Choice Based Credit System (CBCS)
(Effective from Academic Year 2022-23)

Syllabus
for
M.A/M.Sc in Economics

Department of Economics
Aliah University
IIA/27, New Town
Kolkata-160

M.A/M.Sc in Economics

Programme Outcomes (PO):

At the end of the 2-yrs. M.A/ M.Sc. in Economics programme, a student will be able to do the following:

1. Get exposure to advanced economic theories.
2. Develop rational economic thinking and problem solving.
3. Understand, formulate, and use economical and statistical models arising in various fields of study.
4. Develop the aptitude to integrate economics theory and practice of broad developmental aspects of international and national economic policies and analysis of different sectors
5. Have the quantitative technique to handle wide range of real life data with computer skills and use their results and interpretations to make practical suggestions for improvement.
6. Equip the students with the required skills to enable them to take prominent roles in the wide spectrum of employment and research.

Programme Specific Outcomes (PSO):

On successful completion of the course a student will be able to:

1. Gain sound knowledge in theoretical and practical aspects of advances in economics.
2. Get an idea of the various types of real-world economic problems and gain an understanding of the various policy responses.
3. Learn the advanced mathematical and statistical techniques , the ar of economic modelling necessary to analyse the broad spectrum economic problems
4. Learn the professional efficiency which is required on contemporary job market and also in the field of research

Outline of Syllabus for M.A/M. Sc. in Economics:

Semester-I					
Srl.	Code	Type	Paper Name	Credit	Marks
1	ECOPGCCT01	Core (T)	Microeconomics-I	4	50
2	ECOPGCCT02	Core (T)	Macroeconomics-I	4	50
3	ECOPGCCT03	Core (T)	Mathematical Methods for Economics	4	50
4	ECOPGCCT04	Core (T)	Econometrics-I	4	50
5	ECOPGCCT05	Core (P)	Advanced Indian Economics	4	50
6	PGAUC01	Compulsory	Elementary Arabic and Islamic Studies	0	50
Total				20	250
Semester-II					
Srl.	Code	Type	Paper Name	Credit	Marks
1	ECOPGCCT06	Core (T)	Microeconomics-II	4	50
2	ECOPGCCT07	Core (T)	Macroeconomics-II	4	50
3	ECOPGCCT08	Core (T)	Econometrics-II	4	50
4	ECOPGCCT09	Core (T)	Development Economics	4	50
5	ECOPGCCT10	Core (P)	History of Economic Ideas	4	50
6	PGAEC01	Compulsory	Disaster Management/Human Rights & Value Education/Yoga & Life Skills	0	50
Total				20	250

Semester-III

Srl.	Code	Type	Paper Name	Credit	Marks
1	ECOPGCCT11	Core (T)	International Economics	4	50
2	ECOPGCCT12	Core (T)	Project I	4	50
3	ECOPGDET01	DE (T)	Any one from: 1. Advance Macroeconomics-I 2. Labour Economics-I 3. Monetary Economics- I 4. Development and Sustainability-I	4	50
4	ECOPGDET02	DE (T)	Any one from: 1. Applied Econometrics-I 2. Economics of Finance-I 3. Environmental Economics-I 4. Operational Research -I	4	50
5	...PGGEC01	GE	To be chosen from other PG programme	4	50
Total				20	250

Semester-IV

Srl.	Code	Type	Paper Name	Credit	Marks
1	ECOPGCCT13	Core (T)	Public Economics	4	50
2	ECOPGDET03	DE (T)	Any one from: 1. Advance Macroeconomics-II 2. Labour Economics-II 3. Monetary Economics-II 4. Economics of Social Sector_II	4	50
3	ECOPGDEP01	DE (P)	Any one from: 1. Applied Econometrics-II 2. Economics of Finance-II 3. Environmental Economics-II 4. Operational Research II	4	50
4	...PGGEC02	GEC	To be chosen from other PG programme	4	50
5	ECOPGPRJ01	PRJ	Project and Dissertation	4	50
Total				20	250

Generic Elective Courses:

1. ECOPGGEC01 Indian Economics
2. ECOPGGEC02 Statistics and Basic Econometrics.

Detailed Syllabus:
Semester-I

Course code: ECOPGCCT01
Course Title: Microeconomics I

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcomes: After completing this course students will be able to

1. The course will provide the students with knowledge of the utility maximization problem of a consumer along with concepts of compensating variation, equivalent variation, and duality in consumption using a mathematical approach. This course will also provide insight into how individuals make decisions in a risky environment.

2. This course will provide the students the knowledge of profit maximization and cost minimization problems using a mathematical approach. Furthermore, the students will be introduced to the perfectcompetitive behavior of the firm.

3. This course will provide the students with knowledge of the concepts of general equilibrium analysis, such as competitive equilibrium, Pareto optimality, and core with the help of the exchangeeconomy, one-consumer, one-producer economy and 2 by 2 production model.

4. This course will provide the students with knowledge of how the efficient allocation of productive resources takes place in a free market economy. Furthermore, the students will be able to differentiate between private and social costs in the economy caused byexternalities and be able to find solutions to the public goods and externalities problems.

5. The students will be able to link the current microeconomic theory to economic policies. Furthermore, the course will strengthen the problem-solving skills that are applied to microeconomic theory.

Detailed Syllabus:

I. Consumer Behaviour [20]

Choice of a representative consumer – Duality approach - Indirect Utility Function, Expenditure Function - Consumer surplus, Equivalent and compensating variation -revealed reference – choice under uncertainty - problem of aggregation – social choice

II. Theory of the Firm and the Competitive Market [6]

Cost minimization – envelope theorem for constrained optimization – duality;The competitive firm – market equilibrium – Pareto efficiency – taxes and subsidies.

III. General equilibrium [18]

The exchange economy – Equilibrium (Existence, uniqueness, stability) – Pareto Optimality - concept of core - Core equivalence theorem. One consumer one producer Economy

The Production Model- fixed and flexible coefficients – relation between endowments and product mix – relation between commodity prices and factor prices.

IV. Welfare [6]

First and Second Fundamental theorems of Welfare Economic – Pareto Optimality and Social Welfare Optima.

References:

- Varian H. (2009) - Microeconomic Analysis, 3rd Edition, Viva Books Pvt. Ltd.
- MasCollel A., Whinston M. D. and Green J. R. (2012) - Microeconomic Theory, OxfordUniversity Press, India
- Jehle G. A. and Reny P. J. (2006) – Advanced Microeconomic Theory, 2nd Edition,Pearson Education, India
- Anjan Mukherji, *An Introduction to General Equilibrium Analysis*, Oxford University Press, 2002.
- Avinash Dixit, *Optimization in Economic Theory*, Oxford University Press, 1990.
- David M. Kreps, *A Course in Microeconomic Theory*, Princeton University Press, 2020.

Course code: ECOPGCCT02
Course Title: Macroeconomics I
Nature of the Course: Core Course
Credit: 4 Full Marks: 50

Course Learning Outcomes:

1. To understand and analyze the factors that affect income, demand, employment, pricein an economy.
2. To know the alternative approaches towards macroeconomic analysis.
3. To understand and analyze the macroeconomic policy in an open economy.
4. To analyze the formation of expectations and its effect on the macroeconomy.

Detailed Syllabus:

1. Background (10)
   A. The Point of Departure- Circular relation between aggregate income and aggregate expenditure and two alternative approaches to Macroeconomics (Supply side approach and Demand based approach);
   B. Introduction to Supply based Models: Wage-price flexibility and voluntary unemployment- Comparative Static Exercises- Labor in efficiency units and the Role of Economic Policy;
   C. Introduction to Demand based Models: Relative Wage Hypothesis and Constant Money Wage- A model of Effective Demand with Money-wage Rigidity and the concept of Involuntary Unemployment- Volatile Expectation and Monetary versus Fiscal Policy in Recession;

2. Modern Version of Supply-side Models (40)
   A. *Rational Expectation*: Adaptive Expectation, Rational Expectation and the Lucas Critique- A Market clearing Model with rational Expectation and the Policy Irrelevance Results- Limitation of Rational Expectation Theory and the passage to Real Business Cycle;
   B. *Real Business Cycle*: Overlapping Generation Model and the Ricardian Equivalence- Exposition of Real Business cycle in an Overlapping Generation Model- Integration Between Trend and Cycle- Intertemporal Labor-Leisure Substitution and its Critique;
   C. *Economic Growth*: Harrod-Domar Model (Point of Departure)- Exogenous Technical Progress and the Neo-classical Model of Growth- Endogenous Growth (the Human Capital Model and the R&D Model);

Selected Readings:

1. Hicks, J. 1971. Social Framework: An Introduction to Economics. Oxford University Press.
2. Keynes, J. M. 1936 (reprinted 2007). The General Theory of Employment, Interest and Money. London: Macmillan.
3. Davidson, P. 2011. Post Keynesian Macroeconomic Theory. Edgar Elgar.
4. Romer, D. 2011. Advanced Macroeconomics, McGraw Hill. (Text)

5 Lucas, R.E. and T, J. Sargent, T. J. 2011 (edited). Rational Expectations and EconometricPractice, Volume 1. University of Minnesota.
6. Hartley J, K Hoover and K. D. Salyer (Editor). 1998. Real Business Cycles: A Reader. Routledge.
7. Lucas, R.E. 1983. Studies in Business-Cycle Theory. MIT Press.

8 Miller, P, J. 1994. The Rational Expectations Revolution: Readings from the Front Line. MIT Press.
9. Jones, C.I and D Vollrath. 2013. Introduction to Economic Growth. WW Norton and Company.

10. Barro, R, J and Xavier I. Sala-i-Martin. 1998. Economic Growth. MIT Press.12. Bhaduri, A.: *Macroeconomics - Dynamics of Commodity Production*, Palgrave Macmillan.

Course code: ECOPGCCT03

Course Title: Mathematical Methods in Economics

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcomes:

1. Equip the students with basic mathematical tools used for Economic analysis
2. Learn to interpret, apply and analyse the result of mathematical anaysis

Detailed Syllabus:

I. Static Optimization: Review of Classical Constrained Programming and Nonlinear Programming, Comparative Statics, Envelope Theorem , Saddle Point Theorem, Concave and Convex Programming. [10]

II. Elements of point-set topology and real analysis: Metric Spaces, Continuity, Convergence, Weirstrass Theorem, Fixed-Point theorems. [10]

III. Dynamic Optimization: Optimal Control Theory and Hamiltonian, Dynamic Programming. [8]

IV. Choice under uncertainty: Risk and portfolio analysis. [8]

V. Linear Models, matrix algebra and vector analysis. [6]

VI. Differential Equations and Stability Issues: Differential Equations, Stability Theory, Phase Diagrams. [8]

References:

1. Dixit (1976): Optimization in Economic Theory, OUP
2. Beavis & Dobbs (1990): Optimization and Stability Theory for Economic Analysis, CUP
3. Intrilligator (1971); Mathematical Optimization and Economic Theory, Prentice Hall
4. Hadley (1960): Linear Algebra, Addision-Wesley, Massachusetts
5. Chiang (1992): Dynamic Optimization, McGraw Hill Inc.
6. Kamien & Schwartz (1981): Dynamic Optimization, North Holland

Course code: ECOPGCCT04
Course Title: Econometrics -I
Nature of the Course: Core Course
Credit: 4 Full Marks: 50

Course Learning Outcomes:

1. Equip the students with basic Econometric tools used for analysis of data
2. Learn to interpret, apply and analyse the result of various Econometric models.
3. To famaliarise the students of various Econometric models.
4. To help students deal with various cases of departure from CLRM

Detailed Syllabus:

a. Single Equation Methods (with independent and identically distributed errors): [20]
   i. K-variable Classical Linear Regression Model: specification, Estimation, Hypothesistesting, Prediction;
   ii. Extension of CLRM: Qualitative Regressor - Dummy variables – Analysis of Stability;

b. Relaxing Assumptions: [20]
   i. Generalized Linear Regression Model
   ii. Heteroskedasticity: Consequence, Detection, Correction
   iii. Autocorrelation: Consequence, Detection, Correction
   iv. Multicollinearity: Consequence, Detection, Correction
   v. Stochastic Regressor (distributed lags)

c. Simultaneous Equation System: [10]
   i. Problem of Identification: Structural Form and Reduced Form,Observational Equivalence, Rank and Order Condition;
   ii. Limited Information Estimation: Endogeneity problem, Instrumental Variable, Omitted Variable (Indirect Least Square, 2-Stage Least Square)

References:

Maddala, G S and Kajal Lahiri (2009), *Introduction to Econometrics*, John Wiley & Sons, England, 4th Edition.

Wooldridge, Jeffrey M (2009), *Introductory Econometrics: A Modern Approach*, South-Western Cengage Learning, USA, 4th Edition.

Johnston, Jack and John Dinardo (1997), *Econometric Methods*, McGraw Hill, New York, 4th Edition.

Gujarati, Damodar N and Dawn C Porter (2009), *Basic Econometrics*, McGraw Hill,New York, 5th Edition.

Kementa, J (1986): Elements of Econometrics (2nd Edition), McMillan-Maxwell, NY;

Course code: ECOPGCCT05
Course Title: **Advanced Indian Economics**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcome: (CLO)

1. Develop ideas about the basic characteristics of Indian economy and its potential.
2. Grasp the importance of planning undertaken by the government of India and have knowledge of the various objectives, failures, and achievements as the foundation of the ongoing planning and economic reforms undertaken by the government.
3. To understand the basic characteristics of economic development and the growthof Indian economy.
4. To analyze new economic policies (privatization, liberalization, and globalization) inIndia.
5. Understanding of problems and measures from a contextual standpoint.
6. Ability to identify and analyze current issues.

Detailed Syllabus

I. Transformation of the State and Economic Reforms

II. Growth and Sectoral Performance

- Aggregate GDP growth, structural change and productivity
- Agricultural growth and distribution
- Manufacturing growth and issues relating to productivity, market structure and economies of scale
- Issues relating to services-led growth
- Inclusive growth in 11th and 12th Plan

III. Trade and Payments Reforms in India

- Contours of trade and payments reforms in India including WTO related reforms in market access
- Merchandise trade performance and determinants
- Balance of Payments and issues related to accumulation of Foreign Exchange Reserves, Capital Account Convertibility

IV. Fiscal Reforms in India

- Profile of Fiscal Reforms
- Issues relating to deficit and growth, FRBM Act and fiscal prudence
- Reforms with respect to State Finances

V. Financial Sector Reforms in India

- Issues relating to reforms in banking, insurance, pensions, exchange rate and capital market

VI. Employment, Poverty, and Food Insecurity in India

- Measurement issues
- Regional and sectoral dimensions in employment, poverty and inequality
- Recent debates on poverty and employment during reforms
- Issues relating to rural and urban employment, livelihood security, National Urban Livelihood Mission and MGNREGA
- Rural and urban food insecurity
- The Public Distribution System
- Rural and urban infrastructures and delivery of services

References

- Acharya, Sankar and Rakesh Mohan (eds.) (2010), *India's Economy: Performance and Challenges*, OUP, New Delhi.

- Ahluwalia, M S, S S Tarapore and Y V Reddy (eds.) (2004), *Macroeconomics and Monetary Policy*, OUP, New Delhi.

- Balakrishnan, P (2010), *Economic Growth in India*, OUP, New Delhi.

- Basu, K (ed.) (2005), *India's Emerging Economy*, OUP, New Delhi.

- Bhaumik, S K (ed.) (2008), *Reforming Indian Agriculture: Towards Employment Generation and Poverty Reduction*, Sage Publications, New Delhi.

- Chakravarty, R (2006), *The Financial Sector in India*, OUP, New Delhi.

- Mahendra Dev, S (2008), *Inclusive Growth in India*, Oxford University Press, New Delhi.

- *India Development Report*, Various years, OUP, New Delhi.

- Panagariya, A (2008), *India: The Emerging Giant*, OUP, New Delhi.

- Rakshit, M (2008a), *Macroeconomics of Post-Reforms India*, OUP, New Delhi.

- Rakshit, M (2008b), *Money and Finance in the Indian Economy*, OUP, New Delhi.

• Reddy, Y V (2004), *Lectures on Economic and Financial Sector Reforms in India*, OUP, New Delhi.

Selected articles from various journals will be referred in the class.

Semester-II

Course code: ECOPGCCT06

Course Title: **Microeconomics II**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcome: (CLO)

1. The course will provide the students with advanced knowledge of microeconomic theory and its applications.
2. The course will provide the students with the required knowledge to identify, analyze and solve diverse economic situations using techniques of game theory.
3. The course will provide the students with the required knowledge to address different issues that are related to the economics of information.
4. The course will provide the students with the required knowledge to identify research problems and pursue research work that is related to microeconomic theory.

Detailed Syllabus:

I. Static Games of Complete Information [16]

Concept of a game – normal form representation – Prisoners' Dilemma - iterated elimination of dominated strategies – Nash equilibrium.

II. Dynamic Games of Complete Information [16]

Dynamic Games – subgames – backwards induction – subgame perfect Nash equilibrium – Entry Deterrence Game.

Repeated Games – Infinitely repeated games- folk theorem.

III. Market Failure [18]

Imperfect markets – Monopoly – Price discrimination – Durable goods monopoly; Oligopoly –Cournot, Bertrand and Stackelberg

Extenalities and inefficiency – Pigouvian taxes Incomplete markets – Property rights – Coase Theorem

Public goods – free rider problem – Efficient provision of a public good – voting

Incomplete information – Moral hazard and Adverse Selection

Reference

•Gibbons, R. - Game Theory for Applied Economists, Pearson Higher Education & Professional Group, 2010

•MasCollel A., Whinston M. D. and Green J. R. (2012) - Microeconomic Theory, Oxford University Press, India

•Jehle G. A. and Reny P. J. (2006) – Advanced Microeconomic Theory, 2nd Edition, Pearson Education, India

Course code: ECOPGCCT07
Course Title: **Macroeconomics II**

Nature of the Course**:** Core Course

Credit: 4 Full Marks: 50

Course Learning Outcomes:

1. To develop advanced analytical macroeconomic models.
2. Understanding and analyzing issues like business cycles and growth theory.
3. To have a understanding of New Keynesian Macroeconomic models.
4. To have a deeper understanding of development in consumption and investment theories.

Detailed Syllabus:

I. Accounting (10)

Household accounting- Corporate Accounting- Government accounting- Rest of the world accounting- Bank Accounting (Central Bank and commercial Banks);

II. Open economy Macroeconomics (15)

Mundell-Fleming Model- Monetary and Fiscal Policy- Process of Adjustment and ExchangeRate Overshooting- An Alternative Formulation of the Process of Adjustment and Divergent Paths- Treatment of Financial Crisis in Mundell-Fleming Model;

III. Introduction to New-Keynesian Macroeconomics (15)

Keynes & New-Keynesiam, Staggered Wage, rational Expectation and the Breakdown of thePolicy irrelevance result- Menu Cost and the Fluctuation of Output- Model of Disciplinary Unemployment.

IV. Consumption and Investment (10)

Consumption Theory and Hall's Random Walk- Neo-classical Investment Theories andTobin's q Theory;

Selected Readings:

1.Bhaduri, A.: *Macroeconomics - Dynamics of Commodity Production*, Palgrave Macmillan.

2.D'Souza, E.: *Macroeconomics*, Pearson Education.

3. Carlin W. and Soskice, D.: *Macroeconomics – Imperfections, Institutions & Policies*, Indian Reprint. Oxford University Press.
4. Heijdra, B.J.: *Foundations of Modern Macroeconomics*, Oxford University Press.

5. Romer, D.: *Advanced Macroeconomics*, McGraw Hill.

6. Sargent, T. J.: *Macroeconomic Theory*. Academic Press.

7. Vegh, C.A.: *Open Economy Macroeconomics in Developing Countries*, MIT Press.

Course code: ECOPGCCT08
Course Title: **Econometrics II**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50 (25 Theory+ 25 Practical)

Course Learning Outcomes: After successful completion of this course, student will be able to:

1. Able to analyse various time series data and apply time series models and interpret the result.
2. Have an understanding of binary dependent variable models
3. Understand and analyze panel data
4. Have a practical exposure to various models.

Detailed Syllabus:

I. Stochastic Trends: Time Series Data [12 + 8 (Lab)]

-Trend Stationary Process & Difference Stationary Process

-Random Walk and Unit root (detection, correction)

-Cointegration and Error Correction

-Test for Causality;

II. Limited Dependent Variables: Cross Section Data [10 + 8 (Lab)]

-Problem of Partial Observability- Truncation & Censoring of error distribution
-Switch from Least Square Technique to Maximum Likelihood Estimation: LPM,LOGT, PROBIT, TOBIT;

III. Introduction to Panel Data [8 + 4 (Lab)]

-Longitudinal Data: Usefulness

-Panel data models: Least Square Dummy Variable, Fixed Effect, Random Effect.

References:

•Maddala, G S and Kajal Lahiri (2009), *Introduction to Econometrics*, John Wiley & Sons, England, 4th Edition.

•Wooldridge, Jeffrey M (2009), *Introductory Econometrics: A Modern Approach*, South-Western Cengage Learning, USA, 4th Edition.

•Johnston, Jack and John Dinardo (1997), *Econometric Methods*, McGraw Hill, New York, 4th Edition.

•Baltagi, Badi H (2008), *Econometrics*, Springer-Verlag, Berlin, 4th Edition.

•Chatterjee Samprit & A S Hadi (2012): Regression Analysis by Examples (5th Edition); John-Wiley, NY;

Course code: ECOPGCCT09

Course Title: Development Economics

Nature of the Course**:** Core Course

Credit: 4 Full Marks: 50

Course Learning Outcome: (CLO): After the completion of the course:

1. Students would be able to understand immense and varied economic challenges facing the world's impoverished and developing economies in general and interpret what practical and effective policies can be implemented to address these challenges.
2: Students would be able to understand and interpret theoretical models that illustrate important development issues.
3: It will develop capability to derive and discuss policy implications.
4: Students would be familiarized with cutting edge research topics in the field

I. Development Discourse: The Present Setting

Growth-Inequality-Poverty debate: Economic Efficiency Versus Social Justice **[6]**

Inclusive Growth: Top Down versus Bottom-Up approach.

II. Economic Liberalization and Developing Economies

Concepts and background of initiation of economic reforms [4]

III. Economic Growth and Income Distribution [20]

(a) Capital Market: FDI- Modes, types, determinants, technology access & consequences

- Imperfections in Capital Market: organized and unorganized capital market

(b) Labour Market: Informal Sector- Importance, Nature of employment, Linkages with Formal Sector;

(c) Land Market & Land Acquisition: Industry versus Agriculture Debate, the SEZ controversy. Problems of acquisition of agricultural land, country experiences.

(d) Market Inter-linkage: Effects on Growth and Income Distribution.

IV. Institutions and Governance [8]

(a) Institutions and economic development.

(b) Provision of Public Good: Education- Health- Infrastructure

(c) Social Security & Inclusion: Employment Generation- Credit Expansion- Other Security Measures- An Introduction to Impact Evaluation;

V. Measurement Issues

(a) Income based Measures: Poverty, Inequality **[12]**

(b) Human Development Approach: Multidimensional Indices (achievement, deprivation, discrimination)

References:

1. Rodrik, D. (1995a): "Trade and Industrial Policy Reform," in J.R. Behrman and T.N. Srinivasan (eds.), *Handbook of Development Economics*, vol. III,B Amsterdam, North-Holland, 1995.

2. Rodrik D. (1995b): "The Political Economy of Trade Policy," in G. Grossman and K. Rogoff (eds.), Handbook of International Economics, vol. 3, Amsterdam, North-Holland, 1995.

3. Basu Kaushik (1997): "Analytical Development Economics: The Less Developed Economy Revisited".
4. Debraj Ray (1999): 'Development Economics'. OUP
5. Ravallion & Chen (2001): 'Measuring Pro-poor Growth'. World Bank

6. Aseem Srivastava & Ashish Kothari (2012): 'Churning the Earth: The Making of Global India'.
7. Shivkumar & Parr (1997): 'Readings in Human Development' OUP;

Several other articles are to be referred to the students during the course.

Course code: ECOPGCCT10

Course Title: **History of Economic Ideas**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcome (CLO): After the completion of the course

1. Students would be able to understand the evolution of various economic thoughts and theories
2: Students would be able to understand and interpret classical theories
3: It will develop capability to critically evaluate the theories
4: Students would be able to compare and contrast the classical theories with the modern theories.

I. Classical theories of value and distribution: Physiocrats, Mercantilism, Theories of Adam Smith, Ricardo, Marx and others. [20]

II. Evolution of neoclassical paradigm: General Equilibrium Theory, Keynesian economics, etc. [10]

III. Evolution of critical economic theories: Theories of Kalecki, Sraffa, Post-Keynesian and Marxian theories; [10]

IV. Approach of Economic Methodology: Positivism vs. Normativism, Causality Questions, Modernism vs. Post modernism [5]

V. Recent developments in Economic Theory and Methodology [5]

References:

1. Schumpeter (1954): History of Economic Analysis, Harvard University Press
2. Screpanti & Zamagni (2005): An Outline of the History of Economic Thought, OUP
3. Blaug (1983): Economic Theory in Retrospect (3/e), Vikas Publishing, New Delhi
4. Meek (1962): Economics of Physiocracy, George Allen & Urwin

Semester-III

Course code: ECOPGCCT11

Course Title: **International Economics**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcomes:

1. Have a good conceptual understanding of the key concepts and practicalapplications of international trade.
2. To understand the processes of international economic relations as a part of the global market economy's development.
3. Ability to outline the development of trade theory historically, differentiating between standard classical and orthodox trade theories.
4. To acquire skills that would help them to take rational decisions on issues related to the international economy.

Detailed Syllabus:

Module 1: Trade theory& policyunder perfect competition

Unit 1: Basis of trade; absolute vs comparative advantage, gains fromtrade

Unit 2: Ricardian model of trade; Derivation of World Supply Curve; Multi- country extension,world PPF, Multi- good extension of Ricardian Model-;Dornbusch- Fisher- Samuelson model of continuum of goods.

Unit 3: Specific factormodel; output and income distribution, growth in factorendowments, the Dutch disease. Heckscher-Ohlin model; Rybczynski theorem; Stolper Samuelson theorem; factor price equalization; empirical tests of H-O theorem

Unit 4: Commercialpolicy in trade, regional trading blocks. Trade creation and diversion.

Module 2: Trade, imperfect competition and development

Unit 1: Internationaltrade, imperfect competition andincreasing returns to scale, IRS and monopolistic competition, intra-industry trade ;horizontal productdifferentiation, vertical product differentiation, strategic trade theoryand policy.

Unit 2: Immiserizing growth; Brecher and Alejandro models of trade and welfare.

Unit 3: Trade and wage inequality indeveloping; a simplegeneral equilibrium analysis

Unit4: Introduction to factor content approach.

References:

Giancarlo Gondolfo, *International trade theory and policy*, Springer, 2013.

Jagdish N. Bhagwati, T. N. Srinivasan and Arvind Panagariya, *Lectures on International Trade*, MIT Press, 1998.

Kierzkowski (ed.), *Monopolistic Competition and International Trade*, OUP, 1984.

Paul Krugman, *Rethinking International Trade*, MIT Press, 1994.

Paul R. Krugman, Maurice Obstfeld and Marc J. Melitz, *International Economics: Theory and Policy*, Pearson Education, 2015.

Francisco L. Rivera-Batiz, Luis A Rivera-Batiz and Luis Rivera-Batiz, *International Finance and Open Economy Macroeconomics*, Macmillan, 1994.

R. Caves, J. Frankel and R.W. Jones, *World Trades & Payments* (9th Ed), Pearson Education,

Rajat Acharyya, *International Economics: An Introduction to Theory and Policy*, Oxford University Press, 2013.

R. Jones, *International Trade: Essays in Theory*, North Holland, 1979.

Course code: ECOPGCCT12

Course Title: **Project**

Nature of the Course: Core Course

Credit: 4 Full Marks: 50

Course Learning Outcome: (CLO)

1. To design and manage a piece of original project work.
2. To develop a research proposal and protocol.
3. To discuss the ethical dimensions of their research and obtain appropriate ethical approval if needed.
4. To synthesize knowledge and skills previously gained and applied to an in-depth study.
5. To establish links between theory and methods within their field of study.
6. To select from different methodologies, methods, and forms of analysis to produce a suitable research design and justify their design.
7. To present the findings of their project in a written report.
8. Critically appraise and interpret published literature.

ECOPGDET01

Any one from:
1. Advance Macroeconomics-I
2. Labour Economics-I
3. Monetary Economics-I
4. Development and Sustainability-I

ECOPGDET02

Any one from:
1. Advance Econometrics-I
2. Economics of Finance-I
3. Environmental Economics-I
4. Operations Research-I

ECOGGEC01

This is a generic elective course. To be chosen from another PG Programme.

Semester-IV

Course code: ECOPGCCT13
Course Title: **Public Economics**
Nature of the Course: Core Course
Credit: 4 Full Marks: 50

Course Learning Outcomes: This paper will expose students to major areas of public economics which include nature of public, club and merit goods, the economics of public expenditure, of taxation to pay for that expenditure, and of policy and programs broadly-defined.

Detailed Syllabus:

Module 1 **(25 marks)**

1. Equilibrium and Efficiency: The exchange economy; The production and exchange; The efficiency of competition

2. Public good: Definition; Private provision; Efficient provision; Publicly provided private good; Voting; Mechanism design.

3. Club good: Definition; Single product clubs – Fixed utilization, Variable utilization, Two-part tariff

4. Externalities and Merit goods
Market inefficiency; Externality examples – River pollution, The tragedy of commons; Pigouvian taxation; Internalization; Coase theorem

Module 2 **(25 marks)**

5. Tax incidence: Canons of taxation, Simple competitive equilibrium model Static Two-sector model; Incidence of corporation tax; General tax incidence

6. Effects of tax on labour supply, Savings and Risk taking – comparison between Income tax and Expenditure tax

7. Public debt – Barro-Ricardo equivalence theorem; Debt and growth in Solow model

8. Fiscal policy and the macroeconomy; Macroeconomics of budget deficit –Sustainability, Solvency and Optimality.

References:

1. Anthony B. Atkinson and Joseph E. Stiglitz, Lectures on Public Economics, Princeton University Press.
2. Blinder, A. S., & Solow, R. M. (1972). Does fiscal policy matter? (Vol. 144).Econometric Research Program, Princeton University.
3. Jean Hindriks and Gareth D. Myles, Intermediate Public Economics, MIT Press.
4. John Cullis, Philip Jones and Philip R. Jones, Public Finance and PublicChoice: Analytical Perspectives, OUP.

5. Rakshit, M. (2005). Budget Deficit: Sustainability, Solvency and Optimality.Readings in Public Finance, Oxford University Press, New Delhi, 143-164. 6.Errol D'Souza: Macroeconomics, Pearson Education India

ECOPGDET03

Any one from:
1. Advance Macroeconomics-II
2. Labour Economics-II
3. Monetary Economics-II
4. Development and Sustainability-II

ECOPGDET04

Any one from:
5. Advance Econometrics-II
6. Economics of Finance-II
7. Environmental Economics-II
8. Operations Research-II

ECOPGGEC02

This is a generic elective course. To be chosen from another PG Programme.

ECOPGPRJ01 Project and Dissertation

This should be some innovation in Economics/application of Economics in view of the developments in Economics based on the knowledge gained during the program. The Project Work will be spread over the 2nd year (Sem-III and Sem-IV) of the program. The topic of their project work/dissertation will bedecided at the beginning of the 3rd Semester by the Head of the Department in consultation with the supervisors. A project report is to be submitted by a student. The project report will include: a) Review of the relevant literature, b) Objectives of the study, c) Materials and Methods, d) Results/Observations (supported by figures/tables etc as required), e) Discussion of the Results/Observations, f) Summary and g) References. The project work will be evaluated by the teachers of the department by a presentation and viva-voce examination. Out of total 50 marks assigned to the project, 30 marks will be assigned on the evaluation of the project work separately by the examiners and 20 marks will be assigned on the oral presentation and viva – voce.

Steps in project work:

1. Conceptual phase-formulation of the research problem, literature review, developing the

hypothesis.

2. Empirical phase- preparing the research design, determination of sample size, collection of data.
3. Analytical phase- analysis of data, hypothesis testing, generalization and interpretations, writing up, conclusions.

Department Specific Electives(DSE):

Course Name: Advance Macroeconomics

Course Learning Outcome: (CLO): Over the period of two semesters the students will:

1. Have an in depth knowledge of various inter generational models.
2. Understand Business cycles and its various aspects
3. Understand various macroeconomic disequilibrium and the corrective mechanisms.
4. Have a through knowledge of various optimal growth theories models

DSE A1: Advanced Macroeconomics I (50 marks)

(For semester III students)

Syllabus

- Concept of macroeconomic equilibrium.
- Overlapping generation models.
- Business cycles.
- Growth and inequality.
- Disequilibrium macroeconomics.

DSE A2: Advanced Macroeconomics II (50 marks)

(For semester IV Students)

Syllabus

- Optimal growth models
- Recursive macroeconomic models
- Characterisation of chaotic dynamics
- Macroeconomics of developing countries

References:

1. Blanchard O.J. and Fisher, S.: *Lectures on Macroeconomics*, Indian Reprint, PHI Learning Pvt. Limited.
2. Brock, W.A. and Malliaris, A.G.: *Differential Equations, Stability and Chaos in Dynamic*

Economics, North-Holland.

3. Dasgupta, D.: *Modern Growth Theory*, Oxford University Press.
4. Ljungvist, L. and Sargeant, T.: *Recursive Macroeconomic Theory*, MIT Press.
5. Medio, C.: *Chaotic Dynamics*, Oxford University Press.
6. Rakshit, M.: *Macroeconomics of Post-Reform India*, Oxford University Press.

Course Name: Labour Economics

Course Learning Outcome: (CLO): Over the period of two semester the students will:

1. Be able to understand the fundamental issues related to labour market.
2. Will get a comprehensive idea of how labour is treated in a market economy
3. Apply the tools to address major problems associated with labour market outcomes such as unemployment.

DSE A3: Labor Demand and Supply (50 marks)

(For Students of Semester III)

- Human Capital, Individual Wage Determination, Schooling, Experience, and Earnings
- Unions and Collective Bargaining
- Labor Migration
- Economics of the Informal Sector
- Globalization and Labour
- Economics of Child Labour

DSE A4: Labour in India (50 marks)

(For Students of Semester IV)

- Characteristics of the Indian labour force,
- Wages and employment in agriculture,
- Industry and services,
- Importance of the informal sector,
- Employment and labour welfare policy.
- Trade unions,
- Women in the labour force.
- Rural urban migration.
- Investment in human capital.
- Globalisation and labour market reforms.
- Wage inequality,
- Child labour.

References:

- Cahuc, Pierre, and Andre Zylberberg. *Labor Economics*. Cambridge, Mass. and London:MIT Press, 2004.
- Ashenfelter, Orley, and Richard Layard. *The Handbook of Labor Economics.* Vol. 1and 2. New York: North-Holland, 1986; Vol. 3A, 3B, and 3C, 1999.

- Chaudhuri, Sarbajit and Mukhopadhyay, Ujjaini (2009): *Revisiting the Informal Sector: A General Equilibrium Approach*, Springer, New York, USA.
- Basu, Kausik (1997): *Analytical Development Economics*, Oxford University Press,Delhi.
- Marjit, S. and Acharyya, R. (2003): International Trade, Wage Inequality and theDeveloping Economy: A General Equilibrium Approach, Physica-Verlag.
- R. Solow (1990): The Labour Market as an Institution, Blackwell Publisher.

Course Name: Monetary Economics

Course Learning Outcome: (CLO): Over the period of two semester of the course will:

1. Equip the students to the theoretical foundations of Monetary Economics.
2. Develop an understanding about the working of the monetary policy.

DSE A5: Monetary Economics I (Full Marks 50)
(For the students of semester III)

Detailed Syllabus

Different approachesto modeling money : Money-in-the- Utility Function;Cash –in- advance models;Money in the Walrasian and Non-Walrasian set up; Money in dynamic System

MonetaryPolicy Operation: Instruments and Goals; Operating Procedures and Policy Measures; Alternative rulesof Monetary policy

The Consensus model of monetary policy : Monetary Policy Regimes and Economic Performance; The consensus model of monetary policy; Asset prices in the consensus model; Critique to the New consensus model

New Keynesian Monetary Economics:- The basic New Keynesian model; Monetary Policy Analysis in New Keynesian Models

DSE A6: Monetary Economics II (Full Marks :50)
(For students of semester IV)

Course Content:

Monetary Policy in the open economy : The Obstfeld- Rogoff Two- Country Model; Policy coordination; Open economy new Keynesian model.

Financial Markets and MonetaryPolicy: Interest Rates and MonetaryPolicy; TheTerm structure of Interest Rates;Financial Frictions in Credit Markets;Financial Intermediaries and Monetary Economics

The Interaction between Monetary and Fiscal Policy : Positive Theoryof Price Stability; Normative Theory of PriceStability

MonetaryPolicy in India : History of monetary policy in India; Monetary policy framework; Transmission mechanism; Transition of RBI's policy framework

Suggested Readings:

1. Carl E. Walsh, *Monetary Theory and Policy*, 4th Edition, The MIT Press, 2017.
2. Frank. Hahn, *Money and Inflation*, MIT Press, 1983.
3. Prabhat Patnaik, *The Value of Money*, Columbia University Press, 2009.
4. Michael Woodford, *Interest and Prices - Foundations of a Theory of Monetary Policy*,Princeton University Press, 2011.
5. Jordi. Gali: Monetary Policy, Inflation, and the Business Cycle – An Introduction to the New Keynesian Framework, 2nd Edition, Princeton University Press, 2015.
6. Ostroy, Joseph M., and Ross M. Starr. "The transaction's role of money." *Handbook ofmonetary economics* 1 (1990): 3-62.
7. Duffie, Darrell. "Money in general equilibrium theory." *Handbook of monetary economics* 1 (1990): 81-100.
8. Friedman, Benjamin M. "Targets and instruments of monetary policy." *Handbook of monetary economics* 2 (1990): 1185-1230.
9. Svensson, Lars EO. "Inflation targeting." In *Handbook of monetary economics*, vol. 3,pp. 1237-1302. Elsevier, 2010.
10. Bordo, Michael D., and Anna J. Schwartz. "Monetary policy regimes and economic performance: the historical record." *Handbook of macroeconomics* 1 (1999): 149-234.
11. Goodfriend, Marvin. "How the world achieved consensus on monetary policy." *Journalof Economic Perspectives* 21, no. 4 (2007): 47-68.
12. Kriesler, Peter, and Marc Lavoie. "A Critique of the New Consensus View of MonetaryPolicy." In *Post-Keynesian Essays from Down Under Volume II: Essays on Policy andApplied Economics*, pp. 61-68. Palgrave Macmillan, London, 2016.
13. Galí, Jordi, and Mark Gertler. "Macroeconomic modeling for monetary policy evaluation." *Journal of economic perspectives* 21, no. 4 (2007): 25-46.

Course Name: Development and Sustainablity

Course Learning Outcome (CLO): Over the period of two semester of the course will help the students :

1. To understand the concepts of advanced developmental economic theories.
2. To identify major sustainability challenges and gain an understanding of the different policy responses.
3. To learn the tools and techniques to address the sustainable development problems.
4. To understand the different aspects of sustainable development.
5. To understand the carrying capacity of ecosystems as related to providing for human needs.
6. Students will be able to apply concepts of sustainable development to address sustainability challenges in a global context.
7. Students will identify, act on, and evaluate their professional and personal actions with the knowledge and appreciation of interconnections among economic, environmental, and socialperspectives.

DSE A7: Development and Sustainablity -I

(For the students of Semester III)

Course Content:

Need for studying the economics of sustainable development; meaning of sustainable development – Comparison with static and dynamic economic efficiency; Weak versus strong sustainability; Rawls and Solow Sustainability, role of discounting, Inter- and Intra-generational equity and sustainability

Welfare Economics

Compensating &Equivalent variation- WPT vs WTA: Why Differ. Household Production Function; Market instruments: Carbon prices,emission trading.

Valuing Market and Non-market Ecosystem and Social Services.

Uses of monetary valuation; Cost-benefitanalysis; Techniques of monetary valuation-recap; Applications.

Measuring Sustainable Development

Defining conventional gross netproduct (GNP);modifying GNP for missing (non-market) values – Green GNP;genuine savings; criticalnatural capital concerns and strong sustainability

DSE A8: Development and Sustainability -II (50 Marks)
(For the students of semester IV)

Sustainable Development

– EcologicalEconomics: Precautionary Principle; biodiversity and precautionary principle; economic growth and natural carrying capacity

Sustainable Development – Visions , Principles and operational Rules: Indicators of Sustainability and Sustainable Development Goals Indicators; Neoclassical Economic growth Inclusive and

comprehensive wealth and sustainability; social capital, Community sustainability and environmental

Special Issues in Sustainable Development : Gender, health, education, poverty, equity, access to resources, food security, clean energy, climate change etc.

National Policies for sustainable developmentin India: National Missions for sustainable development, smart city mission, National mission for adaptation and mitigation etc.

Suggested Readings:

Books

- Pearce, D. and E. Barbier, Blueprint for a Sustainable Economy, Earthscan, 2000.
- Daly, H.E., Beyond Growth: The Economics of Sustainable Development, BeaconPress, 1996.
- Rogers, P. K.F. Jalal and J.A. Boyd, An Introduction to Sustainable Development,Earthscan, 2008
- Deb, D. Beyond Developmentality: Constructing Inclusive Freedom and Sustainability,Daanish Books, 2009
- Sengupta, R. (2012), Ecological Limits and Economic Development, OxfordUniversity Press, Delhi
- Murty, M.N. (2009), Environment, Sustainable Development, and Well-being:Valuation, Taxes and Incentives, Oxford University Press, Delhi
- N. Hanley, J. Shogren, Ben White. *Environmental Economics-In Theory and Practice*,
- Palgrave Macmillan, 2007
- C.D. Kolstad. *Environmental Economics*, OUP, 2010.
- Tom Tietenberg and Lynn Lewis. *Environmental and Natural Resource Economics*, 8th Edition, Pearson, 2008.
- B. Copeland and S. Taylor, Trade, Growth and the Environment, Journal of EconomicLiterature. (NBER WP 2003), 2004.

Journal Articles and Book Chapters

- D.S. Brookshire et.al. *Valuing Public Goods; A Comparison of Survey and Hedonic*
- *Approaches*, American Economic Review, 72, pp. 165-177, 1982.
- W. Beckerman. *Sustainable development': is it a useful concept?,* EnvironmentalValues, 3(3), pp. 191-209, 1994.
- R.H. Coase, *The Problem of Social Cost,* Journal of Law and Economics, 3, pp. 1-44,1960.
- Peter A Diamond and Jerry A. Hausman. *Is Some Number Better Than No Number?,*

  Journal of Economic Perspectives: 8(4) : 45-64, 1994.
- P. Ekins. *Sustainable development* in E.A. Page and J. Proops (eds) *Environmental Thought*, Cheltenham: Edward Elgar, pp. 144-172, 2002.
- Michael W. Hanemann. *Valuing the Environment through Contingent Valuation*, Journal of Economic Perspectives: 8(14): 19-43, 1994.
- A.M. McGrathland and W. E. Oates. *Marketable Permits for the Prevention of Environmental Deterioration*, Journal of Environmental Economics and Management,12(3), pp.207-228, 1985.
- Paul R. Portney. *The Contingent Valuation Debate. Why Economists should care?*,Journal of Economic Perspectives: 8(4): 8-17, 1994.
- UNU-HIS, UNEP, Inclusive Wealth Report 2014: Measuring Progress TowardsSustainability, Cambridge University Press, 2014
- WHO, UNDP, UNEP & IPCC reports.

DSE Group B

Course Name: Advanced Econometrics

Course Outcome:

On completion of this course, the students will be able:
1. To analyse models for time series and binary choice datasets;
2. Ability to use different software (Eviews)
3. To understand the application of the econometric tools in Indian dataset.

DSE B1: Advanced Econometrics I (Full Marks: 50)

(For students of semester III)

Group A: **Time Series Econometrics** (25 hours)

- Non-stationarity and Unit-root tests
- Cointegration and Error-correction models
- Vector Auto-regression models and causality tests
- ARIMA models and Box-Jenkins methodology
- ARCH-GARCH for modeling the variance

Group B: **Multivariate Techniques in Social Science Research** (25 hours)

- Simultaneous Multi-equation Models
- Estimation and Bias in the Simultaneous Equation Models
- Multivariate Analysis and Indexing: Factor Analysis, Principal Component Analysis;
- Grouping Observations: Discriminant Analysis, Cluster Analysis,
- Partial Correlation and Path Analysis, Analysis of Cannonical Correlation;

DSE B2: Advanced Econometrics II

Full Marks: 50 (Theory 25 + Practical 25)

(For students of semester IV)

Theory/ Group- A: **Advanced Econometric Methods** (10 hours)

- Specification Error;
- Measurement Error;
- Maximum Likelihood Estimation & Generalized Method of Moments;
- Models with Expectation & Distributed Lag;

Group- B: **Analysis of Cross-section Data** (10 hours)

- Limited Dependent Variable Models (LOGIT, PROBIT);
- Censoring, Truncation & Selection Bias (TOBIT, Heckman Correction);
- Impact evaluation & p-score Matching;

Group- C: **Analysis of Panel Data** (10 hours)

- Models with Static Panel data;
- Models with Dynamic Panel data;

Practical/ **Computer Applications** (20 hours)

- Analysis of Cross-section, Time-series & Panel Data using suitable Statistical packages;
- Analysis of Multivariate Techniques using suitable Statistical Packages;

References:

- Maddala & Lahiri (2009): Introduction to Econometrics (4/e), John-Wiely;
- Baltagi (2005): Econometric Analysis of Panel Data, 3rd ed., John Wiley, New York.
- C. Hsiao (2003): Analysis of Panel Data, 2nd ed., Cambridge University Press.
- Wooldridge (2002): *Econometric Analysis of Cross Section and Panel Data*, The MIT Press.
- Greene (2009): *Econometric Analysis*, 6th ed., Prentice Hall,
- Arellano (2003): Panel Data Econometrics, Oxford University Press.
- Cameron and Trivedi (2009): *Microeconometrics Using Stata*, Stata Press.
- Tacq (1997): *Multivariate Analysis Techniques in Social Science Research*, Sage International.

Course Name: Financial Economics

Course Learning Outcome:

On completion of this course, the students will be able:

1. To understand the financial structure of a firm.
2. To analyze the financial structure by different financial tools.
3. To understand the activities of financial markets using macroeconomic tools.

DSE B3: Financial Economics – I [Full Marks 50]
(For students of semester III)

Course Content:

CorporateFinance

Capital budgeting and Financial Ratio analysis: Financial statement and Ratio analysis; Net Present value approach; Payback period
method; Discounted payback period method; Internal rate of return; Profitability Index.

Corporate Finance

Capital Structureand basicconcepts: Modigliani- Miller theoremand the financial structure puzzle; Corporate tax and personal tax;Limits to debt and cost offinancial distress;Pecking order theory.

Corporate financing andAgency Cost: The role of networth and creditrationing; Debtoverhang; Borrowing capacity; The equity multiplier.

Stock Market, Interest rate and Banking

Stock Market. Tobin's Q Model: Tobin'sQ and EconomicActivity; Dividend Growth Model. Interest rate Term structure ofInterest rate Spot rate andYield to maturity.
Banking: A model of perfect competition; TheMonte-Kelein model of monopolisticbank.

DSE B4: Financial Economics – II [Full Marks : 50]
(For students of semester III)

Course Content:

Analysisof Stock Market and Portfolio Return

Efficient Market hypothesis Foundation of Efficient market hypothesis; Different types ofefficiency; The behavioral and empirical challenge tomarket efficiency; Implications for Corporate finance

Mean-Variance Portfolio Theory Asset return;Random variables;Portfolio Mean and Variance; Thefeasible set; TheMarkowitz Model; The One-Fund theorem: TheTwo-Fund theorem.

Capital Asset Pricing Model Market Equilibrium; Capital marketline; The Pricingmodel; The Security marketline; Investment Implications; Performance Evaluation; CAPM as a Pricing Formula.

Exchange rate dynamics & financial crisis Dornbusch's Overshooting Model; Overshooting model in the dependent economy framework; Indicators of financial crisis;Alternative approaches to crisis.

Derivative Market : Forwards andFutures Basics of Futurescontracts; FuturePrices; Relation toexpected spot price.

Hedging ,The Perfect hedge;The Minimum-variance hedge;Optimal hedging;Hedging non linear risk.

Options and Swap The boundary space for call and put options;Option prices and interest rate;Option prices and stock price movements; Option prices and the riskiness of stocks; The single-period binomial model; The multi- period binomial model; Currency Swaps.

References:

1. J.C. Hull, *Options, Futures and Other Derivatives*, Pearson Education, 2014.
2. J. Tirole, *The theory of Corporate finance*, Princeton University Press, 2010.
3. Jonathan B. Berk, Jarrad V. T. Harford, Peter M. DeMarzo, David Stangel and AndrásMarosi, *Fundamentals of Corporate Finance*, Pearson Education Canada, 2019.
4. Richard A. Brealey, Stewart C. Myers and Franklin Allen, *Principles of CorporateFinance*, McGraw Hill, 2011.
5. S. Kevin, *Portfolio Management*, Prentice Hall India, 2006.
6. X. Freixas and J. C. Rochet, *Microeconomics of Banking*, MIT Press, 2008.

Selected Papers.

7. D. G. Luenberger, *Investment Science*, Oxford University Press, 1998.
8. John. Hull, *Options, Futures and Other Derivatives*, Pearson Education, 2009.
9. R.A. Brealey and S.C. Myers, *Principles of Corporate Finance*, McGraw Hill/ Irwin, 2007.
10. Robert W. Kolb, *Futures, Options, and Swaps*, Wiley, 1999.
11. Stephen A. Ross, Mark Christensen, Michael Drew, Robert Bianchi, Randolph Westfieldand Bradford D. Jordan, *Fundamentals of Corporate Finance*, McGraw-Hill, 2013.

Course Name: Resource and Environmental Economics

Course Learning Outcome:

On completion of this course, the students will be able:

1. To understand the basics of Environmental Economics.
2. To analyse the various models of utilization of resources
3. To understand the basic of common properties, environmental valuation etc.
4. To have a proper idea of cost and benefit analysis for given various environmental decision making

DSE B5: Resource and Environmental Economics-I (Full Marks: 50)

(For the students of semester III)

I: *Conceptual Framework*

- Economics, Ethics and the Environment;
- Ecological Economics and the Material Balance Approach;
- Environmental Economics and the Economics of Environment;

II: *Economics of Exhaustible Resources*

- A simple 2-period framework and the concept of Backstop;
- Extension to Dynamic Model of Mining with modified Hotelling's Rule;
- Depletion & Discovery under alternative market structures;

III: *Economics of Renewable Resources*

- Forestry: Single versus Multiple use Forest- Optimal Rotation and Faustman's Rule;
- Fishery: The concept of Maximum Sustainable Yield (MSY), Optimization under alternative fishery management regimes-open access solutions, Fishery and fish biodiversity, Mangrove-fishery linkages, Basic ideas of the theory of aquaculture shrimp farming;

IV: *Environmental Regulation*

- Environmental Pollution as a Public Bad;
- Externality (Pigou), Property Rights (Coase), Optimal Pollution;
- Pollution Control: Alternative Market Based Instruments – pure policies (Emission Fees, Standard setting, and Tradable Pollution Permits), Hybrid instruments (two-part tariff), Double Dividend Hypothesis, and Illicit Dumping;
- Case Studies;

References:

- Costanza, et.al. (1998): *An Introduction to Ecological Economics*.
- Bhattacharyya, R.N. (2001): *Environmental Economics: Indian Perspective*, OUP.
- Fisher, A (1981): *Resource & Environmental Economics*, CUP.
- Conard & Clark (1987): *Natural Resource Economics: Notes & Problems*, CUP.
- Broomley (1995): *Handbook of Environmental Economics*, Blackwell.
- Hanley, Shogren & White (1997): *Environmental Economics*, McMillan.
- Pearce,D.W. and Turner. R.K.(1991) : *Economics of Natural Resource and Environment,* Harvester-Wheatsheaf.
- Kolstad (2000): *Environmental Economics*, OUP.
- James, Mishra & Murty (1999) *Economics of Water Pollution: The Indian Experience*. OUP.
- Baumol & Oates (1988): *Theory of Environmental Policy* (2/e), CUP.

DSE B6: Resource and Environmental Economics-II (Full Marks: 50)

(For the students of semester III)

I: *Common Property Resources*

- Poverty and Environmental Degradation;
- Community Management of Common Property Resources;
- Coordination Failure- Increasing Returns, Free-riding Problem (Assurance Game and Prisoner's Dilemma)
- Community Institutions: Case Studies;

II: *Sustainable Development and Green Accounting*

- Environmental Kuznets Curve;
- Irreversibility, Uncertainty and Economic Development;
- Concept of Sustainability and constraints;
- Environmental Accounting: Basic Theory;
- Environmentally adjusted national product;

III: *Environmental Valuation and Cost-benefit Analysis*

- Total Economic Value of the Environment
- Revealed preference Approach:
  - Household Production Function
  - Travel Cost
  - Hedonic Price Theory
  - Statistical Value of Life;
- Stated Preference Approach:
  - Hypothetical Market and Contingent Valuation Method
  - Experimental Market;

IV: *Global Issues and the Environment*

- Trade, Development and Environment;
- The Pollution Haven Hypothesis;
- International/ Interregional Cooperation;
- The Problem of Managing Trans-national Commons;

References:

- Dasgupta, P (1982): *The Control of Resources*, HUP.
- Baland & Platteau (2003): Economics of Common Property Management Regimes in Mäler & Vincent (eds.) *Handbook of Environmental Economics*, Vol 1, North-Holland.
- M. Cole (1998): *Trade Liberalization, Economic Growth and Environment*. Edward-Elger.
- Perman, Ma, MacGilvray and Common (2003) *Natural Resource and Environmental Economics*, 4/e, Prentice Hall.
- Kadekodi , G. (2004): *Environmental Economics in Practice: Case Studies from India*, OUP.

Course Name: Operations Research

Course learning Outcomes: After the completion of the course the students will

1. **Learn various tools , techniques and models of operational research**
2. **Will have practical application and learn how to use various softwares for analysis purposes.**

DSE B7: Techniques of Operations Research I: 50 marks

Deterministic Models

Group A: 25 marks

- Deterministic models of Optimisation: Linear Programming,Transportation and Assignment models, Duality and Sensitivity Models, Integer Programming, Multiobjective Optimisation.
- Shortest Path and Discrete Dynamic Programming: Dynamic Programming Approach to Shortest Paths, CPM, PERT, Discrete Dynamic Programming models.
- Nonlinear Programming: Reduced Gradient Algorithm, Quadratic Programming, Separable Programming Methhods
- Network Analysis: Optimal network flows
- Applications of Game Theory

Group B: 25 marks

Practical Applications of the Topics 1-5 in Group A based on software.

DSE B4: Techniques of Operations Research II:

50 marksProbabilistic Models

Group A: 25 marks

- Decision Analysis: Decision making under different environment, Methods of Decision making under uncertainty
- Markov Chains: Stochastic Processes, Long Run Properties of Markov Chains, Continuous Time Markov Chains
- Queuing Theory: Queuing Systems, Probability Distributions, Queuing Process
- Inventory Theory: Deterministic and Probablistic Models
- Simulation: Monte Carlo Method, Psedo-Randomn Numbers and its application to economic problems

Group B: 25 marks

- Practical Applications of the Topics 1-5 in Group based on software.

References:

- Hillier, F and Liberman, G(2006): Operations Research, McGraw Hill,India
- Taha, H(2000): Operations Research , Pearson Publication, India
- Rardin, R (1998): Optimization in Operations Research, Pearson Publication, India

General Electives

(To be Selected by students of Department other than Economics)

ECOPGGEC01

ECOPGGET01: Indian EconomicsSyllabus

1. National Income

Official estimates: National Accounts Statistics; Growth and structural change; Sectoral composition; Features of high growth regime

[4]

2. Agriculture

Technologies and institutions; Land relations and land reforms; Rural credit; Modern farm inputs and marketing— price policy and subsidies; Commercialisation and diversification;Agriculture and WTO; Food processing, subsidies, Agricultural prices and public distribution system; Impact of public expenditure on agricultural growth.

[5]

3. Industry

Strategy of industrial development— Industrial Policy Reform; Reservation policy relating to small scale industries; Sources of industrial finances - bank, share market, insurance companies, pension funds, non-banking sources and foreign direct investment; Role of foreign capital for direct investment and portfolio investment; Public sector reform, privatisation and disinvestment.

[5]

4. Planning:

From central Planning to indicative planning; Relation between planning and markets for growth; Alternative development strategies—goal of self-reliance based on import substitution and protection; Stabilisation and structural adjustment packages - fiscal reforms, financial sector reforms and trade reforms. **[5]**

5. Federal Finance

Fiscal Federalism and Fiscal Consolidation;Constitutional provisions relating to fiscal and financial powers of the States; Finance Commissions and sharing of taxes; Financial aspect of Sarkaria Commission Report, financial aspects of 73rd and 74th Constitutional Amendments.

[5]

6. Fiscal Policy

Fiscal reforms – Tax Reforms: Introduction of Goods and Services Tax, Reforms in expenditure, pension and budgetary deficits; Public debt management and reforms; Fiscal Responsibility and Budget Management (FRBM) Act; Black money and Parallel economy in India—definition,

estimates, genesis, consequences and remedies, demonetisation and black money. [5]

7. Financial sector reforms

Organisation of India's money market;Changing roles of the Reserve Bank of India, commercial banks, development finance institutions, foreign banks and non-banking financial institutions; Indian capital market and SEBI; Development in Global Financial Market and its relationship with Indian Financial Sector; Commodity Market in India-Spot and Futures Market, Role of FMC. [7]

8. Poverty, Unemployment and Human Development

Estimates of inequality and poverty measures for India; Appraisal of Government measures;India's human development index in global perspective; Poverty and Inequality after reforms;Rural development programmes including poverty alleviation programmes, development of economic and social infrastructure

[5]

9. Inflation

Definitions: Core inflation, headline inflation, wholesale price index (WPI), consumer price indextrends (CPI), Official estimates based on WPI and CPI; Consequences, components and trends. [4]

10. Labour

Concepts and measurement of employment, unemployment and underemployment: differentNSS rounds on employment and unemployment survey;Urban labour market and informal sector employment; Employment and poverty; Strategies for employment generation;Social issues relating to labour - child labour; New Rural Employment Guarantee Scheme– MGNAREGA

[6]

11. Urbanisation and Migration

Different types of migration and their impact on the economies of their origin and destination;Process of growth of urban settlements; Urban development strategies.

[4]

12. Foreign trade

Features of India's foreign trade; Composition, direction and organisation of trade; Recentchanges in trade policyand tariff policy; Trends in balance of paymentsand exchange rate; Partialand full convertibility; Capital account convertibility;India and WTO - bilateral Trade Agreements and their implications;Intellectual property rights : implications of TRIPS, TRIMS, GATS and new EXIM policy. **[6]**

References:

- Acharya, Sankar and Rakesh Mohan (eds.) (2010), *India's Economy: Performance and Challenges,* OUP, New Delhi.

- Ahluwalia, M S, S S Tarapore and Y V Reddy (eds.) (2004), *Macroeconomics and MonetaryPolicy*, OUP, New Delhi.

- Balakrishnan, P (2010), *Economic Growth in India*, OUP, New Delhi.

•Basu, K (ed.) (2005), *India's Emerging Economy*, OUP, New Delhi.

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•Reddy, Y V (2004), *Lectures on Economic and Financial Sector Reforms in India*, OUP, NewDelhi.

Selected articles from various journals will be referred in the class.

Course Code: ECOPGGEC02

Course name: STATISTICS AND ECONOMETRICS [Full marks 50]

Course Outline

1. Nature and Scope of Econometrics **[4]**

1.1 Distinction between Economic Model and Econometric model
1.2 Concept of stochastic relation, Role of random disturbance in econometric model
1.3 Types of data
1.4 Application of Econometrics in different branches of social science

2. Classical Linear Regression Model (Simple linear regression and multiple linear regression): **[5]**

2.1 The classical assumptions (basic interpretation)
2.2 Concepts of population regression function and sample regression function
2.3 Estimation of model by method of ordinary least squares
2.4. Simple correlation, partial correlation and multiple correlation (Definition, and interpretation in the context of SLRM and MLRM)
2.5 Limitations of SLRM and additional complications in MLRM
2.6 Economic interpretations of the estimated model

3. Classical Linear Regression Model (Simple linear regression and multiple linear

regression):
part 2 **[10]**
3.1 Properties of the Least Squares Estimators (BLUE) in SLRM- Gauss-Markov theorem
3.2 Qualitative (dummy) independent variables – intercept dummy and slope dummy (only interpretation of the model)
3.3 Forecasting - Ex-post forecast and Ex-ante forecast, forecast error (only for two variable model)

4. Statistical inference in linear regression model **[10]**
4.1 Use of standard normal, chi^2, t, and F statistics in linear regression model
4.2 Testing hypothesis Single test (t test and chi2 test)-Joint test (F test)
4.3 Goodness of fit (in terms of R^2, adjusted R^2 and F statistic), Analysis of Variance (ANOVA)
4.4 Statistical significance and economic importance

5. Violations of Classical Assumptions **[10]**

5.1 Heteroscedasticity - Consequences, Detection (Lagrange Multiplier test) and Remedies

5.2 Autocorrelation - Consequences, Detection (Durbin-Watson test) and Remedies *[4 lecture hours]*

6. Multiple Regression

i. Single Equation Methods (with independent and identically distributed errors): [20]

ii. K-variable Classical Linear Regression Model: specification, Estimation, Hypothesis testing, Prediction;

iii. Extension of CLRM: Qualitative Regressor - Dummy variables – Analysis of Stability;

a. Relaxing Assumptions: [20]

iv. Generalized Linear Regression Model
v. Heteroskedasticity: Consequence, Detection, Correction
vi. Autocorrelation: Consequence, Detection, Correction
vii. Multicollinearity: Consequence, Detection, Correction
viii. Stochastic Regressor (distributed lags)

b. Simultaneous Equation System: [10]

ix. Problem of Identification: Structural Form and Reduced Form, Observational Equivalence, Rank and Order Condition;

x. Limited Information Estimation: Endogeneity problem, Instrumental Variable, Omitted Variable (Indirect Least Square, 2-Stage Least Square)

7. Stochastic Trends: Time Series Data [12 + 8 (Lab)]

-Trend Stationary Process & Difference Stationary Process

-Random Walk and Unit root (detection, correction)

-Cointegration and Error Correction

-Test for Causality;

8. Limited Dependent Variables: Cross Section Data [10 + 8 (Lab)]

-Problem of Partial Observability- Truncation & Censoring of error distribution
-Switch from Least Square Technique to Maximum Likelihood Estimation: LPM,LOGT,

PROBIT, TOBIT;

9. Introduction to Panel Data [8 + 4 (Lab)]

-Longitudinal Data: Usefulness

-Panel data models: Least Square Dummy Variable, Fixed Effect, Random Effect.

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