflation

Lecture hours 6

- Concepts and types - Inflationary Gap, Demand pull vs. Cost push inflation,
- Anti-inflationary policy

### **Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### **Text/ References:**

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Principles of Macroeconomics, Indian Imprint of South Western by Cengage India, 6th edition, 2015.
3. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 2010.
4. Ghosh Chandana and Ghosh Ambar, Macroeconomics, PHI Learning Pvt Ltd, 2014.
5. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
6. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
7. Venieris, Y.P. and Sebold F.D., Macroeconomics: Models and Policy, John Wiley and Sons, 1977.
8. Ackley Gardner (old), Macroeconomic Theory, Macmillan, 1961
9. Ackley Gardner(new), Macroeconomics : Theory and Policy : Macmillan
10. J.R.Hicks. The Social Framework: An introduction to Economics, Clarendon Press, 3rd Edition, 1960
11. Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press

## 7 Introductory Statistics and Applications (II)

### Theory

Marks: 25, Credit: 1

No. of Lecture hours (Th): 15

[For Semester-II]

### 7.1 Basic ideas of economic data

15 lecture hours

- Types of data-cross section, time series, pooled data, panel data etc.
- Nature of field survey data – types of cross section data
- Advantages and disadvantages of field survey data
- Importance of field survey data for economic analysis
- Role of pilot survey

### Practicalal

Marks: 75, Credit: 3

No. of Lecture hours (Pr): 45

[For Semester-II]

- Practical: – Computer Laboratory based Worksheet Program (50 marks) & Viva (25 marks)
- Applications of use of Microsoft Excel software will be demonstrated in the computer laboratory in practical classes and the practical examination will be conducted in the usual manner as mentioned in CSR.
- To be more specific, the practical examination of the project is to be conducted jointly by the supervisor and an external examiner on the basis of the use of the Worksheet Program software in the computer laboratory (by determining the various measures of descriptive statistics in front of the examiners just like that of a practical examination) and also on the basis of a viva-voce based on the candidate's knowledge in this context.

### 7.2 Topics under worksheet Program: (Microsoft Excel)

#### 2.1 Concept on Data Frame:

(13 lecture hours)

(Understanding the purpose and benefits of using worksheets in data management and analysis - Familiarizing students with Microsoft Excel, and their user interface)

- – Data Entry and Formatting
  - Variables & Observations (Inputting data into cells accurately and efficiently - Applying formatting options to enhance data presentation (e.g., number formatting, date formatting, cell borders).
  - Data Validation and Conditional Formatting (Setting validation rules to ensure data accuracy and consistency - Applying conditional formatting to highlight specific data patterns or trends.)
  - Data Sorting and Filtering (Sorting data in ascending or descending order based on specific criteria - Filtering data to display only relevant information).

- Basic Formulas and Functions (Understanding the concept of formulas and their role in performing calculations - Using basic mathematical operators (+, -, \*, /) to create formulas - Utilizing built-in functions (e.g., SUM, AVERAGE, MAX, MIN, AND, IF, OR, COUNTIF, VLOOKUP, HLOOKUP) to perform common calculations)
- Importing and Exporting Data (Importing data from external sources (e.g., CSV files, databases) into worksheets - Exporting spreadsheet data to different file formats (e.g., CSV, PDF) for sharing or further analysis).

## 2.2 Frequency Analysis and Data Visualization:

(12 lecture hours)

(Creating charts and graphs to visually represent data - Selecting appropriate chart types based on data characteristics - Customizing chart elements (e.g., titles, axes, legends) to improve readability)

- – Raw Data to Group Data
  - Different type so Frequency Table
  - Different Types of Tabulation (e.g.: Two Way, Three Way, Pivot Table etc.)
  - Different Types of Frequency Graphs (Bar Chart, Column Charts, Frequency Polygon, Histogram, Pie Diagram)
  - Customization of Graphs Frame

## 2.3 Descriptive Statistics:

(20 lecture hours)

(Applying descriptive statistics functions to analyze data - Calculating measures of central tendency and dispersion - Bivariate Analysis).

- – Calculation of Mean, Median & Mode (Un-Grouped & Grouped Data)
  - Dispersion & Inequality Measures (Un-Grouped & Grouped Data)
  - Findings the Observations from different Descriptive Statistical Measures with Graphics (e.g.: Box Plot, Histogram, Lorenz Curve etc.)
  - Scatter Diagram - Correlation Coefficient
  - Simple Regression (Two Variables) - Estimation of Predicted Value & Regression Residuals
  - Random Number Generation

### Suggested Readings: Microsoft Excel

#### Books:

1. "Mastering Data Analysis with Excel" by Michael Alexander. "Data Analysis Using Excel" by Michael Middleton; Wiley, 2020
2. "Excel Bible" by John Walkenbach; Wiley, 2019
3. "Excel Charts and Graphs: Master Data Visualization Techniques" by Paul McFedries; Wiley, 2016
4. "Excel Formulas and Functions for Dummies" by Ken Bluttman; For Dummies, 2015
5. "Microsoft Excel 2016 Step by Step" by Curtis Frye; Microsoft Press, 2015

#### Weblinks:

1. MS Excel: <https://www.w3schools.com/EXCEL/index.php>
2. MSEXcel: <https://support.microsoft.com/en-au/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb>

## 8 Microeconomics (II)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-III]

### 8.1 Theories of Consumer Behaviour and Applications

14 lecture hours

- Derivation of Demand Curves from ICs, composite good convention. Application: Cash subsidy versus subsidy in kind
- Price consumption curve, Income consumption curve and Engel curve. Price effect - Income and Substitution effect (Hicks and Slutsky), inferior goods and Giffen goods, Marshallian and compensated demand curves
- Application of Consumer Behaviour-Labour-leisure trade-off- Inter-temporal choice (saving and borrowing)
- Revealed preference - The Idea, From Revealed Preference to Preference, Recovering Preferences, The Weak Axiom of Revealed Preference, How to check WARP, The Strong Axiom of Revealed Preference, How to Check SARP
- Choice under uncertainty – utility function and expected utility, risk aversion and risk preference

### 8.2 Production and Costs

13 lecture hours

- Technology – general concept of Production Function, production with one and two variable inputs, total average and marginal products, short run and long run, returns to factor and returns to scale, Isoquants, marginal rate of technical substitution, isocost line and firm's equilibrium–Output maximization and Cost Minimization–Expansion path and Ridge lines- elasticity of substitution
- Types of production functions- Cobb-Douglas, fixed-coefficient and CES functions
- Cost structure- implicit cost, explicit cost, accounting cost, sunk cost, economic cost, fixed cost, variable cost, total, average and marginal cost. Determinants of short run cost, cost curves, short versus long run cost curves, economies of scale

### 8.3 The Firm and Perfect Market Structure

10 lecture hours

- Organization, Firms and Profit Maximization
- Relationship among Total Revenue, Average Revenue, Marginal Revenue and Price elasticity of demand
- Marginal Revenue, Marginal Cost and Profit Maximization

- Perfect competition- short run competitive equilibrium of the firm, short run supply curve of firm and industry, Output choice and competitive equilibrium in long run, Economic rent and profit, long-run industry supply- constant, increasing and decreasing cost.
- Consumer and Producer surplus, welfare and efficiency of competitive equilibrium. Government intervention and dead weight loss, Application- Minimum prices and price supports (price ceiling and price floors)
- Tax and market adjustment, Elasticity and Tax incidence

#### 8.4 Input Market in Perfect Competition

8 lecture hours

- Basic concepts- derived demand, productivity of an input, marginal product of an input, value of marginal product and marginal revenue product
- Marginal productivity theory of distribution
- Labor market-supply of labour, competitive labor markets
- Land markets and rent– Ricardian Theory and Modern theory

##### **Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

**[For Semester-III]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

##### **Texts/ References:**

1. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson
2. G.S.Maddala and E. Miller, 1989, Microeconomics, Prentice Hall, McGraw Hill International Editions
3. Hal. R Varian , Intermediate Microeconomics, A modern Approach, WW Norton and Company, 8th edition, 2010 (T)
4. Gravelle, H. and Rees ,R., Microeconomics, Prentice Hall
5. Ferguson, C. E. and Gould, J.P., Microeconomic Theory, Aitbs Publishers and Distributors, New Delhi.
6. Lipsey, R. and Chrystal, A., 2007, Economics, OUP

7. R.G. Lipsey. An Introduction to Positive Economics, ELBS (6th edited Cengage Learning)
8. Karl e Case and Ray C Fair, Principles of Economics, Pearson Education, 8th Edition, 2007
9. P Samuelson and W.Nordhaus, Economics, McGraw hill International Edition (14th edition or later edition)
10. J.E.Stiglitz and C.E.Walsh, Principles of Economics, WW Norton and Company, NY, (3rd edition or later edition)
11. Ryan, W.J.L. and Pearce : Price Theory and Applications , Macmillan Education, Publishers and Distributors, New Delhi.
12. Satya Chakrabarty, Microeconomics, Allied Publishers
13. Gould, J.P and E.P. Lazear: Microeconomics Theory, McGraw-Hill
14. Kousyiannis A, Modern Microeconomics, Macmillan

## **9 Development Economics (I)**

**Theory**

**Marks: 75, Credits: 3**

**No. of Lecture hours (Th.): 45**

### **9.1 Introduction to Development Economics**

9 Lecture Hours

- Definition and Scope of Development Economics - Historical Perspective of Development Theories (Brief Idea Only)
- Growth Vs. Development - Goals and Indicators of Economic Development – HDI (concepts only)
- Income Approach and Capability Approach
- International Comparisons - Challenges and Opportunities in Developing Economies

### **9.2 Poverty, Inequality, And Development**

12 Lecture Hours

- Causes and Consequences of Poverty in Developing Economies
- Measurement Of Poverty: Poverty Line, Poverty Indices – Human Poverty Index (HPI), Multidimensional Poverty Index (MPI) - Vicious Circle of Poverty Hypothesis
- Income Inequality and Wealth Distribution – A Comparison of Commonly Used Inequality Measures (Lorenz Curve, Gini Coefficient)
- Gender Inequality - Gender Inequality Index (GII)

### **9.3 Dual Economy and Development Strategies**

12 Lecture Hours

- Surplus Labour and Disguised Unemployment-Basic Concepts
- Lewis Model of Economic Development with Unlimited Supply of Labour.
- Balanced and Unbalanced Growth as Development Strategies
- Choice of Techniques

### **9.4 Financial Inclusion and Development**

12 Lecture Hours

- Financial Inclusion and Its Impact on Economic Development
- Access to Credit and Financial Services in Rural Areas - Microfinance and Its Role in Poverty Alleviation
- Role of Banks and Financial Institutions in Promoting Development
- Objectives and Functions of IMF, World Bank, WTO

**Tutorial**  
**Marks: 25, Credits: 1**  
**No. of Lecture hours (Tu.): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Text/ References:**

1. "Economic Development" by Todaro and Smith, Pearson Education, 2009
2. "Development Economics" by Debraj Ray, Oxford University Press, 2009.
3. "Analytical Development Economics" by Kaushik Basu, OUP
4. "Growth & Development" by A. P. Thirlwall
5. "Economics of Development" by Dwight H. Perkins, Steven Radelet, David L. Lindauer, and Steven A. Block
6. "Poverty, Inequality, and Development: Essays in Honor of Erik Thorbecke" edited by Hans Binswanger-Mkhize, Kym Anderson, and Kym Anderson
7. "The End of Poverty: Economic Possibilities for Our Time" by Jeffrey D. Sachs
8. "Financial Inclusion: Theory and Measurement" edited by J. D. von Pischke, C. R. Cull, and T. Harten
9. "Financial Inclusion, Growth, and Inequality" by Thorsten Beck
10. "Microfinance for Bankers and Investors: Understanding the Opportunities and Challenges of the Market at the Bottom of the Pyramid" by Elisabeth Rhyne

**Web-links:**

1. World Bank: <https://www.worldbank.org/>
2. International Monetary Fund (IMF): <https://www.imf.org/>
3. United Nations Conference on Trade and Development (UNCTAD): <https://unctad.org/>
4. The United Nations Development Programme (UNDP): <https://www.undp.org/>



## 10 Data Analysis and Research Methodology

### Theory

Marks: 50, Credits: 2

No. of Lecture hours (Th.): 30

[For Semester-III]

### 10.1 Methodologies of collection of data

5 lecture hours

- Complete enumeration vs. sample survey
- Sampling techniques: basic ideas of simple random sampling (with and without replacement), stratified random sampling, circular sampling, sampling proportional to size (mathematical proof/mathematical demonstration not required for any type of sampling)
- Practical methods of drawing random sample using random number tables.
- Prerequisites for field survey –preparation of blank tables
- Preparation of questionnaire depending on nature of survey- illustrations on the basis of preparation of hypothetical questionnaire

#### Textbook:

1. Goon, A. M, Gupta, M. K, and Dasgupta, B. Fundamentals of Statistics (Volumes One and Two),The World Press Private Ltd
2. "Research Methodology: Methods and Techniques" by C.R. Kothari and Gaurav Garg

#### Reference:

1. "Elementary Survey Sampling" by Richard L. Scheaffer, William Mendenhall, and R. Lyman Ott

### 10.2 Recording & Validating of data

5 lecture hours

- Recording of data after completion of survey: Manual & Digital
- Tabular representation of data collected
- Cross checking of data after tabular representation
- Role of units of measurement

#### Textbook:

1. Goon, A. M, Gupta, M. K, and Dasgupta, B. Fundamentals of Statistics (Volumes One and Two),The World Press Private Ltd
2. "Fundamentals of Applied Statistics" by S.C. Gupta and V.K. Kapoor

#### Reference:

1. "Survey Methodology" by Robert M. Groves et al.

### 10.3 Elements of Report writing

5 lecture hours

- Locating the basic issues- theme based literature survey and motivation behind any study-objectives of the study-development of writing skills.
- Methodological issues: Use of tables and graphs.
- Use of various measures of central tendency and dispersion in analysing the results.
- Insertion of footnotes or endnotes.
- Preparation of Bibliography

**Textbook:**

1. Goon, A. M, Gupta, M. K, and Dasgupta, B. Fundamentals of Statistics (Volumes One and Two),The World Press Private Ltd
2. "Business Research Methods" by Donald R. Cooper and Pamela S. Schindler

**Reference:**

1. "The Craft of Research" by Wayne C. Booth et al.

### 10.4 Basics of Power Query in MS Excel, Power BI

15 lecture hours

- Power Query in Excel - Connect, Transform, Combine, Load
- Power BI - Loading Excel data, Visualize data, Explore data, Make informed decisions

**Reference:**

1. "Cleaning Excel Data with Power Query: Straight to the Point" Du Soleil, Oz; Independent Publishers Group, 2019
2. <https://learn.microsoft.com/en-us/power-bi/fundamentals/desktop-what-is-desktop?source=recommendations>

**Practical**

**Marks: 50, Credits: 2**

**No. of Lecture hours (Tu.): 30**

**[For Semester-III]**

- Practical: – Sample Survey (Preparation of Questionnaire & Data Collection: 25 marks), Report Writing (Presentation using MS Excel Dynamic Dashboard, Interpretation & Analysis: 15 marks) & Viva (10 marks).
- Total Practical Hours: 30
- Students will Prepare a Questionnaire and Collect Primary Data, and then they should make Statistical Analysis based on the use of Excel Worksheet Program software (Microsoft Excel). They are to prepare one Dynamic Interactive Dashboard in this context.

- Students should have good knowledge about the sampling procedure used in collecting data. On the day of the Practical examination students should carry the data set used in the report.
- It is a computer laboratory-based Practical based on which the project report will be constructed. Use of computer laboratory is essential for running the Worksheet Program and for handling the data.
- Small Sample Survey, Data Analysis & Report Writing may be done by a single student or by a group of students (not exceeding 5 students in a single group) depending on the decision of the internal examiner/ supervisor.
- The Report should be supervised by a subject teacher approved by the institution. But viva-voce will always be with respect to individual student, not for the group as a whole.
- The norm of examination for this Practical part of the course will be decided as per university modalities. To be more specific, the Practical examination of the project is to be conducted on the basis of the content of the survey report, use of Excel Worksheet Program in the computer laboratory and also on the basis of a viva-voce based on the candidate's knowledge about the data set along with economic insights. Data should be primary, and data to be justified by the student.

## 11 Mathematical Economics (I)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-IV]

### 11.1 Preliminaries

20 Lecture hours

- **Sets and their operations** – Cartesian Products of sets, Open and Closed sets, Convex sets
- **Matrices** – Elementary Operations, Rank of a Matrix, Determinant and Inverse of a square matrix, Solution of a system of linear equations using Cramer's rule, Eigen values and Eigen vectors
- **Functions of One Real Variable**
  - Geometric properties of functions – Increasing and Decreasing functions, convex and concave functions, Quasi-concave and Quasi-convex functions, Domain and Range of a Function, Concepts of monomial and polynomial functions, Linear and Non-linear functions, Explicit and Implicit functions, Number System
  - Limit and Continuity of a Function – Different Limit Theorems (without proofs)
  - Differentiability of a function – Concept of first principle – First-order differentiation and Second-order differentiation; L'Hospital's Rule
  - First derivative and slope of a function, Second derivative and curvature of a function
  - Graphs of Linear, Quadratic, Polynomial, Power, Exponential and Logarithmic Functions
  - Quasi-convexity and quasi-concavity of functions – conditions for checking
  - Applications in economics – Marginal and Average functions, Elasticity
- **Functions of several variables**
  - Partial and total derivatives – Hessian Matrix
  - Monotonic transformation of a function, Homogeneous and homothetic function, Euler's theorem
  - Implicit Function Theorem (without proof), System of non-linear equations – Jacobian determinant and existence of solution
  - Conditions for convexity / concavity, conditions for quasi-convexity /quasi- concavity for two-variable functions
  - Level curves – definition, slope and curvature
  - Applications in economics – Utility function – Marginal Utility, Indifference curves; Demand function – various elasticities of demand; Production function – Marginal Product, Isoquants and Output elasticity; Comparative Static Analysis

[Ref: Chiang, A.C. and Wainwright (CW), Fundamental Methods of Mathematical Economics, McGraw-Hill Book Co. – Chapters on 'Economic Models', 'Equilibrium Analysis in Economics', 'Linear Models and Matrix Algebra', 'Linear Models and Matrix Algebra (continued)', 'Comparative Statics and the Concept of Derivative', 'Rules of Differentiation and their Use in Comparative Statics', 'Comparative Static Analysis of General Functions Models' 'The Case of More than One Choice Variable', 'Optimization with Equality Constraints']

## 11.2 Single Variable Optimization

10 Lecture hours

- Concepts of Local and Global Maximum/Minimum, Maximum/Minimum on the Boundary and in the Interior
- Stationary/Extreme Points and Values
- Significance of First order and second order conditions of maximisation/ minimisation
- **Applications in economics** –
  - Profit maximization with respect to output for a competitive firm
  - Effects of (a) lump-sum tax (b) specific tax (c) ad valorem tax under perfect competition

[Ref: CW – Ch. on ‘Optimisation: A Special Variety of Equilibrium Analysis’; Henderson, J. M. and R.E. Quandt, R. E. (HQ), Microeconomic Theory: A Mathematical Approach, Tata McGraw-Hill Publishing Company Limited – Ch. On ‘Market Equilibrium’]

## 11.3 Optimisation of Several Variable Functions

15 Lecture hours

- **Concepts of Unconstrained and Constrained optimisation**
- **Unconstrained optimisation of a Function of two variables** - conditions for maximisation / minimization – stationary point / extreme values, Hessian determinant and the concepts of positive definite and negative definite
  - Applications in economics - Profit maximization with respect to factor-uses for a competitive firm when Production function is given
- **Constrained Optimisation with Equality Constraint** – Conditions for maximisation/minimisation, Lagrange method and Bordered Hessian determinant, Value Function and Envelope theorem
  - Applications in Economics –
  - Utility maximization problem – Derivation of demand curves, income consumption curve, indirect utility function, Interpretation of Lagrange multiplier, Roy’s identity
  - Expenditure minimization problem – Derivation of compensated demand function, Shephard’s Lemma, Slutsky’s equation
  - Optimal choice of labour and leisure
  - Cost minimization problem – Derivation of factor demand function for a cost-minimising firm, cost function, expansion path
- **Constrained optimisation with Inequality Constraint** – Application of Kuhn-Tucker conditions
- **Linear Programming Problem** – Formulation of an LPP, Graphical solution, Basic feasible solution, Slack and surplus variables, Duality, Duality Theorems (without proofs)
  - Economic Applications –

- Diet problem, Production problem, Leontief Static Open Model and Leontief Static Closed Model and Hawkins-Simon conditions – Economic interpretation of Dual

[Ref: CW – Chapters on ‘Optimisations: A Special Variety of Equilibrium Analysis’, ‘The Case of More than One Choice Variable’, ‘Optimisation with Equality Constraints’, ‘Further topics in optimisation’; Chiang, Alpha C., ‘Linear Programming’, ‘Linear Programming (continued)’; HQ – Chapter on ‘Topics in consumer behavior’, ‘The theory of the firm’; Dorfman, R., Samuelson, P.A. and Solow, R. M., Linear Programming and Economic Analysis, Dover Publications – Ch. on ‘The Statical Leontief System’]

### **Tutorial**

**Marks: 25, Credit: 1**

**Tutorial contact hours (Tu): 15**

**[For Semester-IV]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### **Additional References**

1. Dixit, A. K., Optimization in Economic Theory, Oxford University Press.
2. Hoy, M., Levernois, McKenna, C., Rees, R. and Stengos, T. Mathematics for Economics, PHI Learning Private Limited.
3. Intrilligator, Michael D., Mathematical Optimization and Economic Theory, PHI Learning Private Limited.
4. Renshaw, G., Maths for Economics, Oxford University Press.
5. Simon, C. P. and L. Blume, Mathematics for Economists, W. W. Norton & Company Ltd.
6. Sydsaeter, K., Hammond, P. J. and Storm, A., Essential Mathematics for Economic Analysis, Pearson.
7. Silberberg, E. and Suen, W., The Structure of Economics: A Mathematical Analysis, McGraw-Hill.

## 12 Macroeconomics (II)

### Theory

Marks: 25, Credit: 1

No. of contact hours (Th): 15

[For Semester-IV]

### 12.1 Income Determination in the Short-run (Part-II): The IS-LM Model

10 lecture hours

- IS-LM Model - equilibrium, stability and comparative statics-Crowding out -Effects of fiscal and monetary policies.

### 12.2 Aggregate Demand and Aggregate Supply- the Complete Keynesian Model

10 lecture hours

- Derivation of aggregate demand curve.
- Derivation of aggregate supply curves both in the presence and absence of wage rigidity.
- Equilibrium, stability, and comparative statics-effects of monetary and fiscal policies. Effects of wage cut.
- Unemployment equilibrium and its causes- possible solutions including real balance effect.

### 12.3 Keynes vs. Classics

7 lecture hours

- Keynesian vs classical system.
- Hybrid models under Classical/Keynesian framework.
- Friedman's restatement of classical ideas

### 12.4 Money Supply, Monetary Policy and Government Budgetary Operations

10 lecture hours

- Measures of money supply with special reference to India (M1, M2, M3 and M4)
- Balance sheet view of money supplied by the banking sector as a whole
- High powered money –definition
- Balance sheet of Reserve Bank of India and High-powered money
- Balance sheet of Commercial banks and basic ideas of money multiplier theory.
- Deposit multiplier, currency multiplier, reserve multiplier, credit multiplier and money multiplier in the context of the theory of money supply

- Interest sensitivity of money supply and the slope of the LM curve
- Monetary policy – Open Market Operations, Statutory Liquidity Ratio, Bank rate, variable reserve ratio, repo rate.
- Government Budget Deficit –Deficit financing and monetary policy.

## 12.5 Inflation-Unemployment Trade-off and Expectations

8 lecture hours

- Inflation and unemployment trade-off.
- Four models of aggregate supply: The Sticky-Wage Model, The Worker-Misperception Model, The Imperfect Information Model, and The Sticky-Price Model.
- Deriving the Phillips Curve from Aggregate Supply Curve.
- Short run and long- run Phillips curve – role of adaptive expectations and rational expectations.
- Disinflation, Sacrifice Ratio and policy ineffectiveness.

### Tutorial

Marks: 25, Credit: 1

Tutorial contact hours (Tu): 15

[For Semester-IV]

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]  
Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### Texts/ References:

#### Textbooks:

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 2010

#### **References**

1. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
2. Ackley Gardner (old), Macroeconomic Theory, Macmillan, 1961
3. Ackley Gardner(new), Macroeconomics: Theory and Policy: Macmillan,1978
4. Ghosh Chandana and Ghosh Ambar, Macroeconomics, PHI Learning Pvt Ltd, 2014



5. Andrew B. Abel and Ben S. Bernanke, *Macroeconomics*, Pearson Education, Inc., 7th edition, 2011.
6. Venieris, Y.P. and Sebold F.D., *Macroeconomics: Models and Policy*, John Wiley and Sons, 1977
7. Richard T. Froyen, *Macroeconomics*, Pearson Education Asia, 10th edition, 2016.
8. William Branson. *Macroeconomic Theory and Policy*, Indian reprint, East West Press, 3rd edition, 2014.
9. Levacic Rosalind and Rebmann Alexander, *Macroeconomics: An Introduction to Keynesian and Neo-Keynesian Controversies*, Palgrave Macmillan, 1982.
10. Sikdar Soumen, *Principles of Macroeconomics*, Oxford University Press
11. Blaug Mark, *Economic Theory in Retrospect*, 5th Edition, Cambridge University Press, 1997
12. Mueller, M. (edited), *Readings in Macroeconomics*, London: Holt, Rinehart and Winston, 1973.

## 13 Statistics for Economics

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-IV]

### 13.1 Elementary Probability Theory

8 Lecture hours

- Sample spaces and events (concepts and definitions using set theory)
- Classical and Axiomatic definitions of probability and their comparison
- Conditional Probability and Independence of Events, Pairwise and Mutual independence
- Theorem of total probability, Theorem of compound probability, Bayes' Theorem and their applications

[Ref: Goon, A. M, Gupta, M. K, and Dasgupta, B. (GGDG) Fundamentals of Statistics, Volume One, The World Press Private Ltd – Chapter on 'Elements of Probability Theory']

### 13.2 Probability Distributions

15 Lecture hours

- Random variable (discrete and continuous) – probability distribution, probability mass function (pmf), probability density function (pdf), distribution function
- Expected values of random variables – mean, variance, raw moment, central moment, moment generating function (mgf)
- Properties of commonly used discrete and continuous distributions:
  - Binomial – pmf, mean, variance, moment generating function, measures of skewness and kurtosis
  - Poisson – pmf, mean, variance, moment generating function, measures of skewness and kurtosis
  - Normal – pdf, mean, median, mode, variance, moment generating function, measures of skewness and kurtosis points of inflection
- Joint distribution of random variables (discrete and continuous) – joint pmf/ pdf, marginal pmf/pdf, conditional pmf/pdf – independence of jointly distributed random variables

[Ref: GGDG Vol 1 – Chapters on 'Univariate Theoretical Distributions', 'Elements of Probability Theory']

### 13.3 Sampling Theory and Distribution

7 Lecture hours

- Concepts of Complete enumeration survey and sample survey, sampling and non- sampling errors, Population, sample, statistic, parameter, sample size, population size, random sampling, sampling distribution and standard error of a statistic
- Some Methods of Random Sampling:
  - Simple random sampling (SRS) with replacement (WR) and without replacement (WOR) – Practical methods of drawing SRSWR and SRSWOR
  - Mean and standard error of sample mean in cases of SRSWR and SRSWOR
  - Mean and standard error of sample proportion in cases of SRSWR and SRSWOR
  - Mean of sample variance in case of SRSWR
  - Stratified sampling (basic concept only)
  - Multi-stage sampling (basic concept only)
- Some Basic Distributions –
  - Chi-square, Student's t and F distributions – definitions, important properties (mean, variance, skewness - without derivations)

[Ref: GGDG Vol 1 – Chapter on 'Random Sampling and Sampling Distributions'; Murthy, M.N., Sampling Theory, Chapters on 'Need for Sample Survey', 'Concepts, Definitions and Notations', 'Simple Random Sampling', 'Stratified Sampling', 'Multi-stage Sampling']

### 13.4 Statistical inference

15 Lecture hours

- Basic ideas of Estimation and Testing, Point Estimation and Interval Estimation
- Point Estimation – Criteria of a good estimator – unbiasedness, minimum variance, mean square error, Consistency and Sufficiency
  - Basic principles of Ordinary Least Square, Maximum Likelihood Method, Method of Moments
  - MLEs of parameters of Binomial, Poisson and Normal distributions
- Interval Estimation –
  - Confidence interval for population mean and SD of Normal distribution
  - Confidence interval for Population Proportion
- Testing of hypothesis – Concepts of null hypothesis, alternative hypothesis, Type I and Type II errors, Power of a test, p-value
  - Testing related to mean and SD of normal distribution
  - Testing related to Population Proportion

[Ref: GGDG Vol 1 – Chapters on 'Basic Principles of Statistical Inference and Exact Tests and Confidence Intervals']

**Tutorial**  
**Marks: 25, Credit: 1**  
**Tutorial contact hours: 15**  
**[For Semester-IV]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Additional References:**

1. Cochran, William G., Sampling Techniques, John Wiley.
2. Freund, John E., Mathematical Statistics, Prentice Hall.
3. Mood, A.M., Graybill, F. A. and Boes, D.C., Introduction to the Theory of Statistics, McGraw Hill.

## **14 Indian Economics (I)**

**Theory**

**Marks: 75, Credits: 3**

**No. of Lecture hours (Th.): 45**

**[For Semester-IV]**

### **14.1 Economic Development since Independence**

(15 hours)

- Growth and development under different policy regimes (from planning to market-based development)
  - Objectives, achievements and failures of Planning
  - Economic crisis during the late 1980s
  - Economic Reforms – Critical Analysis
- Structural changes in the post-reforms period
- Regional variation of growth and development

### **14.2 Population and Human Development**

(9 hours)

- Demographic trends and issues
- Health: Basic problems and Government measures
- Education: Basic problems and Government measures, Right to Education (RTE) Act 2009

### **14.3 Growth and Distribution: Policy perspectives**

(9 hours)

- Trends in GDP and per capita GDP
- Poverty and Inequality
- Unemployment, Youth unemployment (School Transition to Work)

### **14.4 Economic Reforms in India**

(12 hours)

- Industrial Sector Reform
- Financial Sector Reforms
- Fiscal Sector Reforms
- Trade & External Sector Reforms
- Labour market Reforms

- Reforms in the Public Sector

**References Books:**

1. "Indian Economy" by Ramesh Singh
2. "Indian Economy: Performance and Policies" by Uma Kapila
3. "Indian Economy: Problems and Development" by A.M. Gokhale and S.S. Acharya
4. "Indian Economy since Independence" by Uma Kapila
5. "Indian Economy: Economic Development and Policy" by Mishra and Puri
6. "Indian Economy: Economic Development and Policy" by Dutt and Sundaram
7. "India's Economic Development Since 1947: 1947-1970" by T.V. Sathyamurthy
8. "The Evolution of the Indian Economy: 1900 to the Present Day" by Irfan Habib
9. "India's Economic Reforms and Development: Essays for Manmohan Singh" edited by Isher Judge Ahluwalia and I.M.D. Little
10. "India's Economic Policy: Preparing for the Twenty-First Century" by I.G. Patel and Ismail Serageldin
11. "India Unbound: The Social and Economic Revolution from Independence to the Global Information Age" by Gurcharan Das
12. "The Indian Economy: Problems and Prospects" by Bimal Jalan
13. "India: Economic Reforms and Growth" by Jagdish Bhagwati
14. "India's Economic Transformation" edited by K.L. Krishna and S. Mahendra Dev
15. "India's Economy: Performance and Challenges" by S.K. Ray
16. "India's Economy: Problems and Prospects" by Arvind Panagariya
17. "The Oxford Handbook of the Indian Economy" edited by Chetan Ghate
18. "Indian Economy: Environment and Policy" by Gaurav Datt and Ashwini Deshpande
19. "Indian Economy: Issues and Policies" by D.K. Hathi and C.B. Mamoria
20. "The Indian Economy: A Macroeconomic Perspective" by S.S. Bhalla
21. "The Indian Economy: Issues, Policies and Performance" edited by Rajib Bhattacharya, & Ananya Ghosh dastidar, 2024, Routledge India
22. "Bharatiyo Arthaniti", Sudakshina Gupta (Paschimbanga Rajya Pustak Parshad)

**Web-links:**

- Reserve Bank of India: <https://www.rbi.org.in/>
- Ministry of Finance, Government of India: <https://www.finmin.nic.in/>
- Planning Commission (now NITI Aayog): <https://niti.gov.in/>

**Tutorial**  
**Marks: 25, Credits: 1**  
**No. of Lecture hours (Tu.): 15**  
**[For Semester-IV]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

## 15 Sustainable Development

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-IV]

### 15.1 The Approach Towards Sustainability-Introductory ideas

10 lecture hours

- Key environmental issues and problems - Economic way of thinking about these problems
- Circular flow of Environmental Pollutants and Waste Recycling - Laws of Thermodynamics
- Renewable and Non-renewable Resources - The issue of Sustainability

### 15.2 The Meaning of Sustainable Development

20 lecture hours

- Different definitions of Sustainable Development
- Rules of Sustainable Development
- Measures of Sustainable Development
- Sustainable Management of resources-the role of property rights
- Stakeholders associated with Sustainable Management of different types of renewable resources: fishery, forestry and water
- The concept of Sustainable livelihood in the context of sustainable resource management.

### 15.3 Trans-boundary pollution, Climate Change and Sustainable Development

15 lecture hours

- Implementation of Environmental policies in Developing Countries and International experience;
- Transboundary Environmental Problems - International Meetings, Protocols and Treaties;
- Economics of Climate Change - Basic ideas of the Carbon Credit Market – Clean Development Mechanism and International Emission Trading.

### Tutorial

Marks: 75, Credits: 1

No. of Lecture hours (Tu): 15

[For Semester-IV]

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]



- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### **Texts**

1. Rabindranath Bhattacharya: Environmental Economics: An Indian Perspective■, Oxford University Press.
2. Pearce and Turner: Environmental and Natural Resource Economics, John Hopkins University Press,1991

### **References**

1. Roger Perman, Yue Ma, Michael Common, David Maddison and James McGilvray, ■Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 4th edition, 2011.
2. Charles Kolstad, ■Intermediate Environmental Economics■, Oxford University Press, 2nd edition, 2010.
3. IPCC (Intergovernmental Panel on Climate Change), Fifth Assessment Report, 2014.
4. National Water Policy 2012, Ministry of Water Resources, Government of India.
5. National Forest Policy 2016: Ministry of Environment and Forests, Government of India
6. National Policy on Marine Fisheries, 2017: Ministry of Animal Husbandry, Dairying and Fisheries, Government of India.

## 16 Microeconomics (III)

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-V]

### 16.1 Imperfect Market Structure

20 lecture hours

- Monopoly and barriers to entry- output determination and price rule, measure and sources of monopoly power, social costs of monopoly power-Deadweight loss
- Pricing with market power- first, second- and third-degree price discrimination, intertemporal price discrimination-peak-load pricing and two-part tariff-multiplant monopoly
- Monopolistic competition- short run and long run equilibrium, excess capacity
- Oligopoly- Oligopoly equilibrium as Nash equilibrium, Cournot, Bertrand and Stackelberg Model- use of isoprofit curves and simple game theoretic interpretation. Sweezy's kinked demand curve model and non-collusive equilibrium. Competition versus collusion- the Prisoners' Dilemma. Collusive Oligopoly –Cartels and Price Leadership

### 16.2 Input market under Imperfect Competition

5 lecture hours

- Monopsony, bilateral monopoly in labour market—Monopolistic and monopsonistic exploitation

### 16.3 General Equilibrium, Efficiency and Welfare

20 lecture hours

- General Equilibrium and Economic Efficiency- Exchange, production and welfare, Pareto Optimality, Edgeworth box and contract curve, Pareto efficiency and perfect competition
- Reasons for Market failure, Pareto efficiency and market failure (externalities and public goods), property right and Coase Theorem
- Markets with asymmetric information-adverse selection, moral hazards, agency problems (concepts only)

### Tutorial

Marks: 25, Credits: 1

No. of Lecture hours (Th): 45

[For Semester-V]

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.

- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Texts/ References:**

1. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson
2. Hal. R Varian, Microeconomic Analysis, WW Norton and Company, 3rd edition, 2013
3. J Tirole, Theory of Industrial Organisation, MIT Press, 1988
4. K Binmore, Fun and Games: A text on Game Theory, OUP,1991
5. Anindya Sen, Microeconomics, OUP
6. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning, 2010
7. Satya Chakrabarty, Microeconomics, Allied Publishers
8. Ferguson, C. E. and Gould, J.P., Microeconomic Theory, Aitbs Publishers and Distributors, New Delhi.
9. Cohen, K.J. and Cyert, R.M., Theory of the Firms: Resource Allocation in a Market Economy , Prentice Hall India,1981
10. Chauhan, S.P.S. , ■ Microeconomics- An Advanced Treatise■, Prentice Hall India, 2009.
11. Walter Y.Oi- “ A Disneyland Dilemma: Two Part Tariffs for a Mickey Mouse Monopoly” The Quarterly Journal of Economics, Vol. 85, No. 1 (Feb., 1971), Oxford University Press ( For Two-part Tariff only)

## 17 Macroeconomics (III)

### Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-V]

### 17.1 Basic Tenets of New Classical and New Keynesian Theories

10 Lectures

- New Classical Theory-The concept of rational expectations and the theory of real business cycle-introductory ideas
- New Keynesian Theory- nominal rigidities and real rigidities, rigidities in interest rates and credit rationing-introductory ideas

### 17.2 Macroeconomic Foundations

15 Lectures

- Consumption: Keynesian consumption function; Fisher's theory of optimal inter-temporal choice; life-cycle and permanent income hypotheses; Dusenberry's relative income hypothesis;
- Demand for money: Regressive Expectations and Tobin's portfolio choice models; Baumol's inventory theoretic money demand.

### 17.3 Economic Growth

20 lectures

- Harrod and Domar models of economic growth.
- Solow one sector growth model-steady state-golden rule- -dynamic efficiency.
- Technological progress
- Elements of endogenous growth theory-basic ideas-the AK model

### Tutorial

Marks: 25, Credit: 1

No. of Lecture hours (Tu): 15

[For Semester-V]

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Textbooks:**

1. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 2010
2. Ghosh Chandana and Ghosh Ambar, Macroeconomics, PHI Learning Pvt Ltd, 2014

**References**

1. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
2. Romer David , Advanced Macroeconomics, McGraw Hill Education, 4th edition, 2011.
3. Ghosh Chandana and Ghosh Ambar, Economics of the Public Sector, PHI Learning Pvt Ltd, 2008
4. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
5. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 10th edition, 2016.
6. Steven M. Sheffrin, Rational Expectations, Cambridge University Press, 2nd edition, 1996.
7. William Branson. Macroeconomics , Harper and Row, 3rd edition, 1989
8. Snowdon and Vane (ed), A Macroeconomics Reader, Routledge, Taylor and Francis Group.
9. R. Barro. Macroeconomics, 5th edition, The MIT Press, 1989
10. A.K.Sen (ed). Growth Economics, Penguin, 1970
11. Barro, R.J. and Xavier Sala-i-Martin , Economic Growth,
12. Errol D'Souza. Macroeconomics, Pearson Education (New Delhi), 2009.
13. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
14. Laidler, E.W. ,The Demand for Money : Theories and Evidence, Dun-Donnelley Publishing Corporation, New York, 1978.

## 18 Mathematical Economics II

Theory

Marks: 75 Credits: 3

No. of Lecture hours (Th): 45

[For Semester-V]

### 18.1 Game Theory

10 Lecture hours

- Concept of a game – Pure Strategy and Mixed Strategy, Constant-sum and Non-constant-sum game – Constant-sum game as a zero-sum game
- Static Games – Pure Strategy Solution Methods, viz., Maximin–Minimax technique, Dominant strategy equilibrium, Iterated dominant strategy equilibrium, Nash equilibrium and Mixed Strategy Solution Method
- Some Common Games – Prisoners’ Dilemma, Battle of Sexes, Matching Pennies
- Dynamic Games – Method of Backward Induction (Basic concept)

[Ref : Gibbons, R., Game Theory for Applied Economists, Princeton University Press – Ch. on ‘Static Games of Complete Information’]

### 18.2 Integration of Functions

5 Lecture hours

- Integration of functions
- Integration by Substitution and Integration by parts
- Applications in Economics – finding total functions from marginal functions, Present Value

[Ref: Chiang, A.C. and Wainwright (CW), Fundamental Methods of Mathematical Economics, McGraw-Hill Book Co. – Ch. on ‘Economic Dynamics and Integral Calculus’]

### 18.3 Difference Equations

10 Lecture hours

- First order linear difference equations and their solutions
- Second order linear difference equations and their solutions
- Non-linear Difference Equations – Qualitative-Graphic Approach
- Applications in Economics – Cobweb model, A model with lagged adjustment, Samuelson’s multiplier-accelerator model

[Ref: CW – Chapters on ‘Discrete time: first order difference equations’, ‘Higher Order Difference Equations’; HQ – Chapter on ‘Market equilibrium’]

## 18.4 Differential Equations

20 Lecture hours

- First order linear differential equations and their solutions
- Second order linear differential equations and their solutions
- Solution of linear system of Differential Equations (i) via Eigen values(ii) by substitution
- Fixed Point and stability
- Qualitative-Graphic Approach – One-variable and Two-variable Phase Diagrams
- Linearization of a Non-linear Differential-Equation System and Stability Analysis
- Applications in microeconomics and macroeconomics – Price dynamics in a single market, Multi-market equilibrium and stability, A model with inflation-unemployment interaction, Solow model, ISLM model

[Ref: CW – Chapters on ‘Continuous Time: First Order Differential Equations’, ‘Higher Order Differential Equations’, ‘Simultaneous differential equations and difference equations’; Strogatz, Steven H., Non-linear Dynamics and Chaos, Sarat Book Distributors (for 4.4); Silberberg, E. and Suen, W., The Structure of Economics: A Mathematical Analysis, McGraw-Hill, Ch. on ‘Equilibrium, Dis-equilibrium, and the Stability of Markets’]

### Tutorial

**Marks: 25 Credit: 1**

**Tutorial contact hours (Th): 15**

**[For Semester-V]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### Additional References

1. Aliprantis, D.C. and Chakrabarti, S. K., Games and Decision-Making, Oxford University Press.
2. Allen, R.G.D., Mathematical Analysis for Economists, Macmillan and Co. Limited.
3. Hoy, M., Levernois, McKenna, C., Rees, R. and Stengos, T. Mathematics for Economics, PHI Learning Private Limited.
4. Renshaw, G., Maths for Economics, Oxford University Press.
5. Sydsaeter, K., Hammond, P. J. and Storm, A., Essential Mathematics for Economic Analysis, Pearson.

## 19 Econometrics I

Theory

Marks: 75 Credits: 3

No. of Lecture hours (Th): 45

[For Semester-V]

### 19.1 Nature and Scope of Econometrics

3 lecture hours

- Distinction between Economic Model and Econometric model.
- Concept of stochastic relation, Role of random disturbance in econometric model.
- Application of Econometrics in different branches of social science.

### 19.2 Classical Linear Regression Model

Simple linear regression model (SLRM) and multiple linear regression model (MLRM) with two regressors

27 lecture hours

- The classical assumptions (basic interpretation); Concepts of population regression function and sample regression function, SLRM and MLRM.
- Estimation of SLRM and MLRM (with two regressors only) by method of ordinary least squares.
- Properties of the Least Squares Estimators in SLRM- Gauss-Markov theorem.
- Testing of hypotheses in SLRM and MLRM – Single Test and Joint Test
- Goodness of fit (in terms of R<sup>2</sup>, adjusted R<sup>2</sup> and F statistic), Analysis of Variance (ANOVA).
- Economic Interpretation of Regression results – Statistical significance and economic importance.
- Simple correlation, partial correlation and multiple correlation (Definition, and interpretation in the context of SLRM and MLRM).

## 20 Qualitative (Dummy) Independent Variables

10 lecture hours

- Intercept dummy and Slope dummy (only interpretation of the model).
- Forecasting - Ex-post forecast and Ex-ante forecast, forecast error (only for two variable model).



## 20.1 Violations of Classical Assumptions

5 lecture hours

- Multicollinearity - Consequences, Detection (Variance Inflationary Factor) and Remedies.
- Heteroscedasticity - Consequences, Detection (Lagrange Multiplier test) and Remedies.
- Autocorrelation - Consequences, Detection (Durbin-Watson test) and Remedies.

### **Tutorial**

**Marks: 25 Credit: 1**

**Tutorial contact hours (Th): 15**

**[For Semester-V]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

### **Text Books**

1. Gujarati, Damodar (2004), Basic Econometrics, McGraw-Hill.
2. Wooldridge, Jeffrey M. (2013), Introductory Econometrics – A Modern Approach, CENGAGE learning.

### **Reference Books**

1. Maddala, G. S. (2002), Introduction to Econometrics, Macmillan Publishing Company.
2. Pindyck, R. and D. Rubinfeld (1997), Econometric Models and Economic Forecasts, McGraw-Hill.

## **21 Economic History of India (1857-1947)**

**Theory**

**Marks: 75 Credits: 3**

**No. of Lecture hours (Th): 45**

### **21.1 Colonial India: Background and Introduction**

10 lecture hours

- Overview of the colonial economy
- Macro Trends: National Income; Population; Occupational structure.

### **21.2 Agriculture**

10 lecture hours

- Agrarian structure and land relations
- Agricultural markets and institutions – credit, commerce and technology;
- Trends in performance and productivity
- Famines.

### **21.3 Railways and Industry**

10 lecture hours

- Railways
- The de-industrialisation debate
- Evolution of entrepreneurial and industrial structure
- Nature of industrialisation in the inter-war period
- Constraints to industrial breakthrough, Labour relations.

### **21.4 Economy and State in the Imperial Context**

15 lecture hours

- The imperial priorities and the Indian economy
- Drain of wealth
- International trade, Capital flows and the colonial economy – changes and continuities
- Government and fiscal policy.

**Tutorial**

**Marks: 25 Credit: 1**

**Tutorial contact hours (Th): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).

- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Text**

- Bhattacharya, Dhiresh, A Concise History of Indian Economy, Progressive Publishers, 1972

**References**

- Irfan Habib, Indian Economy 1858-1914, A People's History of India, Vol.28, Tulika, 2006.
- B.R. Tomlison, 1975, India and the British Empire 1880-1935, IESHR, Vol.XII.
- Dharma Kumar, the Fiscal System, CEHI, Chapter 12.
- Basudev Chatterjee, Trade, Tariffs and Empire, OUP 1992, Epilogue.
- Daniel Thorner, Agrarian Prospect in India, 1977
- Amiya Kumar Bagchi, Private Investment in India 1900-1939, Taylor and Francis, 2000.

## 22 Public Finance

### Theory

Marks: 75 Credits: 3

No. of Lecture hours (Th): 45

### 22.1 Core Concepts

15 lecture hours

- Public Goods and Externalities: Understanding the characteristics of public goods, market failures, and the role of government in addressing externalities.
- Public Revenue: Sources of government revenue including taxation (direct and indirect), fees, and other non-tax revenues.
- Public Expenditure: The allocation of public funds for various government activities, including social welfare, infrastructure, and defence.
- Public Debt: The concept of public debt, its implications for the economy, and debt management strategies.
- Taxation: Progressive, Regressive and Proportional

### 22.2 Basic Concepts of Public Finance Theories

10 lecture hours

- Benefit Principle
- Ability-to-Pay Principle
- Public Choice Theory (Basics)
- Fiscal Federalism

### 22.3 Issues from Indian Public Finance

20 lecture hours

- Current Issues of India's Tax System.
- Working of Monetary and Fiscal Policies in India.
- Analysis of Indian Budgetary System

### Tutorial

Marks: 25 Credit: 1

Tutorial contact hours (Th): 15

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.

- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**Text**

1. Ganguly Subrata, Public Finance : A Normative Approach, Nababharat Publishers
2. Majumdar D. and Bhattacharya S., Sarkari Aay- Byay Tatyer Bhumika, ABS Publishing House, 2024

**References**

1. Musgrave, R.A. and P.B. Musgrave, Public Finance in Theory and Practice, Mc- Graw Hill, 1989.
2. M.M Sury, Government Budgeting in India, Commonwealth Publishers, 1990.
3. Shankar Acharya, ■Thirty years of tax reform■ in India, Economic and Political Weekly, May 2005.
4. Government of India, Report of the 13th Finance Commission.
5. Economic Survey, Government of India (latest).
6. State Finances: A Study of Budgets, Reserve Bank of India (latest).

## 23 International Economics-I

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-VI]

### 23.1 Absolute and Comparative Advantages of Trade

7 lecture hours

- Adam Smith's theory of Absolute Advantage.
- David Ricardo's theory of Comparative Advantage.
- Arbitrage as the basis and direction of trade; fundamental sources of cross-country price differences and arbitrage-concept of comparative advantage; externalities, regulation and perverse comparative advantage
- One factor economy, production possibility frontier, relative demand and relative supply, terms of trade, trade in the Ricardian world, Determination of intermediate TOT, Complete vs Incomplete specialization, Complete specialization and gains from trade.

### 23.2 The Building Blocks of Trade Theory

10 lecture hours

- The concept of community indifference curve-Justification and properties.
- The need for trade indifference curves, derivation of trade indifference curves, properties of trade indifference map, Offer curves and its properties. Three important elasticities-the elasticity of offer curves, the elasticity of demand for imports, the elasticity of supply of exports. International equilibrium and offer curves, terms of trade (TOT) and stability, the Marshall-Lerner condition,
- Gains from Trade (GFT) theorem, illustration of GFT, decomposition of GFT, substitution possibilities and magnitude of GFT.

### 23.3 Factor Endowment and Trade (Heckscher-Ohlin-Samuelson Model)

15 lecture hours

- Heckscher-Ohlin (HO)theorem and price vs physical definitions of relative factor abundance.
- Role of homotheticity of tastes in the context of physical definition
- Factor Intensity Reversal in the context of price and physical definitions and invalidity of HO Theorem.
- Factor intensity ranking, one-to-one correspondence between commodity price ratio & factor price ratio (Stolper-Samuelson Theorem), One to one correspondence between endowment ratio and production proportion ( Rybczynski theorem) .
- The Factor Price Equalization Theorem-Factor price equalization and complete specialization.

- Incomplete Specialization, Factor price equalization and Factor Intensity Reversal
- Empirical studies- Leontief Paradox.

### 23.4 Trade Policy

10 lecture hours

- Partial Equilibrium Analysis of Tariff - cost-benefit, Quota, Quota- Tariff equivalence & nonequivalence, monopoly effects of quota, subsidy and voluntary export restraint.
- General Equilibrium Analysis- distinction between large and small economy, welfare effects of a tariff on small country and large country. Tariff ridden offer curve, Tariff war, Optimum tariff for large economy, Metzler's Paradox.

### 23.5 Balance of Payments

3 lecture hours

- Balance of Payments accounts. Autonomous and accommodating transactions. Basic concepts of Fixed and Flexible exchange rate

#### **Tutorial**

**Marks: 25 Credit: 1**

**Tutorial contact hours (Th): 15**

**[For Semester-VI]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

#### Texts

1. P. Krugman and M. Obstfeld- International Economics (8th Edition) ; Pearson Education
2. R. Caves, J. Frankel and R.W. Jones – World Trades & Payments (9th Ed); Pearson Education.
3. Rajat Acharyya- International Economics; Oxford University Press

#### References

1. J.R. Markusen, J.R. Melvin, W.H. Kaempfer, K.E. Maskus – International Trade – Theory and Evidence, McGraw Hill
2. B. Sodersten, and G. Reed (1994) : International Economics , Macmillan, London, 3rd edition.

3. M. Chacoliades (1978) : International Trade: Theory and Policy, New York, McGraw-Hill
4. R. Dornbusch : Open Economy Macroeconomics, Basic Books, Inc. Publishers, New York.
5. Jones, R.W. : The Structure of Simple General Equilibrium Models, Journal of Political Economy, Vol 73, 1965, pp 551-572
6. Jones, R.W. : A Three Factor Model in Theory, Trade and History, in Bhagwati. J. et al (eds) Trade, Balance of Payments and Growth, 1971, North Holland, Amsterdam.
7. Chaudhuri, S. and Mukhopadhyay, U.: Foreign Direct Investment in Developing Countries: A Theoretical Evaluation, Springer, Chapter 2 only, 2014.



## 24 Environmental & Resource Economics (I)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th.): 45

[For Semester-VI]

### 24.1 Environment, Ecology, and Economy

10 lecture hours

- What is environmental economics
- Interlinkages between the Economy and Environment - Circular Economy
- Elements of Environmental Degradation

### 24.2 Efficiency and Market Failure

8 lecture hours

- Externalities, Public Goods/ Bads, and Market Failure
- Property Rights and the Coase Theorem

### 24.3 Environmental Regulations and the Economics of Environmental Policies

12 lecture hours

- History - The Design
- Monitoring and Enforcement
- Pigouvian Fees – Single Polluter, Multiple Polluters, Fees vs Subsidies
- Regulating Pollution: Command and Control, Economic Incentives
- Tradable Pollution Permits (Basic Concepts only)

### 24.4 Measuring the values of Environmental Costs and Benefits

15 lecture hours

- Concept of Total Economic Value: User Value & Non-User Value
- Actual Market based Valuation, Future Use Value, Bequest Value, Vicarious Value
- Objective Standard based Valuation
- Subjective Preference based Valuation - Revealed Preference based Valuation: Travel Cost Method (TCM) & Hedonic Price Theory (HPT)
- Stated Preference Method - Constructed Market: Contingent Valuation Method (CVM)

#### **Reference:**

1. Bhattacharya R. (ed.), Environmental Economics - An Indian Perspective, OUP.

2. Saha D., Handbook of Environmental Economics, Cambridge Scholars Publishing, 2024
3. Kolstad C, Environmental Economics, OUP
4. Hanley N, Shogren J.F. & White B., Environmental Economics in Theory and Practice, Macmillan
5. Pearce and Turner: Environmental and Natural Resource Economics, John Hopkins University Press,1991

**Tutorial**

**Marks: 25, Credits: 1**

**No. of Lecture hours (Tu.): 15**

**[For Semester-VI]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

## 25 Public Economics (I)

Theory

Marks: 75, Credits: 3

No. of Lecture hours (Th): 45

[For Semester-VI]

### 25.1 Government in a Market Economy

6 lecture hours

- Revisiting the concept of Market failure and externalities; public and merit goods; Mixed good, Club good, Partial Public good
- Government intervention-allocation, Distribution, Stabilization and Regulatory functions

### 25.2 Choice and Public Economics

12 lecture hours

- Characteristics of Pure Public Good; Distinction between Pure Public Good and Private Good;
- Market Failure in case of Pure Public Good, Optimal provision of Public Goods - Public Provision of Public Goods,
- Samuelson Model and Lindahl Equilibrium

### 25.3 The Revenue and Expenditure of the Government

15 lecture hours

- Classification of Taxes; Canons of Taxation;
- Principles of Taxation - Benefit Principle, Ability to Pay Principle, Equal Sacrifice Principle, ;
- Incidence and Burden of Taxation;
- Effects of taxation on work efforts, risk-bearing and on savings,
- The Laffer curve;
- Comparison between direct and indirect taxes – income and substitution effects;
- Optimal Taxation

### 25.4 Public Finance

12 lecture hours

- Meaning and Classification of Public Expenditure - government budget and its types– primary deficit, fiscal deficit, revenue deficit and budget deficit
- Meaning of Public Debt; Domar's model of public debt, Ricardian Equivalence, Sources of Public Borrowings: internal and external borrowing; Effects of Public Debt.
- Fiscal federalism-concepts of tax devolution

**Tutorial**  
**Marks: 25, Credit: 1**  
**No. of Lecture hours (Tu): 15**  
**[For Semester-VI]**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point,(iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.

**References:**

- 1. J. F. Due and A. F. Friedlander. Government Finance-Economics of Public Sector, AITBS Publishers and Distributors, 1994
- 2. J. Hindriks and G. D. Myles. Intermediate Public Economics, The MIT Press; Annotated Edition, 2006.
- 3. R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition, 1989.
- 4. Amaresh Bagchi (ed), Readings in Public Finance, OUP
- 5. J. E. Stiglitz. Economics of Public Sector, W. W Norton and Company, 3rd Edition, 2000.
- 6. A Ghosh and C. Ghosh, Economics of the Public Sector, Prentice Hall India Learning Private Limited; 2nd Revised edition (2014)

## **26 Rural Development**

### **26.1 Understanding Rural India**

7 lecture hours

- Basic Elements of Rural Development
- Growth versus Development
- Why Rural Development
- Rising Expectations and Development
- Development and Change

### **26.2 Rural Economy of India**

8 lecture hours

- Size and Structure of the Rural Economy - Population & resources
- The Characteristics of the Rural Sector
- The Role of the Agricultural Subsector
- The Role of the Non-agricultural Subsector
- Challenges and Opportunities

### **26.3 Measures of Rural Development**

8 lecture hours

- Measures of Level of Rural Development: PQLI & HDI
- Measures of Income Distribution: Lorenz Curve & Gini Coefficient
- Measures of Development Simplified
- Concepts and Measures of Rural Poverty: Definition, Criteria, Measures

### **26.4 Rural Governance and Institutions**

10 lecture hours

- Panchayati Raj institutions and their role,
- Rural Credit, NABARD, RRB,
- Self-help groups (SHGs) and microfinance,
- Role of NGOs in rural development

## 26.5 Selected Government Programmes and Rural Development

12 lecture hours

- Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA),
- Pradhan Mantri Awas Yojana-Gramin (PMAY-G),
- Mid-Day Meal Scheme (MDM),
- National Rural Livelihoods Mission (NRLM),
- National Rural Health Mission (NRHM),
- Pradhan Mantri Gram Sadak Yojana (PMGSY)

### References

1. Katar Singh , Rural Development: Principles, Policies and Management, Sage Publications, New Delhi.
2. K.G. Karmakar, Rural Credit and Self-Help Groups, Sage Publications, New Delhi
3. S.Sau, Rural Industrialization –Development Trajectory in India, Farma K.L.M., Kolkata
4. Misra D. and Puri K. Indian Economy, Himalaya Publishing House
5. Datt and Sundharam (Revised by G.Datt and A. Mahajan), Indian Economy, 70th edition, S. Chand
6. Udai Pareek, Rural Development: Planning and Implementation

### Other References:

- Reports and Publications: Government of India publications, such as those from NITI Aayog, Ministry of Rural Development, and Planning Commission, offer valuable insights into rural development policies and programs.
- Government Websites: Websites of ministries and departments related to rural development (e.g., Ministry of Rural Development, NITI Aayog) offer data, reports, and policy documents.

### **Tutorial**

**Marks: 25, Credit: 1**

**No. of Lecture hours (Tu): 15**

- Mode of Tutorial Examination: Presentation (15 Marks) & Viva (10 Marks).
- Tutorial contact hours: 15 [for Revision, Doubt Clearing, Solving Problems]
- Tutorial classes are introduced per course to give the students an idea of detailed understanding of the course and also to build their confidence on the subject in terms of (i) solving problems, (ii) presenting a paper in terms of board work or power point, (iii) preparation of term paper etc.
- A Tutorial class also helps a teacher to clarify any topic in detail to the students.
- A Tutorial contact hour has been meant to promote teacher-student academic interaction.