

**University of Gour Banga**  
**Malda, West Bengal**

CBCS Curriculum for Economics (UG)

The total credit requirement and nature of courses under CBCS are as tabulated below:

Semester	Core Course	Discipline Specific Elective (DSE) Course	Generic Elective (GE) Course equivalent to our ED Course	Ability Enhancement Compulsory Course (AECC)	Skill Enhancement Course (SEC)	Number of courses in the semester
1	2	0	1	1	0	4
2	2	0	1	1	0	4
3	3	0	1	0	1	5
4	3	0	1	0	1	5
5	2	2	0	0	0	4
6	2	2	0	0	0	4
Total courses	14	4	4	2	2	26
Credit per course	6 (Theory- 5 credit, Tutorial -1 credit)	6 (Theory- 5 credit, Tutorial -1 credit)	6 (Theory- 5 credit, Tutorial - 1 credit)	4	6 (Theory - 5 credit, Tutorial - 1 credit)	
Total Credit	84	24	24	8	12	152
<b>Credit per Semester</b>						
Semester I:	2x6 + 1x6 + 1x4					22
Semester II:	2x6 + 1x6 + 1x4					22
Semester III:	3x6 + 1x6 + 1x6					30
Semester IV:	3x6 + 1x6 + 1x6					30
Semester V:	4x6					24
Semester VI:	4x6					24

**Structure of CBCS syllabi for UG Economics (Honours)**

Semester I	<b>Core 1:</b> <b>UG/Eco/Core 1.1</b> Introductory Microeconomics	<b>Core 2:</b> <b>UG/Eco/Core 1.2</b> Mathematical Methods in Economics I	<b>AECC 1: UG/AEC 1.1</b> Env. Science	<b>GE 1: ED 1.1.</b> Mathematics 1 Basic Mathematics (Compulsory)	
Semester II	<b>Core 3:</b> <b>UG/Eco/Core 2.1</b> Introductory Macroeconomics	<b>Core 4:</b> <b>UG/Eco/Core 2.2</b> Statistical Methods for Economics	<b>AECC 2:</b> <b>UG/AEC 2.1</b> English Communication	<b>GE 2: ED 2.1.</b> Any General Paper	
Semester III	<b>Core 5:</b> <b>UG/Eco/Core 3.1</b> Intermediate Microeconomics I	<b>Core 6:</b> <b>UG/Eco/Core 3.2</b> Intermediate Macroeconomics I	<b>Core 7:</b> <b>UG/Eco/Core 3.3</b> Mathematical Methods in Economics II	<b>GE 3:</b> Any General Paper	
Semester IV	<b>Core 8:</b> <b>UG/Eco/Core 4.1</b> Intermediate Microeconomics II	<b>Core 9:</b> <b>UG/Eco/Core 4.2</b> Intermediate Macroeconomics II	<b>Core 10:</b> <b>UG/Eco/Core 4.3</b> Introductory Econometrics	<b>GE 4:</b> Any General Paper	
Semester V	<b>Core 11:</b> <b>UG/Eco/Core 5.1</b> International Economics	<b>Core 12:</b> <b>UG/Eco/Core 5.2</b> Public Economics	<b>DSE 1:</b> Any one of the following <b>UG/Eco/DSE 5.1/1</b> Economics of Health and Education <b>UG/Eco/DSE 5.1/2</b> Issues in Indian Economy <b>UG/Eco/DSE 5.1/3</b> Resource and Environmental Economics	<b>DSE 2:</b> Any one of the following <b>UG/Eco/DSE 5.2/1</b> Money and Financial Economics <b>UG/Eco/DSE 5.2/2</b> West Bengal Economy <b>UG/Eco/DSE 5.2/3</b> Gender and Development	<b>SE 1:</b> <b>UG/Eco/SE 5.3</b> Advanced Statistics
Semester VI	<b>Core 13:</b> <b>UG/Eco/Core 1.2</b> Indian Economy	<b>Core 14:</b> <b>UG/Eco/Core 1.2</b> Development Economics	<b>DSE 3:</b> Any one of the following <b>UG/Eco/DSE 6.1/1</b> Indian Financial Instruments and Markets <b>UG/Eco/DSE 6.1/2</b> Issues in Open Economy <b>UG/Eco/DSE 6.1/3</b> Topics in Microeconomics I	<b>DSE 4:</b> Any one of the following <b>UG/Eco/DSE 6.2/1</b> Field Based Project <b>UG/Eco/DSE 6.2/2</b> Term Paper	<b>SE 2:</b> Any one of the following <b>UG/Eco/SE 6.3/1</b> Data Analysis & Applied Economics <b>UG/Eco/SE 6.3/2</b> General Equilibrium and Welfare Economics <b>UG/Eco/SE 6.3/3</b> Input-Output Analysis and Linear Programming

# Semester - I

## **Core 1:**

**Course number: UG/Eco/Core 1.1**

### **Introductory Microeconomics**

#### **Exploring the subject matter of Economics**

Why study economics? Scope of economics; the economic themes: scarcity and efficiency; the question of what to produce, how to produce and how to distribute output; marginal benefits and marginal costs; opportunity cost (private and social); the basic competitive model; prices, markets and profits; incentives and information; economic systems.

#### **Supply and Demand: How Markets Work, Markets and Welfare**

Elementary theory of demand: determinants of household demand, market demand, and shifts in the market demand curve. Elementary theory of supply: factors influencing supply, derivation of the supply curve, and shifts in the supply curve.

The elementary theory of market price: determination of equilibrium price in a competitive market; the effect of shifts in demand and supply; Existence, uniqueness, and stability of equilibrium; consumer surplus, producer surplus; Elasticities and their applications.

#### **The Households**

The consumption decision - budget constraint, consumption, income and price changes, description of preferences - most preferred bundle and its properties; consumer's optimum choice; income and substitution effects; Marshallian and compensated demand curves; Price consumption curve, income consumption curve, and Engel curve; labour supply and savings decision - choice between leisure and consumption.

#### **The Firm and Perfect Market Structure**

Defining a firm - firm's legal forms; profit maximization hypothesis; Contractual theories and organizational theories of firms (concepts only); Behaviour of profit maximizing firms and the production process; short run costs and output decisions; costs and output in the long run.

#### **Imperfect Market Structure**

Monopoly; measuring monopoly power; government policies towards competition; various types of imperfect competition

#### **Input Markets**

Theory of rent - Ricardo, Marshall, and Modern theory of rent; Labour and land markets - concepts of derived demand, productivity of an input, marginal productivity of labour, marginal revenue product; demand for labour; input demand curves; shifts in input demand curves, competitive labour markets; labour market and public policy.

#### **Suggested Readings**

1. Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
2. N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
3. Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.
4. Samuelson and Nordhaus, Economics, Mc GrawHill

## Core 2:

### Course number: UG/Eco/Core 1.2

#### Mathematical Methods in Economics I

1. Preliminaries Logic and proof techniques; sets and set operations; relations; functions and their properties; number systems.
2. Functions of one real variable Graph; types of functions: quadratic, polynomial, power, exponential, logarithmic; sequences and series: convergence, algebraic properties and applications; continuous functions: characterizations, properties with respect to various operations and applications; differentiable functions: characterizations, properties with respect to various operations and applications; second and higher order derivatives: properties and applications.
3. Single-variable optimization Geometric properties of functions: convex functions, their characterizations and applications; local and global optima: geometric characterizations, characterizations using calculus and applications.
4. Functions of several real variables Geometric representations: graphs and level curves; differentiable functions: characterizations, properties with respect to various operations and applications; second order derivatives: properties and applications; the implicit function theorem, and application to comparative statics problems; homogeneous and homothetic functions: characterizations and applications.
5. Multi-variable optimization Convex sets; geometric properties of functions: convex functions, their characterizations, properties and applications; further geometric properties of functions: properties and applications; unconstrained optimization: geometric characterizations, characterizations using calculus and applications; constrained optimization with equality constraints: Lagrange characterization using calculus and applications; properties of value function: envelope theorem and applications.

#### **Suggested Readings**

1. Apostol T.M. Calculus, Volume 1, One-variable calculus, with an introduction to linear algebra, (1967) Wiley, ISBN 0-536-00005-0, ISBN 978-0-471-00005-1
2. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, Fourth Edition, McGraw-Hill, 2005.
3. A. Mukherji and S. Guha: *Mathematical Methods and Economic Theory*, Oxford University Press, 2011
4. Lawrence Blume and Carl Simon. *Mathematics for Economists*, W. W. Norton and Company, 1994.
5. Sydsaeter Knut and Peter J. Hammond. *Mathematics for Economic Analysis*, PHI, 1995
6. Avinash Dixit *Optimization in Economic theory* .Oxford University Press.

**ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)**

**Each course shall be of 4 credits**

**SEMESTER - 1**

**Environmental Science**

**See the syllabus prepared by the concerned Subjects/Department**

**SEMESTER - II**

**English Communication**

**See the syllabus prepared by the concerned Subjects/Department**

**SEMESTER - 1**  
**GENERIC ELECTIVE COURSE**  
**(Each course shall be of 6 credits)**

**GE 1**  
**Course number: ED 1.1**

**Mathematics I: Basic Mathematics (Compulsory)**

**1. Set Theory and Algebra**

- a) Set Theory : Sets and set operations, Cartesian product of sets, Relations, Equivalence relations, partial order relations, functions, one-to-one and onto functions, bijective functions, Cardinality of sets, Composite functions, Inverse functions and Binary operations. Natural Numbers, Integers, Rational and Irrational Numbers Set of Real Numbers; Absolute value and Intervals.
- b) Expansion of series; Geometric series, Binomial series, exponential series, logarithmic series, trigonometric series (sin, cos).

**2. Matrices, Algebra of Matrices, Different types of matrices, Determinants**

Inverse of a square matrix, Elementary row operations, Determinants and their properties: Rank of a matrix, Cramer's rule, Solution of system of linear equations by matrix inversion method, Characteristic equation, Eigen values and eigenvectors.

**3. Real Sequence and Single Variable Calculus**

(a) Sequence: Real sequences, Limit of a sequence, Monotonic sequences, Cauchy sequences.

(b) Calculus: Limit, Continuity and Differentiability of single variable functions, Rules of differentiation; Rolle's Theorem, Mean Value Theorems, Taylor's Theorem, Maclurine's Theorem, Expansion of functions; Indeterminate forms and La'Hôpital's Rule.

(c) Directional derivative, Partial derivative, Total derivative, Euler's theorem on homogeneous functions

**4. Integral Calculus**

Partition, Upper and Lower integrals of bounded functions, Definite integrals, principles of double integration.

**Suggested Readings**

1. T. S. Blyth and E. F. Robertson. *Basic Linear Algebra*. Springer, 2002.
2. R. Courant and F. John. *Introduction to Calculus and Analysis*, (Vol. I & Vol. II). Springer, 1998.
3. D. V. Widder. *Advanced Calculus*. Prentice Hall, 1947.
4. R. G. Bartle and D.R. Sherbert. *Introduction to Real Analysis*. John Wiley, New York, 2011.
5. M. D. Raisinghania. *Ordinary and Partial Differential Equations*. S Chand & Co Ltd., 2005.
6. S. L. Ross. *Differential Equations*. Wiley, 1984.
7. S. A. Mollah. *Numerical Analysis*. Books and Allied Publishers, 2013.
8. S. K. Mapa. *Introduction to Real Analysis*, Sarat Book House, 2013.
9. S. K. Mapa. *Higher Algebra (Abstract and Linear)*, Sarat Book House, 2011

# Semester - II



### **Core 3:**

**Course Number: UG/Eco/Core 2.1**

#### **Introductory Macroeconomics**

##### **National Income Accounting, Unemployment, and Open Economy Issues**

Macroeconomic data-National Income accounting and cost of living;  
Concept of Growth- role of savings, investment, and financial intermediation;  
Open Economy- Balance of Payments, exchange rates, and capital flow;  
Concept of unemployment- Types and their characteristics;

##### **Money and Inflation**

Monetary system- definitions of money and determinants of money supply  
Money multiplier and central bank's role in controlling money supply;  
Quantity theory of money; inflation and its costs

##### **The Closed Economy in the Short Run**

Theory of aggregate demand  
Components and their interrelations  
Crowding out- Factors causing shift in the function;  
Theory of aggregate supply- determinants of supply and shift factors;  
Interaction of aggregate demand and supply

##### **Suggested Readings**

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. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
4. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
5. J.R.Hicks. The Social Framework: An Introduction to Economics, Clarendon Press, 3rd edition, 1960
6. Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press

## Core 4:

### Course Number: UG/Eco/Core 2.2

#### Statistical Methods for Economics

- Statistics and statistical data, concept of theoretical and applied statistics, application of statistics in economic analysis.
- Tabular and graphical presentation of non-frequency type data, Univariate frequency distributions and their graphical representation
- Measures of Central tendency-The mean, median, mode and other quartiles
- Measures of Dispersion: concept; Absolute and relative measures of dispersions; Applications
- Moments, Skewness and Kurtosis: concepts and uses
- Bivariate frequency distribution-Simple and multiple correlation and regression
- Time series – components, measurement of trend and statistical fluctuations
- Index Numbers – Price, quantity

#### Suggested Readings

1. J. F. Kenney and E. S. Keeping. *Mathematical Statistics: Part 1 & Part II*, Chapman and Hall, New York, 1954.
2. F. E. Croxton, D. J. Cowden and S. Klein. *Applied Statistics*, Prentice Hall; *Applied General Statistics*. 3<sup>rd</sup> ed., Prentice-Hall, Inc., 1960.
3. R.G.Hogg and A.T.Craig. *Introduction to Mathematical Statistics*, Prentice Hall; 6th Edition, 2004
4. A. M. Goon, M. K. Gupta and B. Dasgupta. *Fundamentals of Statistics*, The World Press, 1996

# Semester - III

## **Core 5:**

### **Course Number: UG/Eco/Core 3.1**

#### **Intermediate Microeconomics - I**

##### **Consumer Theory**

Cardinal utility; Preference: ordering and properties of ordinal utility; existence of utility functions, different utility functions and their properties, compensating and equivalent variation, Slutsky equation; consumption-leisure choice and labour supply; choice under uncertainty (expected utility and risk aversion), inter-temporal choice and savings decision; revealed preference approach.

##### **Production and Costs**

Technology- general concept of production function; returns to factor and returns to scale, isoquants and diminishing rate of factor substitution – elasticity of substitution –fixed proportion, perfect substitute, Cobb–Douglas Production Function, CES Production Function, General concept of homogenous and homothetic production function and their properties; production with one and more variable inputs; isocost line and firms equilibrium and expansion paths; short run and long run costs; cost curves in the short run and long run; relation between short run and long run costs.

##### **Competitive Equilibrium**

Short run and long run equilibrium; determination of the supply curve of the firm and the industry: with reference to external economies and diseconomies of scale.

##### **Input market in perfect competition**

Derived demand for input, marginal product and marginal revenue product, input demand for competitive firm and competitive industry, returns to scale and product exhaustion.

##### **Suggested Readings**

1. Hal R. Varian, Intermediate Microeconomics, a Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010. The workbook by Varian and Bergstrom may be used for problems.
2. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.
3. B. Douglas Bernheim and Michael D. Whinston, Microeconomics, Tata McGraw- Hill (India), 2009.
4. Hugh Gravelle and Ray Rees. Microeconomics, Prentice Hall (UK); 3rd edition, 2004.
5. Anindya Sen , Microeconomics: Theory and Applications, Oxford University Press
6. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson

## **Core 6:**

**Course number: UG/Eco/Core 3.2**

### **Intermediate Macroeconomics I**

#### **Income Determination in the short-run**

1. **Simple Keynesian System:** Multipliers; equilibrium in both closed and open economy and stability; autonomous expenditure, balanced budget, and net exports; paradox of thrift.
2. **IS-LM Model** - equilibrium, stability and comparative statics; effects of fiscal and monetary policies, real balance effects; IS-LM in the open economy under fixed and flexible exchange rate with perfect and imperfect capital mobility (Mundell-Fleming model).

#### **Aggregate Demand and Aggregate Supply**

Derivation of aggregate demand assuming price flexibility; 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; Unemployment and its causes- possible solutions, including real balance effect and wage cut policy.

#### **Inflation, Unemployment and Expectations**

Inflation and unemployment trade-off- Short run and long- run Phillips curve under adaptive expectations-outcome under rational expectations (non-rigorous).

#### **Suggested Readings**

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Steven M. Sheffrin, Rational Expectations, Cambridge University Press, 2nd edition, 1996.
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. William Branson. Macroeconomic Theory and Policy, Indian reprint, East West Press, 3rd edition, 2014.
7. Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press
8. Acharyya Rajat, International Economics, OUP

**Core 7:**

**Course number: UG/Eco/Core 3.3**

**Mathematical Methods in Economics II**

1. Differential equations and economic applications
2. Linear algebra Vector spaces: algebraic and geometric properties, scalar products, norms, orthogonality; linear transformations: properties, matrix representations and elementary operations; systems of linear equations: properties of their solution sets; determinants: characterization, properties and applications.
3. Integration of functions and economic application
4. Difference equations and economic applications

**Suggested Readings**

1. Lawrence Blume and Carl Simon. *Mathematics for Economists*, W. W. Norton and Company, 1994.
2. Sydsaeter Knut and Peter J. Hammond. *Mathematics for Economic Analysis*, PHI, 1995
3. Alpha Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, Fourth Edition, McGraw-Hill, 2005.
4. Alpha C. Chiang Elements of Dynamic Optimization McGraw-Hill, 2005.
5. J.R.Hicks. A Contribution to Theory of Trade Cycle, Oxford University Press, New York, 1951.

# **SEMESTER - IV**

## **Core 8:**

**Course number: UG/Eco/Core 4.1**

### **Intermediate Microeconomics II**

#### **General Equilibrium, Efficiency, and Welfare**

1. Exchange Economy, Consumption Allocation and Pareto Optimality; Edgeworth box and contract curve; Equilibrium and efficiency under pure exchange.
2. Pareto efficiency with production: concepts of PPF, SIC, and resource allocation;
3. Perfect competition, Pareto efficiency and market failure (externalities and public good); property right and Coase Theorem.

#### **Market Structure and Game Theory**

1. Monopoly; pricing with market power; degree of monopoly; price discrimination-different degrees; multiplant monopoly; peak-load pricing; two-part tariff; monopolistic competition.
2. Oligopoly and game theory (Cooperative and Non-cooperative static games; simultaneous move and sequential move games; non-cooperative games of perfect information; the Prisoner's dilemma, Nash equilibrium in pure and mixed strategies); Applications of game theory in oligopolistic markets (Cournot Equilibrium, Bertrand Equilibrium, Stackleberg Equilibrium) ; concept of collusion and cartels. .

#### **Input Market under Imperfect Competition**

Monopsony, bilateral monopoly in labour market. Externalities; public goods and markets with asymmetric information.

#### **Suggested Readings**

1. Hal Varian. Microeconomic Analysis, Third Edition, Selected chapters, W. W. Norton and Company, 2013.
2. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010
3. Jean Tirole. Theory of Industrial Organization, MIT Press, 1988
4. Robert Gibbons. A Primer in Game Theory, Princeton University Press, 1992.
5. Erik Rasmusen. Games and Information: An Introduction to Game Theory, Basil Blackwell, 1999.
6. K. Binmore. Fun and Games: A Text on Game Theory, OUP, 1991
7. Anindya Sen, Microeconomics: Theory and Applications, OUP, 1999
8. Pindyck and Rubinfeld, Microeconomics, Prentice Hall
9. Mascollel and Green, Microeconomic Theory, OUP
10. W.W. Norton and Company/Affiliated East-West Press (India), 2010. The workbook by Varian and Bergstrom could be used for problems.



## **Core 9:**

**Course number: UG/Eco/Core 4.2**

### **Intermediate Macroeconomics II**

#### **Schools of Macroeconomic Thoughts**

Classical System: Say's law and quantity theory; Friedman's restatement; classical dichotomy and neutrality of money; Keynesian vs classical system; basic tenets of New Classical and New Keynesian System.

#### **Macroeconomic Foundations**

Consumption: Keynesian consumption function; Fisher's theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; Dusenberry's relative income hypothesis; rational expectations and random-walk of consumption expenditure.

Investment: MEC and MEI- Jorgenson's neo-classical theory- Acceleration principle

Demand for money: Regressive expectations and Tobin's portfolio choice models; Baumol's inventory theoretic money demand.

#### **Monetary Policy**

High-powered money; money multiplier analysis; monetary policy – OMO, Bank rate, variable reserve ratio, repo and reverse repo. Government debt and Ricardian equivalence;

#### **Economic Growth**

Harrod-Domar model and Solow one sector growth model

#### **Suggested Readings:**

1. Snowdon and Vane (ed), A Macroeconomics Reader, Routledge, Taylor and Francis Group.
2. R. Barro. Macroeconomics, 5th edition, The MIT Press, 1989
3. W.H. Branson. Macroeconomics, Haper and Row, 3rd edition, 1989
4. A.K. Sen (ed). Growth Economics, Penguin, 1970
5. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011
6. J.B Hall and R.E. Taylor. Macroeconomics, W.W. Nortan and Company, 5th revised edition, 1997
7. Errol D'Souza. Macroeconomics, Pearson Education (New Delhi), 2009
8. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010

**Core 10:**  
**Course number: UG/Eco/Core 4.3**

**Introductory Econometrics**

**Nature and Scope of Econometrics**

1. Definition and Scope of Econometrics; Importance of error term.
2. The two-variable linear regression model:
  - Least-squares estimators of the regression parameters,
  - The properties of the estimators,
  - Testing of hypothesis.
3. Violation of assumptions and simple least-squares methods in two variable linear regression models:
  - Autocorrelation: concept, tests of autocorrelation; some remedial measures;
  - Heteroscedasticity: concept, tests of Heteroscedasticity; some remedial measures.
4. Concept of dummy variable: regression with dummy variable (simple case)

**Suggested Readings**

1. G.S.Maddala. Introduction to Econometrics, John Wiley & Sons Ltd, 2009.
2. Jack Jhonston. Econometric Methods, 3<sup>rd</sup> Edition Jan Kmenta. Elements of Econometrics, Indian Reprint, Khosla Publishing House, 2nd edition, 2008
3. Jan Kmenta. *Elements of Econometrics*, Macmillan Publishing Company, 1991
4. William H. Green, *Econometric Analysis*, 7<sup>th</sup> Edition, Prentice Hall, 2011
5. D. N. Gujarati and D.C. Porter, Essentials of Econometrics, McGraw Hill, 4th edition, International Edition, 2009.
6. Christopher Dougherty, Introduction to Econometrics, Oxford University Press, 3rd edition, Indian edition, 2007
7. James H. Stock and Mark W. Watson Introduction to Econometrics, 3rd Edition, 2011

# **SEMESTER – V**

## **Core 11:**

**Course number: UG/Eco/Core 5.1**

### **International Economics**

#### **Basics of trade theory**

Concept of comparative advantage; externalities, regulation and perverse comparative advantage; International equilibrium; offer curves, ToT and stability; Gains from Trade (GFT) Theorem; Concepts of Production possibility Frontier and Community Indifference curves;

#### **Technology and Trade (Ricardian Model)**

Comparative versus Absolute Advantage, One-factor economy, production possibility frontier, relative demand and relative supply, terms of trade; Trade in Ricardian world, Determination of intermediate ToT, Complete specialization & GFT.

#### **Factor Endowment & Trade (Heckscher-Ohlin-Samuelson Model)**

H-O theorem and physical vs. price definitions of factor abundance; Proof of HO theorem; Stolper-Samuelson theorem, Rybczysky's theorem; Taste bias and invalidation of HO theorem; Empirical studies- Leontief Paradox; factor price equalization, factor intensity reversal.

#### **Trade Policy**

Partial Equilibrium Analysis: Tariff - and Quota, Quota., effects of tariff, quota, General Equilibrium Analysis- distinction between large and small economy, welfare effects of a tariff on small country, Offer curve and ToT, , Tariff war, Optimum tariff for large economy, Metzler's Paradox.

#### **Balance of Payments & Exchange Rate:**

Balance of Payment accounts in an open economy; Determination of National Income, Introduction of foreign Country & repercussion effect; Fixed & Flexible Exchange Rate: adjustment of demand and supply of Foreign Exchange, Effect of devaluation, Effects of exchange rate on domestic prices, Marshall-Lerner Condition, J-Curve effect.

#### **Suggested Readings:**

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, 2013.
4. Giancarlo Gandolfo, International Trade Theory and Policy, Springer, 2014

## **Core 12:**

**Course number: UG/Eco/Core 5.2**

### **Public Economics**

#### **Nature and Scope of Public Economics**

Definition and Scope of Public Economics; Externalities; Market failure and Government Intervention; Coase theorem; Public expenditure to finance Development.

#### **Taxation**

Classification of Taxes; Canons of Taxation; Benefit Principle; Equal Sacrifice Principle; Ability to Pay Principle; Incidence and Burden of Taxes; Effects of taxation on income distribution, work efforts, and on savings; the Laffer curve; Optimal Taxation.

#### **Public Expenditure and Public Debt**

Meaning and Classification of Public Expenditure; government budget and its types; government expenditure and tax multipliers, balanced budget multiplier; Fiscal Federalism in India; Meaning of Public Debt; Sources of Public Borrowings: internal and external borrowing; Effects of Public Debt.

#### **Theory of Public Good**

Overview of Public Good; Characteristics of Pure Public Good; Distinction between Pure Public Good and Private Good; Market Failure in case of Pure Public Good;

#### **Suggested Readings:**

1. A. B. Atkinson and J. E. Stiglitz, Lectures on Public Economics, McGraw-Hill Inc.,US, 1980.
2. C. V. Brown and P. M. Jackson. Public Sector Economics, Wiley-Blackwell; 4th Edition, 1991.
3. J. F. Due and A. F. Friedlander. Government Finance-Economics of Public Sector, AITBS Publishers and Distributors, 1994
4. J. Hindriks and G. D. Myles. Intermediate Public Economics, The MIT Press; Annotated Edition, 2006.
5. R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition, 1989.
6. Amaresh Bagchi (ed), Readings in Public Finance, OUP
7. J. E. Stiglitz. Economics of Public Sector, W. W Norton and Company, 3rd Edition, 2000.
8. R.J. Chelliah (ed), Towards Sustainable Growth, OUP, 2009
9. A Ghosh and C. Ghosh, Public Finance, Prentice Hall India Learning Private Limited; 2nd Revised edition (2014)

## SEMESTER V

### DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSE Each course shall be of 6 credits and of 40-45 lectures

#### DSE 1: Any one of the following

Course Number: UG/Eco/DSE 5.1/1

#### **Economics of Health and Education**

##### **Introduction:**

Meaning, definition, scope and importance of economics of health and education; Scope of health and education in Economics; Market failure and the role of Government in healthcare services and education sector: Externalities of health and education; Role of health and education in Human Development; Spill-over and intergenerational impact of education and health; Private and social returns from health and educational outcome'

##### **Foundations of Health Economics**

Health Indicators: Mortality, Morbidity and Burden of Disease; Health as human capital: Health and Economic growth; Health and Poverty: Causal inter-linkage; Production of health and healthcare services; Different types of healthcare market

##### **Foundations of Economics of Education**

Role of education in economic growth-endogenous growth models and human capital  
Returns to education; Demand and supply considerations of educational attainment; Poverty, Human capital accumulation and low level trap

##### **Suggested Readings**

1. Barro, R. J. and Sala-i-Martin, X., (1995), *Economic growth*, New York, McGraw-Hill.(Selected chapter dealing with human capital and growth)
2. Blaug. M (1972) *An Introduction to the Economics of Education*: London: Penguin
3. Hurley J. (2000), *An Overview of the Normative Economics of the Health Sector*, Cuyler A. J. And Newhouse J.P., (eds.), *Handbook of Health Economics*, (Vol I), Elsevier, Netherlands.
4. Majumdar, T. (1983) *Investment in Education and Social Choice*: Cambridge, Cambridge University Press.
5. Pascharopoulos. G. (ed):(1987): *Economics of education Research and Studies* Oxford, Pergamon Press.
6. Santerre R.E. and Neun S.P. (2010), *Health Economics: Theories, Insights and Industry Studies (5th ed.)*, South-Western Cengage Learning, USA
7. Sloan, Frank. A. and Chee-Ruey Hsieh (2012): *Health Economics*, The MIT Press, 55 Hayward Street, Cambridge, MA, 02142.
8. Zweifel P., Breyer F and Kifmann M. (1997), *Health Economics (2nd Ed.)*, OUP.

**Course Number: UG/Eco/DSE 5.1/2**

**Issues in Indian Economy (6 Credits)**

### **Issues in Indian Economy**

#### **WTO and India**

Different rounds of trade negotiations

#### **Macroeconomic Policy and Their Impact**

Fiscal Policy; trade and investment policy; financial and monetary policies; inflation and measures to control inflation, labour laws and regulation,

#### **Policies and Performance in Agriculture**

Growth; productivity; agrarian structure and technology; capital formation; trade; food security and food policy, pricing and procurement; globalization and Indian agriculture

#### **Policies and Performance in Industry**

Growth; productivity; diversification; small scale industries; public sector; competition policy; foreign investment, globalization and Indian industry.

#### **Trends and Performance in Services**

Formal and Informal Sectors, banking and insurance; trade in services.

### **Suggested Readings**

Shankar Acharya, 2010, —Macroeconomic Performance and Policies 2000-8, in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.

2. Rakesh Mohan, 2010, —India's Financial Sector and Monetary Policy Reforms in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.

3. PulapreBalakrishnan, Ramesh Golait and Pankaj Kumar, 2008, —Agricultural Growth in India Since 1991, RBI DEAP Study no. 27.

4. B.N. Goldar and S.C. Aggarwal, 2005, —Trade Liberalisation and Price-Cost Margin in Indian Industries, The Developing Economics, September.

**Course Number: UG/Eco/DSE 5.1/3**  
**Resource and Environmental Economics (6 credits)**

**1. Introduction**

What is environmental economics? Review of microeconomics and welfare economics.

**2. The Theory of Externalities**

Pareto optimality and market failure in the presence of externalities; Property rights and the Coase theorem

**3. The Design and Implementation of Environmental Policy**

Overview; Pigouvian taxes and effluent fees; Tradable permits; Implementation of environmental policy.

**4. International Environmental Problems**

Trans-boundary environmental problems; Economics of climate change; Trade and environment

**5. Measuring the Benefits of Environmental Improvements**

Non-Market values and measurement methods; Risk assessment and perception, Sustainable Development: Concepts; measurement.

**Reference Books**

Charles Kolstad, *Intermediate Environmental Economics*, Oxford University Press, 2nd edition, 2010.

Robert N. Stavins (ed.), *Economics of the Environment: Selected Readings*, W.W. Norton, 5th edition, 2005.

Roger Perman, Yue Ma, James McGilvray and Michael Common, *Natural Resource and Environmental Economics*, Pearson Education/Addison Wesley, 3rd edition, 2003.

Maureen L. Cropper and Wallace E. Oates, 1992, —Environmental Economics: A Survey *Journal of Economic Literature*, Volume 30:675-740



## **DSE 2:**

Any one of the following

### **UG/Eco/DSE 5.2/1**

#### **Money and Financial Markets (6 credits)**

##### Introduction to Money and Banking

Concept, functions, measurement of money; determination of money supply

##### Financial Institutions, Markets, Instruments and Financial Innovations

- Role of financial markets and institutions; problem of asymmetric information – adverse selection and moral hazard; financial crises.
- Money and capital markets: organization, structure and reforms in India; role of financial derivatives and other innovations.

##### Financial Markets and Interest Rates Behaviour

- Determination of interest rates; Theories of term structure of interest rates; Interest rates in India.

##### Banking System

- Balance sheet and portfolio management; Multiple Deposit Creation, Determinants of the Money Supply.
- Indian banking system: Changing role and structure; banking sector reforms.

##### Central Banking and Monetary Policy

- Functions; Goals, targets, indicators and instruments of monetary control;
- Monetary management in an open economy;
- Current monetary policy of India.

#### **Reference Books**

- F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions, Pearson Education, 6th edition, 2009.
- F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition, 2009.
- M. R. Baye and D. W. Jansen, Money, Banking and Financial Markets, AITBS, 1996.
- Rakesh Mohan, Growth with Financial Stability- Central Banking in an Emerging Market, Oxford University Press, 2011.
- L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th edition, 2011.
- M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011.
- N. Jadhav, Monetary Policy, Financial Stability and Central Banking in India, Macmillan, 2006.
- R.B.I. – Report of the Working Group: Money Supply Analytics and Methodology of Compilation, 1998.
- R.B.I. Bulletin, Annual Report and Report on Currency and Finance (latest).

## UG/Eco/DSE 5.2/2

### West Bengal Economy (6 credits)

#### 1. Early Economic History of Bengal:

Economic history of the colonial period- -Entrepreneurship in Bengal in the 19<sup>th</sup> century  
Deindustrialization and Drain of Resources- Economic consequences of partition- the case of Jute and  
Textile industry.

#### 2. Growth and Structural Transformation-

Trends in the growth of State Domestic Product (SDP), Trends in Sectoral composition of SDP- Trends in  
per capita SDP- A comparison between Indian and West Bengal

#### 3. Employment Structure:

Occupational Structure- trends in sectoral distribution of workforce- gender segregation  
of employment- A comparison with Indian and West Bengal- farm and non-farm employment- nature,  
extent and pattern of Rural Non-farm employment in West Bengal.

#### 4. Rural Livelihood:

Agricultural Growth and trends in decadal growth rates since 1980's –cropping pattern crop diversification-  
agricultural- mechanization-problems- Problems and prospects of small-scale and cottage industries-  
fishery and dairy development.

#### 5. Social Sector and Human Development:

Education-Elementary education in West Bengal-Enrollment and Drop-out, Infrastructure of primary  
education- Health status in West Bengal- Child- disability, child mortality and maternal mortality- A  
comparison with India, Human Development- concept, measurement and inter-district variation.

#### 6. Infrastructure:

Extent of financial inclusion in West Bengal -Growth of Deposit, Creditdeposit ratio of commercial banks -  
Regional rural banks- Irrigation, Agro-marketing and Storage.

#### References:

- State Development Report, 2010, West Bengal, Planning Commission, Government of India
- West Bengal Human Development Report, 2004, Oxford University Press.
- Sumit Sarkar (1973): The Swadeshi Movement in Bengal, People's publishing House, New Delhi
- N.K. Sinha(1962): Economic History of Bengal from Plassey to the Permanent Settlement.
- Ratan Khasnabis, (2008), "The Economy of West Bengal", Economic and Political Weekly (December 27).
- A. Raychaudhuri & Tuhin Das (ed.). 2005. West Bengal Economy: Some Contemporary issues, Allied Publishers.
- B Rogaly, B Barbara Hariss-White and S Bose(1999): Sonar Bangla? Agricultural Growth and Agrarian Change in West Bengal and Bangladesh. Sage Publications.
- Suvabrata Sarkar(2013) Bengali Entrepreneurs and Western Technology in the Nineteenth Century: A Social Perspectives', Indian Journal of History of Science, Vol.48, No. 3, September, pp. 447-75.

## UG/Eco/DSE 5.2/3

### Gender and Development (6 credits)

#### Role of Gender in Family:

Household as Economic Unit: Division of Labour within Household, Marriage Formation & Contract, Economics of Caring Labour, Marriage Dissolution; Power Distribution within Family, Role of Patriarchy, Sexuality and Gender

#### Women and Workforce Participation:

Factors affecting workforce participation of women workers & social hindrance; Gender wise Occupational Segregation & Wage Disparity; Exploitation of women workers. Indices of Women Empowerment (GEM,WEAI), Missing Women in Indian Workforce

#### Gender and Well Being:

In bringing Gender Equality (in perspectives of gender gaps in Education); In boosting Empowerment

#### Gender & Health

Demographic Transition and Nutrition; Vulnerability to Domestic & Social Violence and Conflict; Aspect of Sexual and Reproductive health

#### Suggested Readings:

- Boserup, Ester. (1970) Women's role in economic development, New York: St Martin's Press • Irene Tinker.(1990), Persistent Inequalities: Women and world development, New York: Oxford University Press
- Kabeer Naila, (1995) Reversed realities: Gender hierarchies in development thought, New Delhi: Kali for women
- Jackobsen J.P. (2007). The Economics of Gender, Blackwell Publishing
- Shahra Razavi (ed.) (2009.) "The gendered impacts of liberalization: Towards embedded liberalism?" New York: Routledge (for UNRISD).
- Maria Mies. (1986), Indian women in subsistence and agricultural labour, New Delhi: Vistaar.
- Mark McGillivray (Ed) (2007), Human Well-being: Concept and Measurement, Palgrave Macmillan: Basingstoke.
- Robin Jeffrey,(2003), Politics, Women and Wellbeing: How Kerala became a 'Model', New Delhi: OUP.
- Swapna Mukhopadhyay (2007) (ed.) The Enigma of the Kerala Woman: The Failed Promise of Literacy, New Delhi; Social Science Press.
- Tessa Pollard and Susan Brin Hyatt, (1999) Sex, Gender and Health Cambridge: Cambridge University Press.
- Karen Oppenheim Mason and An-Margritt Jensen, (1995) Gender and Family Change in Industrialised Countries Oxford: Oxford University Press.
- Lesley Doyal. (2002)"Gender Equity in Health: Debates and Dilemmas", in Gender Health and Healing: The Private-Public Divide. Ed. Bendelow et al (London: Routledge) 91
- Female Genital Cutting: Clitoridectomy, Female Circumcision, Female Genital Mutilation or Rite of Passage, in Forsaken Females: The Global Brutalisation of Women, Andrea Parrot and Nina Cummings, Oxford: Rowan and Littlefield, 2006.

**SEMESTER - V**  
**SKILL ENHANCEMENT COURSE**  
**Each course shall be of 6 credits and of 40-45 lectures**

**SE 1: UG/Eco/SE 5.3**

**Advanced Statistics**

**1. Probability and Distribution**

Introduction to probability theory, Conditional probability and independence, Bayes Theorem. Random variables: discrete and continuous types. Properties of distribution functions, mass functions and density functions. Expectation of a random variable; Transformations of variables: discrete and continuous types.

**2. Some Special Distributions:**

Uniform distribution,  
Binomial Distributions;  
Poisson Distributions,  
Normal and Standard Normal Distribution,  
Chi-Square and 't'- distribution (concept only)  
Limiting Distributions: Central Limit Theorem

**3. Sampling and Distributions**

Sampling Theory, Distributions of sample mean and sample variance.

**4. Introduction to Statistical Inference**

Point Estimation; Confidence Intervals for means; Confidence Interval for difference of means; Test of statistical hypothesis, Z test, t test, Chi-square test,

**Suggested Readings**

1. J.E. Freund. *Mathematical Statistics with Applications*, 7<sup>th</sup> edition, Pearson Prentice Hall, 2004.
2. Irwin Miller and M. Miller. *Probability and Statistics*, Prentice Hall, 2003.
3. F. Kenney and E. S. Keeping. *Mathematical Statistics: Part 1 & Part II*, Chapman and Hall, New York, 1954.
4. Hogg, R.G and A.T. Craig. *Introduction to Mathematical Statistics*, Pearson Education (Indian Edition), 2004.
5. V. K. Rohatgi and A. K.M. E Saleh. *An Introduction to Probability and Statistics*, 2<sup>nd</sup> Edition, Wiley, 2000.

# **Semester - VI**

## Core 13: UG/Eco/Core 6.1

### Indian Economy (6 credits)

#### Indian Economy

##### **1. Economic Development since Independence**

Major features of the economy at independence; Planning: Evolution of India's development goals and strategies -Structural constraints and Indian development strategy: Debates between Growth and distribution, Public sector vs. Private sector, Consumer goods vs. Capital goods, Import substitution vs. Export promotion; growth and development under different policy regimes

##### **2. Population and Human Development**

Demographic trends and issues, Education, Health and malnutrition

##### **3. Poverty and Inequality**

Trends and policies in poverty; Inequality and unemployment

##### **4. Economic Reforms in India**

Monetary, Fiscal, and Trade Policy Reforms

##### **5. Macroeconomic Policies and Their Impact**

Fiscal Policy; trade and investment policy; financial and monetary policies;

#### Reference Books

- Jean Dreze and AmartyaSen, 2013. An Uncertain Glory: India and its Contradictions, Princeton University Press.
- Jean Dreze and AmartyaSen: Economic Development and social opportunity, OUP
- Sukhomoy Chakraborty: Development Planning: The Indian Experience, OUP
- Uma Kapila: Indian Economy since independence, Academic Foundation
- S.L. Shetty, 2007, —India's Savings Performance since the Advent of Planning, in K.L. Krishna and A. Vaidyanathan, editors, Institutions and Markets in India's Development.
- J.B.G. Tilak, 2007, —Post Elementary Education, Poverty and Development in India, International Journal of Educational Development.
- T. Dyson, 2008, —India's Demographic Transition and its Consequences for Development in Uma Kapila, editor, Indian Economy Since Independence, 19th edition, Academic Foundation.
- Kaushik Basu and A. Maertens, Eds, 2013, The New Oxford Companion to Economics, Oxford University Press.

**Core 14:**  
**UG/Eco/Core 6.2**  
**Development Economics (6 credits)**

**1. Demography and Development**

Demographic concepts; birth and death rates, age structure, fertility and mortality; demographic transitions during the process of development; gender bias in preferences and outcomes and evidence on unequal treatment within households; connections between income, mortality, fertility choices and human capital accumulation; migration

**2. Land, Labor and Credit Markets**

The distribution of land ownership; land reform and its effects on productivity; contractual relationships between tenants and landlords; land acquisition; inter- linkages between rural factor markets.

**3. Environment and Sustainable Development**

Defining sustainability for renewable resources; a brief history of environmental change; common-pool resources; environmental externalities and state regulation of the environment; market based instruments, economic activity and climate change.

**4. Globalization**

Globalization in historical perspective; the economics and politics of multilateral agreements; trade, production patterns and world inequality; financial instability in a globalized world

**References**

- Debraj Ray, Development Economics, Oxford University Press, 2009.
- ParthaDasgupta, Economics, a Very Short Introduction, Oxford University Press, 2007.
- Abhijit Banerjee, Roland Benabou and DilipMookerjee, Understanding Poverty, Oxford University Press, 2006.
- Thomas Schelling, Micromotives and Macrobehavior, W. W. Norton, 1978.
- Albert O. Hirschman, Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States, Harvard University Press, 1970.
- Raghuram Rajan, Fault Lines: How Hidden Fractures Still Threaten the World Economy, 2010.
- Elinor Ostrom, Governing the Commons: The Evolution of Institutions for Collective Action, CambridgeUniversity Press, 1990.
- DaniRodrik, The Globalization Paradox: Why Global Markets, States and Democracy Can't Coexist, Oxford University Press, 2011.
- Michael D. Bordo, Alan M. Taylor and Jeffrey G. Williamson (ed.), Globalization in Historical Perspective, University of Chicago Press, 2003

### **Discipline Specific Electives (DSE) 3:**

Any one of the following

**UG/Eco/DSE 6.1/1**

**Financial Economics (6 credits)**

#### **Financial Economics**

##### **Introduction**

Evolution of limited liability companies; Time value of money and concepts of security markets

##### **Investment Theory and Portfolio Analysis**

1. Deterministic cash-flow streams: Basic theory of interest; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; the term structure of interest rates; yield curves; spot rates and forward rates.
2. Single-period random cash flows: Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean-variance portfolio analysis:
3. CAPM: The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; security market line; use of the CAPM model in investment analysis and as a pricing formula

##### **Options and Derivatives**

Introduction to derivatives and options; forward and futures contracts; forward and future prices; stock index futures; interest rate futures; the use of futures for hedging; option markets; call and put options; factors affecting option prices; put-call parity; option trading strategies: spreads; strangles; the principle of arbitrage; discrete processes and the binomial tree model.

##### **Corporate Finance**

Patterns of corporate financing: common stock; debt; preferences; convertibles; Capital structure and the cost of capital; corporate debt and dividend policy; the Modigliani- Miller theorem.

#### **Reference Books**

- David G. Luenberger, Investment Science, Oxford University Press, USA, 1997.
- Hull, John C., Options, Futures and Other Derivatives, Pearson Education, 6th edition, 2005.
- Thomas E. Copeland, J. Fred Weston and Kuldeep Shastri, Financial Theory and Corporate Policy, Prentice Hall, 4th edition, 2003.
- Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, 7th edition, 2002.
- Stephen A. Ross, Randolph W. Westerfield and Bradford D. Jordan, Fundamentals of Corporate Finance. McGraw-Hill, 7th edition, 2005.
- Burton G. Malkiel, A Random Walk Down Wall Street, W.W. Norton & Company, 2003.
- William Sharpe, Gordon Alexander and Jeffery Bailey, Investments, Prentice Hall of India, 6th edition, 2003.



## UG/Eco/DSE 6.1/2

### Issues in Open Economy (6 credits)

#### 1. Balance of Payments:

Concepts and Accounting: Current Account and Capital Account; Balance of Payments equilibrium: ex ante and ex post – concepts of accommodating and autonomous transactions and movements of monetary instruments. National Income Accounting in an Open Economy: relationship of deficit in current account with savings-investment gap and government budget deficit or surplus.

#### 2. Exchange Rates:

Concepts of exchange rates: Fixed and Flexible exchange rates; nominal and real exchange rates; Nominal and Real Effective Exchange Rate index (NEER and REER), Concept of Purchasing Power Parity (PPP): Absolute and Relative PPP,

#### 3. Foreign Exchange Market

Concepts of spot market –demand for foreign exchange and supply of foreign exchange. Spot market exchange rate determination: partial equilibrium approach-Marshall Lerner condition- J curve. Concept of forward market; concepts of 'open', 'short', 'long' positions.

#### 4. Open economy Macroeconomics

Open economy simple: fix-price model of a small country with exogenous export demand and endogenous import demand; Introduction of various degrees of capital flows under fixed and flexible exchange rate systems and examination of the effectiveness of fiscal and monetary policies; Dutch disease, Alexander's critique and macroeconomic absorption.

#### 5. International Money

Concept of international money and liquidity under various monetary systems; Ancient and modern gold and silver standard: gold and silver parity, Bretton Woods system-gold parity of dollar and dollar parity of other currencies, Introduction of SDR as accounting money and medium of exchange; Emergence of dollar as international reserve currency and the currency of intervention; Breakdown of Bretton Woods system.

#### Suggested Readings:

- R. E. Caves, J. A. Frankel and R. W. Jones. World Trade and Payments: An Introduction, Pearson Education, 2007.
- Rudiger Dornbusch. Open Economy Macroeconomics, Basic Books, 1980.
- P. Krugman and M. Obstfeld. International Economics; Theory and Policy, Pearson Education, 6th Edition, 2004.
- Giancarlo Gandolfo. International Economics, Springer Link, 2004.
- Francisco L. Rivera-Batiz and Luis A. Rivera-Batiz, International Finance and Open Economy Macroeconomics, 2nd Edition, 1994.

## UG/Eco/DSE 6.1/3

### Topics in Microeconomics I (6 credits)

#### 1. Introduction

Game Theory Basics: What is a game; games and decisions; different kinds of games; Zero-sum games: secure strategy, min-max theorem, value of a game?

#### 2. Normal form games

The normal form; dominant and dominated strategies; dominance solvability; iterated dominance; mixed strategies and mixed strategy equilibrium; symmetric single population games; n-person games in normal form; Nash equilibrium; applications.

#### 3. Extensive form games with perfect information

The game tree; strategies; sub game perfection; backward induction; sequential equilibrium; Nash bargaining.

#### Reference Books:

- Martin J. Osborne, An Introduction to Game Theory, Oxford University Press, New Delhi, 2004.
- Robert Gibbons. A Primer in Game Theory, Princeton University Press, 1992
- Prajit K. Dutta. Strategies and Game: Theory and Practice, MIT Press, 1999.

**Discipline Specific Electives (DSE) 4:** Any one of the following

**UG/Eco/DSE 6.2/1:** Field Based Project (**6 credits**)

**UG/Eco/DSE 6.2/2:** Term Paper (**6 credits**)

## SEMESTER VI

SE 2: Any one of the following

Course number: UG/Eco/SE 6.3/1

### Data Analysis and Applied Economics

#### **A. Essential Steps in Primary Data Collection**

Problem selection, Testing of hypothesis and Inference, sample design, designing of questionnaire pre-testing of questionnaire for collection of primary data, introduction to secondary data sources.

#### **B. Application of Statistics**

Estimation of descriptive statistics: mean, median, mode, measures of dispersion, skewness and kurtosis, simple correlation; rank correlation. Graphical representation of data sets: pie chart, bar chart, linear and nonlinear curve fitting; Introduction to probability theory, random sampling using random number table, ANOVA based Tests.

#### **C. Application of Econometrics**

Linear regression model and test for linear restriction on parameters test of heteroscedasticity, autocorrelation, multicollinearity, application of dummy variable models; Simple models with limited dependent variable; Examples from economic behaviours.

#### **Suggested Readings**

1. G. Maddala. *Introduction to Econometrics*, Willey, 2002.
2. G. Hadley. *Linear Programming*, Addison-Wesley Pub Co., 1962.
3. W. G. Cochran. *Sampling Techniques*, Wiley; 3rd Edition, 1977.
4. J.W. Wooldridge. *Introduction to Econometrics*, South-Western Division of Thomson Learning; International Ed edition, 2005.
5. J. F. Kenney and E. S. Keeping. *Mathematics of Statistics*, Part I & II, D. Van Nostrand Company Inc; 2nd Edition, 1951.
6. F. E. Croxton, D. J. Cowden and S. Klien. *Applied General Statistics*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1967.

**Course Number: UG/Eco/SE 6.3/2**

## **General Equilibrium Theory and Welfare Economy**

### **Introductory Analysis**

Partial Equilibrium vs. General Equilibrium techniques. Inter-relationship amongst markets. Characteristics and assumptions of competitive General equilibrium. Walras' Law and its implications.

### **Exchange Economy**

Offer curve and stability of competitive allocation; contract curve and Pareto set; concept of Core and Core allocation; Social indifference curves and their properties; Principle of compensation and Pareto Comparability

### **A two Sector Production Economy**

Efficiency in resource allocation, Production Possibility Curve and its properties, concavity of PPF; General equilibrium with production and conditions of Pareto optimality.

### **Competitive General equilibrium**

Existence, uniqueness and stability of competitive general equilibrium in multi-markets  
First and Second Fundamental Welfare Theorems, and welfare properties of competitive equilibrium,

### **Introduction to Theory of Second Best and Social Welfare**

Market Failures (Externality, Public Goods), theory of Second Best and Optimal interventions; Property rights and Coase Theorem; Social Welfare functions and Pareto criterion:

### **Suggested Readings**

1. Rajat Acharyya- International Economics; Oxford University Press, 2013.
2. Anjan Mukherjee. Walrasian and Non-Walrasian General Equilibrium, OUP, 2002.
3. Hal Varian. Microeconomic Analysis, Third Edition, Selected chapters, W. W. Norton and Company, 2013.
4. Satya. R.Chakravarty. Microeconomics, Allied Publishers Pvt Ltd., 2002 5. J. Hindriks and G. Myles. Intermediate Public Economics, The MIT Press, Second Edition, 2013.

**Course Number: UG/Eco/SE 6.3/3**

**Linear Programming and Input-Output Analysis**

- The algebra of Linear Programming the Primal and Dual Problem; the Simplex method
- Input-Output Table: relation to national account.
- The Static Leontief System, technical assumptions, The Hawkins-Simon Conditions, Solving an Input – Output System.
- Applications of input-output analysis
- Partial and General Equilibrium approach to the solutions
- The solutions under different closing rules.
- Social Accounting Matrix

**Suggested Readings**

1. Dorfman, Samuelson and Solow (1968) :Linear Programming and Economic Analysis
2. Hertel T.W (Edited) : Global Trade Analysis,Cambridge University Press
3. Pradhan B.K., Saluja M.R.and Shalabh K Singh (2006), Social Accounting Matrix for India: Concepts, Construction and Applications, Sage publication.