

DEPARTMENT OF ECONOMICS



UNIVERSITY OF BURDWAN

PG Syllabus – 2014-15 session onwards

Preamble

The Department of Economics, University of Burdwan proposes to revise the syllabus for Post-Graduate studies in Economics leading to Masters degree, keeping in line with the changing academic scenario and needs of both academics and job-market.

The department also attempts at a gradual transition to Choice-Based Credit System and Grade Points from the present Marks-based system. However, for the sake of smooth transition and continuity we propose to have a dual system as of now.

The salient features of the syllabus are as follows:

- The PG syllabus shall have 1000 marks divided into 20 papers of 50 marks each.
- Each paper of 50 marks shall be of 5 credits each
- A candidate has to earn total at least 97 credits to earn PG degree in Economics
- The credits to be earned are as follows:

	<i>First Semester</i>	<i>Second Semester</i>	<i>Third Semester</i>	<i>Fourth Semester</i>
<i>Core Papers (compulsory)</i>	25	25	5	15
<i>Major Elective Papers (Departmental)</i>			10	10
<i>Minor Elective Papers (Departmental)</i>			At least 5	
<i>Minor Elective Papers (Non-Departmental)</i>			At least 2	

- There shall be two types of papers/courses: Core Course – A course which should compulsorily be studied by a candidate as a core-requirement is termed as a Core course. These are compulsory courses under the concerned department; Elective Course – Generally a course which can be chosen from a pool of courses and which may be very specific / specialized / advanced to the subject of study or which provides extended scope or enables exposure to some other discipline / subject / domain will be called an Elective Course. Elective courses are to be offered by the concerned department of study (Departmental Electives or Major Electives) or by sister / related disciplines (Non-departmental Electives or Minor Electives).
- A minimum of 70 credits shall have to be earned from Departmental Core Courses and shall be Compulsory (marked with an * in the framework)
- A minimum of 20 credits shall have to be earned from Departmental Optional papers / Major Electives (marked with a # in the framework)
- A minimum of 5 credits shall have to be earned from Departmental Minor Electives (marked with an @ in the framework)
- A minimum of 2 credits and a maximum of 5 credits shall have to be earned from Non-Departmental Minor Electives in lieu of specific Departmental Minor Electives (marked with an @ in the framework)
- A student may opt entirely for Departmental Minor Elective Courses subject to extant University guidelines allowing them to do so
- For Semester-III, a student may opt for Minor Electives at the department or any paper of at least 2 credits from the sister departments (Political Science, History, Sociology,

Statistics, Mathematics, Geography, Mass Communication), subject to prior approval of the departmental committee and University Authorities and uniformity of academic calendar (noted that departmental class-routine shall not accommodate such non-departmental electives):

- Each paper of 5 credits shall have 5 hour session of Lectures per week over a period of one semester of 16 weeks for teaching-learning process.
- The performance of a candidate in a theoretical course (paper) will be assessed for a maximum of 50 marks as explained below (except the Paper ECN 402 which has a Social Outreach component and is discussed later):
 - 40 marks as end-semester examination
 - 10 marks as Continuous Assessment based on class test, assignment, seminar etc, modalities for which are to be decided by the concerned course-in-charge and notified to the students at the beginning of the semester
- The grade and the grade point earned by the candidate in the course (assuming that the course is of 5 credits) will be as given below:

<i>Marks obtained (out of 50)</i>	<i>Grade (G)</i>	<i>Grade Point (GP)</i>
Absent	Ab	5 * 0 = 0
< 17.5	F	5 * 0 = 0
17.5 – 19.5	P	5 * 4 = 20
20.0 – 24.5	C	5 * 5 = 25
25.0 – 29.5	B	5 * 6 = 30
30.0 – 34.5	B (+)	5 * 7 = 35
35.0 – 39.5	A	5 * 8 = 40
40.0 – 44.5	A (+)	5 * 9 = 45
> 45.0	O	5 * 10 = 50

- The Semester Grade Point Average (SGPA), Cumulative Grade Point Average (CGPA), and Final Grade Point Average (FGPA) shall be calculated as per extant university regulations.
- SGPA, CGPA or FGPA shall not be rounded off and shall be mentioned up to 3 decimal places.
- To calculate percentage of marks obtained, the following formula has to be used:

$$[\text{CGPA or FGPA} \times 10] - 5$$
- In case of any difference between the conversion table above and University Regulations, the University Regulations shall prevail.
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Syllabus at a Glance

<i>Semester</i>	<i>Courses</i>	<i>Remarks</i>
I	<ul style="list-style-type: none"> • Microeconomics-I (ECN 101)* • Macroeconomics-I (ECN 102)* • Development Economics-I (ECN 103)* • Mathematical Economics (ECN 104)* • Econometrics-I (ECN 105)* 	<i>All papers are Departmental Core Courses and Compulsory</i>
II	<ul style="list-style-type: none"> • Microeconomics-II (ECN 201)* • Macroeconomics-II (ECN 202)* • Development Economics-II (ECN 203)* • International Economics (ECN 204)* • Econometrics-II (ECN 205)* 	<i>All papers are Departmental Core Courses and Compulsory</i>
III	<ul style="list-style-type: none"> • Indian Economic Scenario (ECN 301)* • <u>Basic Financial Economics (ECN 302)</u>@ • <u>Environmental Economics (ECN 303)</u>@ • Major Elective-I (ECN 304)# • Major Elective-II (ECN 305)# • <i>Minor Elective for Extra-departmental students-I ECN 391</i>^ • <i>Minor Elective for Extra-departmental students-I ECN 392</i>^ • <i>Minor Elective for Extra-departmental students-I ECN 393</i>^ 	<p><u>Major Electives are offered in pairs</u>–</p> <ul style="list-style-type: none"> • Advanced Econometrics-I & II (ECN 304A & ECN 305A) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Advanced Economic Theory-I & II (ECN 304B & ECN 305B) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Agricultural Economics-I & II (ECN 304C & ECN 305C) <p><u>Minor Electives for Extra-departmental students</u>–</p> <ul style="list-style-type: none"> • Environment & Economy (ECN 391) • Demography (ECN 392) • Basic Econometrics (ECN 393) • Indian Economy (ECN 394)
IV	<ul style="list-style-type: none"> • Growth & Planning (ECN 401)* • Computer Applications & Project (ECN 402)* • Public Economics (ECN 403)* • Major Elective-II (ECN 404)# • Major Elective-II (ECN 405)# • <i>Minor Elective for Extra-departmental students-III ECN 491</i>^ 	<p><u>Major Electives are offered in pairs</u> –</p> <ul style="list-style-type: none"> • Financial Economics-I & II (ECN 404A & ECN 405A) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Resource Environment & Energy-I & II (ECN 404B & ECN 405B) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Rural Development -I & II (ECN 404C & ECN 405C)

* marked courses are Core courses and Compulsory;

marked courses are Major Electives and students have to choose from available options;

@ marked courses are Minor Electives and students have the option of taking these or courses from other departments as per extant university regulations;

^ marked courses are Minor Electives for Extra-departmental Students and departmental students will not be offered these courses;

Framework of the Syllabus

<i>Name of Paper</i>	<i>Type</i>	<i>Credit</i>	<i>Pattern</i>		
			L	T	P
<u>First Semester</u> [All papers are Departmental Core Courses and Compulsory]					
• Microeconomics-I (ECN 101)*	Core	5 credit	5	0	0
• Macroeconomics-I (ECN 102)*	Core	5 credit	5	0	0
• Development Economics-I (ECN 103)*	Core	5 credit	5	0	0
• Mathematical Economics (ECN 104)*	Core	5 credit	5	0	0
• Econometrics-I (ECN 105)*	Core	5 credit	5	0	0
<u>Second Semester</u> [All papers are Departmental Core Courses and Compulsory]					
• Microeconomics-II (ECN 201)*	Core	5 credit	5	0	0
• Macroeconomics-II (ECN 202)*	Core	5 credit	5	0	0
• Development Economics-II (ECN 203)*	Core	5 credit	5	0	0
• International Economics (ECN 204)*	Core	5 credit	5	0	0
• Econometrics-II (ECN 205)*	Core	5 credit	5	0	0
<u>Third Semester</u> [Students have to choose 2 core courses, 1 Minor Elective and 2 Major Electives]					
• Indian Economic Scenario (ECN 301)*	Core	5 credit	5	0	0
• Basic Financial Economics (ECN 302)@	Minor Elective	5 credit	5	0	0
• Environmental Economics (ECN 303)@	Minor Elective	5 credit	5	0	0
• <u>Advanced Econometrics-I (ECN 304A)#</u>	Major Elective	5 credit	5	0	0
• <u>Advanced Economic Theory-I (ECN 304B)#</u>	Major Elective	5 credit	5	0	0
• <u>Agricultural Economics-I (ECN 304C)#</u>	Major Elective	5 credit	5	0	0
• <u>Advanced Econometrics-II (ECN 305A)#</u>	Major Elective	5 credit	5	0	0
• <u>Advanced Economic Theory-II (ECN 305B)#</u>	Major Elective	5 credit	5	0	0
• <u>Agricultural Economics-II (ECN 305C)#</u>	Major Elective	5 credit	5	0	0
• <u>Environment & Economy (ECN 391)^</u>	Minor Elective for Extra dept students	4 credit	4	0	0
• <u>Demography (ECN 392)^</u>		4 credit	4	0	0
• <u>Basic Econometrics (ECN 393)^</u>		4 credit	4	0	0
• <u>Indian Economy (ECN 394)^</u>		4 credit	4	0	0
<p>@ Students may opt for Non-departmental Minor Elective in lieu of ECN 302/ ECN 303 subject to prior approval of departmental committee.</p> <p># Students opting for ECN 304A have to select ECN 305A as well, similarly ECN 304B and ECN 305B shall be offered in pair and ECN 304C and ECN 305C shall be offered in pair.</p> <p>^ marked courses are Minor Electives for Extra-departmental Students and departmental students will not be offered these courses;</p>					
Continued.....					

<i>Name of Paper</i>	<i>Type</i>	<i>Credit</i>	<i>Pattern</i>		
			L	T	P
Fourth Semester [Students have to choose 2 core courses, 1 Minor Elective and 2 Major Electives]					
• Growth & Planning (ECN 401)*	Core	5 credit	5	0	0
• Computer Applications & Project (ECN 402)* <i>(including 1 credit for Social Outreach)</i>	Core	5 credit	0	0	5
• Public Economics (ECN 403)*	Core	5 credit	5	0	0
• <u>Financial Economics -I (ECN 404A)#</u>	Major Elective	5 credit	5	0	0
• <u>Resource Environment & Energy Economics-I (ECN 404B)#</u>	Major Elective	5 credit	5	0	0
• <u>Rural Development -I (ECN 404C)#</u>	Major Elective	5 credit	5	0	0
• <u>Financial Economics -II (ECN 405A)#</u>	Major Elective	5 credit	5	0	0
• <u>Resource Environment & Energy Economics-II (ECN 405B)#</u>	Major Elective	5 credit	5	0	0
• <u>Rural Development -II (ECN 405C)#</u>	Major Elective	5 credit	5	0	0
<p># Students opting for ECN 404A have to select ECN 405A as well, similarly ECN 404B and ECN 405B shall be offered in pair and ECN 404C and ECN 405C shall be offered in pair.</p> <p>^ marked courses are Minor Electives for Extra-departmental Students and departmental students will not be offered these courses;</p>					

Question Pattern

Papers with 5 credits

ECN 101, ECN 102, ECN 103, ECN 104, ECN 105

ECN 201, ECN 202, ECN 203, ECN 204, ECN 205

ECN 301, ECN 302, ECN 303, ECN 304A, ECN 304B, ECN304C, ECN 305A, ECN305B, ECN305C

ECN 401, ECN 403, ECN 404A, ECN 404B, ECN404C, ECN 405A, ECN405B, ECN405C

1. In each paper of 50 marks (5 credits) the End-semester examination shall be of 40 marks. There shall be 8 questions of 10 marks each from which 4 questions are to be answered by the candidates (Time 2 hours).
2. In each paper of 50 marks (5 credits) which has two groups within it the End-semester examination shall be of 40 marks. There shall be 4 questions of 10 marks from each group. Candidates are to answer 4 questions taking 2 from each group. (Time 2 hours).

ECN 402 (Project paper): Based on Survey Report, Assignment, Presentation, Viva-Voce and Social Outreach report.

Papers with 4 credits

ECN 391 (Minor Elective for Extra-departmental students) Environment & Economy:

ECN 392 (Minor Elective for Extra-departmental students) Demography:

ECN 393 (Minor Elective for Extra-departmental students) Basic Econometrics:

ECN 394 (Minor Elective for Extra-departmental students) Indian Economy:

1. In each paper of 50 marks (4 credits) the End-semester examination shall be of 40 marks. There shall be 8 questions of 10 marks each from which 4 questions are to be answered by the candidates (Time 2 hours).
2. In each paper of 50 marks (4 credits) which has two groups within it the End-semester examination shall be of 40 marks. There shall be 4 questions of 10 marks from each group. Candidates are to answer 4 questions taking 2 from each group. (Time 2 hours).

DETAILED SYLLABUS

[Electives shall be offered on First Come First Served Basis.]

Paper will be taught only if at least 10 students opt for it]

DETAILED SYLLABUS

Semester - I

MICROECONOMICS – I (ECN 101)

Full Marks: 50

Lecture Hours: 70

1. Preference Relations:

(18 Lectures)

- Axioms of Consumer's choice, Indifference Curve, Utility function, Utility maximization, Interior and corner solution, Ordinary and compensated demand function, Indirect Utility function, Roy's identity, Expenditure function. Properties Shephard's lemma, Additively separable utility function, Quasi-linear utility function.

2. Production function:

(18 Lectures)

- Specification of technology, Input requirement set, Properties of technology – Monotonic, Convex and regular; CD, CES and Leontieff technology. Returns to scale and scale elasticity, Elasticity of factor substitution, Homogenous and Homothetic production function, and case of multiple products.

3. Models:

(16 Lectures)

- Cost minimization model, Derived demand for inputs, properties of cost function, Shephard's lemma. Profit Maximisation – Factor demand and Output supply function, properties of profit function, Hotelling's lemma; Duality in production

4. Markets:

(18 Lectures)

- Perfect Competition; Profit maximization, Derivation of SS curves under external economies, tax and welfare implications; Monopoly, Welfare and Output, Quality choice; Discriminating Monopoly; Natural Monopoly; Monopsony; Oligopoly Models – Cournot, Bertrand, Stackelberg and Collusive Oligopoly.

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Arrow, K. and F. Hahn (1971), General Competitive Analysis, Holder-Day, San Francisco.

Arrow, K. J (1971): Essays in the Theory of Risk Bearing, Chicago: Malkham.

Chipman, J. (1965): "The Nature and Meaning of Equilibrium in Economic Theory" in H. Townsend. "Price Theory", Penguin.

De Costa, G.C.(1980) Production, Prices and Distribution, Tata McGraw Hill, New Delhi.

Gravell H. and R. Reese (1992), Microeconomics, Longman, London (2nd Edition)

Hilderbrand, W and A. Kirman (1976): Introduction to Equilibrium Analysis, Northern Holland.

Hirshleifer J and J Riley (1992): Analysis of Uncertainty and Intonation, Cambridge University Press.

Koutsoyiannis, A. (1979) Modern Microeconomics and

Kreps, David M. (1990) A Course in Microeconomic Theory, Princeton University Press.

Layard, P.R.G. and A W. Walters (1978) Microeconomic Theory. McGraw Hill, New York.

Mass-Colell, A., M. Whinston and J. Green (1995); Microeconomic Theory, Oxford University Press, New Delhi.

Mukherjee, Anjan (1990): Walrasian and Non-Walrasian Equilibria, Oxford University Press, Oxford.

Sen, A. (1999) Microeconomics; Theory and Applications, Oxford University Press, New Delhi.

Tirole, J. (1988), Theory of Industrial Organization, MIT Press.

Varian, H (2000) Microeconomic Analysis. W.W. Norton, New York

MACROECONOMICS – I (ECN 102)

Full Marks: 50

Lecture Hours: 70

- 1. Unemployment (14 Lectures)**
 - The Natural Rate – Types of Unemployment – Full Employment – Costs of Unemployment. Wage rigidity- Generic Efficiency wage Model-General Version of Efficiency wage model-Shapiro-Stiglitz model.
- 2. Wage-Unemployment-Inflation Trade-off (24 Lectures)**
 - Theories of Inflation – A Brief Review; Demand-pull, Cost-push, Monetary, and Structural Inflation; Stagflation; Costs of Inflation; Inflation-Proofing the economy.
 - Why are Wages sticky; The Phillips curve; Lipsey's theoretical rationale behind its existence; Role of Expectations; Adaptive expectation and rational expectation: Application in Cagan's model. Expectations Augmented Phillips Curve.
 - Inflation and interest rate- Fisher's equation, Tobin-Mundell Effect.
 - Short run Aggregate supply function- The Sticky Wage model, The Workers' Misperception model, The Imperfect Information model and the Sticky Price model.
 - Derivation of Expectation Augmented Phillips Curve from the Short run Aggregate supply function: Okun's law, Supply Shocks.
- 3. The Demand for Money (6 Lectures)**
 - Keynesian Regressive Expectation model.
 - Portfolio Balance Approach.
 - A General Equilibrium Baumol-Tobin Model.
- 4. The Supply of Money (6 Lectures)**
 - Balance sheet of RBI- sources & components of High powered money.
 - Balance sheet of Commercial Banks-sources & components of money supply.
 - Concepts of Money Multiplier.
- 5. Open Economy Macroeconomics (20 Lectures)**
 - Balance of Payments accounting; national product accounting; monetary accounting.
 - Different Exchange rate regimes and Measures of exchange rate.
 - IS-LM model with goods trade: comparative statics results- Monetary policy, Fiscal policy, Exchange rate policy (Devaluation).
 - Extension to international capital market: perfect capital mobility under fixed exchange rate – Effectiveness of monetary and fiscal policy.
 - Extension to international capital market: perfect capital mobility under flexible exchange rate regime: The Mundell-Flemming Model.

References

- Asbjorn Rodseth (2000)- Open economy macroeconomics (Cambridge University Press)
- Ackley, G. (1978) – Macroeconomics: Theory and Policy; (Macmillan)
- Branson, W. (1989) – Macroeconomic Theory and Policy; (3rd Ed, Harper & Row)
- David Romer (2001)-Advanced Macroeconomics,(2nd Ed, McGraw Hill)
- Dornbush, R. (1980)- Open Economy Macroeconomics (New York: Basic Books)
- Dornbush, R. and S. Fischer (2004) – Macroeconomics (9th Ed, Tata-McGraw Hill).
- Errol D'Souza (2008) – Macroeconomics (Pearson Education)
- Jha, R. (1991)– Contemporary Macroeconomic Theory and Policy; (Wiley Eastern)
- Levacic, R and A. Rebman (1986) – Macroeconomics; (2nd Ed, Macmillan).
- Mankiw, N. Gregory (2000) – Macroeconomics (4th Ed, Macmillan-Worth)
- Mankiw, N.G. and D. Romer (eds.) (1991) – New Keynesian Economics; (MIT, Cambridge)
- Rakshit, M. (1998), Studies in the Macroeconomics of Developing Countries; (OUP)

DEVELOPMENT ECONOMICS – I (ECN 103)

Full Marks: 50

Lecture Hours: 70

Group-A (25 Marks) – Development Theory in Historical Perspective

- 1. Development - An Overview of Indicators (5 Lectures)**
 - Indices of Development - Per Capita Income, Basic Needs Approach, PQLI, Capability and Entitlement, Human Development Index, Gender Development Index, Human Poverty Index I & II.
- 2. Political Economy of Development (10 Lectures)**
 - Theories of Underdevelopment - Low-Level Equilibrium Trap Model, Dependency Models: Frank, Kay; Furtado, Samir Amin, Different versions of Exploitation model: Direct and Indirect Exploitation; Globalisation and Underdevelopment.
- 3. History of Development Thoughts (20 Lectures)**
 - Mercantilism – Physiocracy – Classical School - Smith, Ricardo, Malthus; Marxian theory of Development – Neo-classical theory of development – Keynesian theories – Neo-liberalism & its critique.

Group-B (25 Marks) – Problems of Developing Countries

- 1. Poverty (12 Lectures)**
 - Conceptual Issues; Alternative Measures of Poverty - Head Count Ratio, Poverty Gap, Sen measure, FGT measure; Empirical Historical Observations; Impact of Poverty; Strategies for Poverty Eradication.
- 2. Inequality (13 Lectures)**
 - From Growth to Inequality - The Inverted U hypothesis of Kuznets; Possible explanations of Inverted U – Uneven and Compensatory Changes; Tunnel Effect and Tolerance; Empirical Testing of the Inverted U hypothesis: Evidence from different countries – Kuznets, Paukert, Adelman & Morris, Ahluwalia, Kanbur, Fields & Jakubson, Deininger & Squire, Mathur, Shand & Bhide, etc; Lessons from Micro-data – Inter-sectoral Inequality.
 - From Inequality to Growth – Role of Distribution and Redistribution on Growth; Political process; Demand, Savings, Wealth, and Credit; Occupational Choice and

Human Capital Formation; Inefficiency of Inequality; Evidence from different countries – Alesina & Rodrik, Deininger & Squire.

3. Dualism

(10 Lectures)

- Overview - Technical, Behavioural and Social;
- Lewis model; Ranis-Fei model; Dixit and Marglin model; Jorgenson model.

READING LIST

Ray, Debraj - Development Economics

Blaug, Mrk – Economic Theory in Retrospect, 5th revised edition 1997.

Bhatia, H L - History of Economic Thought

Meir, G.M. - Leading Issues in Economic Development

Thirlwall, A.P.- Growth and Development

Basu, K. - Analytical Development Economics

Behrman and Srinivasan Ed.-Handbook of Development Economics, vol. 3

Chenery and Srinivasan Ed.- Handbook of Development Economics, vol.1&2

Bhattacharya, Debesh - Political Economy of Development

World Bank - World Development Report (various issues)

United Nations - Human Development Report (various issues)

Adelman, I. and C.T. Morris (1973) – *Economic Growth and Social Equity in Developing Countries*, Stanford, USA

Ahluwalia, M. (1976) – “Inequality, Poverty, and Development”, *Journal of Development Economics*, Vol. 6

Anand, S. and R. Kanbur (1993) – “The Kuznets Process and the Inequality-Development Relationship”, *Journal of Development Economics*, Vol. 40

Anand, S. and R. Kanbur (1993a) – “Inequality and Development: A Critique”, *Journal of Development Economics*, Vol. 41

Berman, P. (Ed.) (1995) - *Health Sector Reform in Developing Countries : Making Health Development Sustainable*, Boston: Harvard Series on Population and International Health.

Blaug, M (1972) - *Introduction to Economics of Education* (Penguin)

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Foster, Greer, Thorbecke – “A Class of Decomposable Poverty Measure”, *Econometrica*, May, 1984

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Kuznets, S. (1963) – “Quantitative Aspects of Economic Growth of Nations: VIII, Distribution of Income by Size”, *Economic Development and Cultural Change*, Vol. 12.

Lewis W. A. – ‘Economic Development with Unlimited Supplies of Labour’ in Agarwala and Singh (ed.) *Economics of Underdevelopment*

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- Paukert, F. (1973) – “Income Distribution at Different Levels of Development: A Survey of Evidence, *International Labour Review*, Vol. 108
- Ranis, G. and J. Fei - ‘A Theory of Economic Development’, *American Economic Review*, Vol. 51, 1961, *Reprinted in* Eicher and Witt (ed.) *Agriculture in Economic Development*
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- Shand, Ric and S. Bhide (2000), “Sources of Economic Growth: Regional Dimensions of Reforms,” *Economic and Political Weekly*, Vol. 35, No. 42, October 14.
- Stiglitz, J. – Article in *American Economic Review*, May, 1989
- Tilak, J.B.G. (1994) - Education for Development in Asia, Sage Publications, New Delhi.
- World Bank (1993) - The World Development Report, 1993 : Investing in Health, Oxford University Press, New York.

MATHEMATICAL ECONOMICS (ECN 104)

Full Marks: 50

Lecture Hours: 70

1. **Optimisation** (15 Lectures)
 - **Static Optimisation:** Global/Local; Unconstrained optimization (single variable case) – First Derivative Test, Second Derivative Test, (Unconstrained optimization) – Multi-variable case; Constrained Multi-variable case; Constrained Multi-variable optimization with Equality Constraints Application of Matrices and determinants; - Lagrange Multipliers Method; Envelope Theorem; Applications.
 - **Optimal Control Methods:** Pontryagin optimization principles – Continuous Model, Discrete Model; Phase Diagram Approach to continuous Time Control Models; Applications.
2. **Linear Programming** (15 Lectures)
 - Standard and Canonical Form of LP Problem; Theory of Simplex Method; Simplex Algorithm – Maximisation Case, Minimisation case; Exceptional Situations in LP Solution; Duality Theorems; Primal-Dual Relationship; Economic Interpretation of Duality; Dual Simplex Method; Applications.
3. **Sensitivity Analysis** (8 Lectures)
 - Changes in coefficients of variables in the objective function (C), changes in Right Hand Side Constants of Constraints (b), changes in Input – Output Coefficients, Addition of New Constraint; Applications.
4. **Transportation** (12 Lectures)
 - Basic concepts Transportation Tableau, Mathematical Model, Theorems, Initial Basic Feasible Solution – North-west Corner Rule, Least Cost Method, Vogel’s Approximation Method, Optimum Solution - ‘u-v’ (MODI) Method, Rationality of u-v’ method, Loop Formation and Reallocation; Exceptional Cases of Transportation Problem – Maximisation problem, Prohibited Route, Alternative optima, unbalanced problem, Degeneracy in Transportation Problem.
5. **Non-linear Programming** (10 Lectures)
 - Kuhn- Tucker Conditions, Graphical Solution, Economic Interpretation of Kuhn – Tucker Conditions, constraint Qualification, Kuhn-Tucker Sufficiency Theorem; Applications.
6. **Game Theory** (10 Lectures)
 - General Idea – Strategies, Players, Pay-off; Non-zero Sum Game – Some Simple Examples; Nash Equilibrium – Cournot, Bertrand; Mixed Strategies; Point Concept of Dominance, Simultaneous Move Game; LP Formulation of Game.

References

- Allen, R. G. D. (1974) *Mathematical Analysis for Economists*, Macmillan Press and ELBS. London
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- Chiang, A. C. (1986) *Fundamental Methods of Mathematical Economics*, McGraw Hill, New York.
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- Vygodsku, G. S. (1971) *Mathematical Handbook (Higher Mathematics)* Mir Publishers, Moscow.

ECONOMETRICS-I (ECN 105)

Full Marks: 50

Lecture Hours: 70

- 1. Estimation (10 Lectures)**
 - Point Estimation – Desirable Properties of Point Estimator; Methods of Estimation – OLS, Maximum Likelihood and their Properties; Cramer-Rao Inequality.
 - Interval Estimation – Interval Estimators of Population Mean, Population Variance, and Population Proportion.
- 2. Testing of Hypothesis (10 Lectures)**
 - Neyman-Pearson Theory of Testing of Hypothesis – Type I & Type II Errors - Power of Test.
 - Simple Parametric Tests based on τ , t , χ^2 and F Distributions – Small Sample Tests, Large Sample Tests
 - Analysis of Variance (Fixed Models) – One-way Classified Data; Two-way Classified Data.
- 3. Classical Linear Regression Model (15 Lectures)**
 - Two-variable and K-variable CLRM – Assumptions, Estimation (using OLS & ML Method), Properties of Estimators, ANOVA in CLRM, Inference Analysis, Prediction, Applications.
- 4. Violation of the OLS Assumptions (15 Lectures)**
 - Heteroscedasticity – Meaning, Problems created by its Presence, Testing for its presence, Estimating Methods in its Presence.
 - Autocorrelation – Meaning, Problems created by its Presence, Testing for its presence Estimating Methods in its Presence.
 - Multicollinearity – Meaning, Problems created by its presence, Testing for its Presence, Estimating Methods in its Presence.
- 5. Dynamic Econometric Model/Regression with Lagged Variables (10 Lectures)**
 - Sources of Lagged Variables; Consequences of applying direct OLS in Distributive Lag models; Polynomial Distributed Lag models; Geometric Lag models; Auto-Regressive Lag models; Applications under different situations
 - Estimation and Stability of a Dynamic equation; Forecasting using Dynamic Models

References

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Gujarati D. Basic Econometrics, 4th ed, Mc Graw Hill, New Delhi.

Gupta, S. C. (1993) Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.

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Johnston and Dinardo (1998), Econometric Methods, Mc Graw Hill.

Maddala (1997), Econometrics, Mc Graw Hill, N.Y.

Millar, J. (1996) Statistics for Advanced Level, Cambridge University Press, Cambridge.

Nagar, A. L. and R. K. Das (1993) Basic Statistics, Oxford University Press, New Delhi.

Spiegel, M. R. (1992) Theory and Problems of Statistics, McGraw Hill Book Co. London.

Sukhatme, P.V. and B.V. Sukhatme (1970) Sampling Theory of Survey with Applications, Ioa State University Press, Ames

Semester - II
Compulsory Papers
MICROECONOMICS – II (ECN 201)
Full Marks: 50
Lecture Hours: 70

- 1. Economics of Uncertainty: (14 Lectures)**
 - Distinction between risk and uncertainty-Individuals behaviour towards risk- Contingent Consumption- Von-Neumann –Morgenstern expected utility function- Properties- uniqueness of the expected utility function – positive affine transformation-consumer’s equilibrium under uncertainty- utility function and the measures of risk –aversion-example Gambling and Insurance -Risk Aversion- Arrow-Pratt measures of risk aversion-absolute and relative measures- - Convexity of Indifference curves and the shape of Von-Neumann-Morgenstern utility function-Allocation of wealth to risky asset-output decision under uncertainty.
- 2. Asymmetric Information: (12 Lectures)**
 - Economics of Information- Imperfect Information-the market for Lemons-Akerlof’s Model- Adverse Selection- Moral Hazard- Signaling- the Principal-Agent Model.
- 3. Exchange Under Uncertainty: (10 Lectures)**
 - Risky Asset- Mean-Variance Utility-Measuring risk-equilibrium in a market for risky asset - Risk Spreading-The Arrow –Lind Theorem- Risk-Pooling and Diversification.
- 4. Managerial Economics: (12 Lectures)**
 - Limit Pricing- Bain’s Model- Managerial Theories of the Firm-Baumol’s theory of Sales Maximization- Morris’s Model of the Managerial Enterprise-Williamson’s Model of Managerial discretion-Behavioural theory of the Firm-Cyert and March.
- 5. General Equilibrium: (12 Lectures)**
 - Walrasian General Equilibrium- a Pure Exchange Model- An aggregate Excess demand function- Walras Law- composite commodity theorem-existence of a general equilibrium- Mechanism for attaining Walrasian general equilibrium-Tatonnement process- Uniqueness and stability of General equilibrium –Perfect and imperfect stability.
- 6. Welfare Economics: (10 Lectures)**
 - Social Welfare Functions-The Pareto conditions-Pure Exchange –Pure Production-the Classical Theorem of Welfare Economics- Public Good and Pareto Optimality-The Theory of the second Best-Arrow’s Social Welfare function-General Possibility theorem- Compensation Principle-Kaldor-Hicks-Scitovsky.

References

Hall and Varian: Microeconomic Analysis

Hall and Varian: Intermediate Microeconomics

Silberberg and Suen: The structure of Economics-a mathematical analysis

Maddala and Miller: Microeconomics-Theory and Applications

Kreps: A course in Microeconomic Theory

Baumal: Economic theory and Operational Analysis

Koutsoyannis: Modern Microeconomics

Henderson and Quandt: Microeconomic Theory

MACROECONOMICS – II (ECN 202)

Full Marks: 50

Lecture Hours: 70

- 1. Real Business Cycle Theory** (10 Lectures)
 - Some Facts about Economic Fluctuations.
 - Theories of Fluctuations.
 - A Baseline Real Business Cycle Model.
 - Household Behaviour.
 - A Special Case of the Model and its Solution.
 - Productivity Shocks, Consumption and Capital Accumulation.
 - Output and Employment Fluctuations.
 - Unemployment, Heterogeneity, Shocks and Imperfect Information.

- 2. Consumption** (4 Lectures)
 - Consumption under Uncertainty: The Random Walk Hypothesis.
 - The Interest Rate and Saving
 - Consumption and Risky Assets.

- 3. Investment** (10 Lectures)
 - Investment and the Cost of Capital
 - Neo-classical Theory of Investment: Jorgenson's Model.
 - Flexible Accelerator Model: Eisner and Strotz Model.
 - A Model of Investment with Adjustment Costs.
 - Tobin's q Model: Analysing & Implications of the model.
 - The Effects of Uncertainty.
 - Financial Market Imperfections.

- 4. Consumption and Investment: Basic Infinite Horizon Model** (12 Lectures)

The Ramsey Problem: The Keynes Ramsey Rule.
The Decentralized Economy.
The Government in the Decentralized Economy.
Overlapping Generations Model: (a) Two-Period Lives. (b) Social Security and Capital Accumulation. (c) A Model of Perpetual Youth. (d) Fiscal Policy: Debt and Deficit Financing.

- 5. Money** (8 Lectures)
 - The Overlapping Generation Model with Money.
 - Money in the Utility Function.
 - Money: Inside and Outside.
 - Seigniorage and Inflation.
 - Sirdrauski Model.
 - Dynamics of Hyper-inflation.

- 6. Rational Expectation Model** **(10 Lectures)**
- Some Basic Issues.
 - Lucas Supply Function.
 - A Complete Rational Expectations Macro Model.
- 7. Unemployment** **(10 Lectures)**
- Model of Implicit Contracts.
 - Insider-Outsider Models.
 - Hysteresis.
 - Search and Matching Models.
- 8. Open Economy Macro Dynamics** **(6 Lectures)**
- Disequilibrium analysis and its implication: Exchange rate overshooting.
 - Traded and Non-Traded Goods: Wage Dynamics, Capital Stock Dynamics.
 - Temporary and Permanent Shocks: Anticipations & News.

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- Ackley (1961): *Macroeconomic Theory*
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- Baumol (1952): *Economic Dynamics*
- Baumol (1977): *Economic Theory and Operations Analysis*
- Begg (1982): *The Rational Expectations Revolution.*
- Dorfman, Samuelson and Solow (1958): *Linear Programming and Economic Analysis*
- Friedman (1956) in *Studies in the Quantity Theory of Money*, (ed.), Friedman
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- Mathews (1959): *The Trade Cycle*
- Samuelson (1939): *Review of Economics and Statistics*
- Schneider (1962): *Money, Income and Employment.*
- Shackle (1949): *Expectations in Economics*
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- Turvey (1961): *Interest rates and Asset Prices.*

DEVELOPMENT ECONOMICS – II (ECN 203)

Full Marks: 50

Lecture Hours: 70

Group-A (25 Marks) – Strategies of Development

- 1. Surplus Labour** (6 Lectures)
 - Surplus Labour Models – Nurkse and Sen Model
- 2. Wage-gap and Migration** (10 Lectures)
 - Harris-Todaro model and the Policy implications; Labour Turnover model & Efficiency Wage Hypothesis; Stiglitz model; Recent Empirical Evidences.
- 3. Human Capital and Development** (10 Lectures)
 - Components of Human Capital; Human Capital vs. Physical Capital;
 - Education as means of Development – Cost-Benefit Analysis in Education – Cost of Education - Private costs & Social costs; Wastage and Stagnation; Benefits of Education - Direct and Indirect benefits; Private and Social benefits;
 - Health dimensions of development - Determinants of health — poverty, malnutrition and environmental issues; Concept of human life value; Inequalities in health — class and gender perspectives; Institutional issues in health care delivery.

Group-B (25 Marks) – Demographic Issues in Development

- 1. Basic Concepts and Indicators** (6 Lectures)
 - Vital Rates – Fertility, Mortality, Age Pyramids, and Life Tables
- 2. Human Resource and Development** (8 Lectures)
 - From Development to Population; Theory of Demographic Transition; Historical Trends; Adjustment of Birth and Death Rates; Household Choice Models
 - From Population to Development; Malthusian View; Growth Impact; Population and Environment; Population and Innovation; Markets and Inputs.
- 3. Population Projection** (6 Lectures)
 - National Projection of Total Population and Age-Sex composition – Mathematical Methods and Cohort-Component Methods; Methods of National & Sub-National Projection of Population; Projection of the Economically Active Population
 - Concepts of Stable, Stationary, and Quasi-Stationary Population

4. Trends in Population and Population Policy in India (10 Lectures)

- Major demographic features of India's population – Spatial, Age, Sex, Occupational Structure of Indian Population; Birth rate, Death rate, Life Expectancy & Infant Mortality; Trends & Patterns;
- Evaluation of family welfare programmes in India - National Population Policies - Manpower Planning in India.
- Migration in India – Concepts, Determinants and Consequences; Measures of Internal Migration;
- Urbanization in India – Components of Urban Population Growth; Forces of Urbanization in the Developed and Developing Countries and the Over-Urbanization Phenomenon;

READING LIST

Ray, Debraj - Development Economics

Meir, G.M. - Leading Issues in Economic Development

Thirlwall, A.P.- Growth and Development

Basu, K. - Analytical Development Economics

Behrman and Srinivasan Ed.-Handbook of Development Economics, vol. 3

Chenery and Srinivasan Ed.- Handbook of Development Economics, vol.1&2

Bhattacharya, Debesh - Political Economy of Development

World Bank - World Development Report (various issues)

United Nations - Human Development Report (various issues)

Adelman, I. and C.T. Morris (1973) – *Economic Growth and Social Equity in Developing Countries*, Stanford, USA

Ahluwalia, M. (1976) – “Inequality, Poverty, and Development”, *Journal of Development Economics*, Vol. 6

Anand, S. and R. Kanbur (1993) – “The Kuznets Process and the Inequality-Development Relationship”, *Journal of Development Economics*, Vol. 40

Anand, S. and R. Kanbur (1993a) – “Inequality and Development: A Critique”, *Journal of Development Economics*, Vol. 41

Berman, P. (Ed.) (1995) - *Health Sector Reform in Developing Countries : Making Health Development Sustainable*, Boston: Harvard Series on Population and International Health.

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- McMohan, W.W. (1999) - *Education and Development : Measuring the Social Benefits*, Oxford University Press, Oxford.
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- Paukert, F. (1973) – “Income Distribution at Different Levels of Development: A Survey of Evidence, *International Labour Review*, Vol. 108
- Ranis, G. and J. Fei - ‘A Theory of Economic Development’, *American Economic Review*, Vol. 51, 1961, Reprinted in Eicher and Witt (ed.) *Agriculture in Economic Development*
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No.50)

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Political Weekly, Vol.20,No.32, August 10, 1985.

World Bank (1993) - The World Development Report, 1993 : Investing in Health, Oxford
University Press, New York.

INTERNATIONAL ECONOMICS (ECN 204)

Full Marks: 50

Lecture Hours: 70

1. Pure Theory of International Trade **(Lecture Hours 10)**
 - Generalization of the Ricardian Model of Trade and Comparative Advantage – continuum of goods, multi-commodity and multi-country cases.
 - Incomplete specialization-the cone of diversification-Stolper-Samuelson Theorem and Rybczynski Theorem-Generalization and higher dimensions-terms of trade and wage inequality in developing economies.
 - Specific Factors, intermediate inputs, public goods and non-traded goods in international trade.

2. Theory of Commercial Policy **(Lecture Hours 10)**
 - Domestic Distortions, Tariffs and The Theory of Optimum Subsidy
 - The political economy of protection; Trade Policy and the Less Developed Countries.
 - Trade Controls in Practice. Multilateral tariff reduction, the trend towards “managed” trade.

3. Trade and Development **(Lecture Hours 10)**
 - Development in the open economy- Theory of immiserizing growth.
 - Foreign capital and welfare- the Brecher-Alejandro (1977).
 - Evolution of Trade Policies- emergence of trading blocs.

4. Intra-Industry Trade, Strategic Trade Theory and Foreign Direct Investment **(Lecture Hours 10)**
 - Causes of emergence and Measurement of Intra-Industry Trade.
 - Trade under Imperfectly competitive market with Increasing returns, Pattern and gains; Intra-industry Trade; Returns to scale, product differentiation monopolistic competition and basis of trade. Implications for standard theorems on international trade.
 - Multinational Corporations. Cartels and the interests of producing and consuming countries, monopoly and policies of exporting and importing countries, industrial policy and market rivalry. Effects of trade policy liberalization on national welfare.

5. Trade Policies and Imperfect Competition **(Lecture Hours 10)**
 - Alternative forms of intervention and their consequences. Reciprocal Dumping and related trade policy; Monopolistic competition, Oligopoly in International Trade - Pattern of trade, Gains from trade.
 - Tariffs vs. Quotas-policy interventions under alternative market structure.

References

Caves, R.E., Frankel, J.A. and Jones, R.W. (1996) - “World Trade and Payments” An Introduction. 5th edition, Scott, Foresman/Little Brown Higher Education.

Krugman, P.R. and M. Obstfeld (1994)-“ International Economics: Theory and Policy,” Glenview, Foresman.

Jones, R.W. and Kenen (ed)-"Handbook of International Economics", vol. I and vol. II, North Holland, 1984.

Chacoliades, M. - "Pure Theory of International Trade"

Jagdish Bhagwati -"Writings on International Economics", edited by V.N. Balasubramanyam, Oxford University Press.

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Krugman, P – Rethinking International Trade. MIT Press, 1990

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Amrita Narlikar (2005): The World Trade Organization-A very short introduction.

ECONOMETRICS-II (ECN 205)

Full Marks: 50

Lecture Hours: 70

- 1. Regression with Qualitative Regressors (10 Lectures)**
 - Dummy Independent Variables – When to use; Classification system; Dummy Variable Trap; Interpretation of estimated coefficients; Class-effect and Interaction-effect; Applications
- 2. Qualitative Response Model (15 Lectures)**
 - The nature of Qualitative Response Model – The Linear Probability Model (LPM) and its application – Problems with LPM
 - The Logit Model – Estimation of the Logit Model and its application
 - The Tobit Model and its application.
- 3. Simultaneous Equation System – Overview and Identification (10 lectures)**
 - Basic Concepts - Structural Form, Reduced Form, and Final Form
 - The identification problem - Rank and Order conditions
 - Reduced Form approach to identification
- 4. Simultaneous Equation System – Methods of Estimation (15 lectures)**
 - Single Equation Approach – Problems of applying OLS in simultaneous equation system – Simultaneous Bias – Contemporaneous Correlation – OLS in Recursive System
 - Estimation through the methods of: Indirect Least Squares (ILS); Instrumental Variable (IV); 2-Stage Least Square; Limited Information Maximum Likelihood (LIML); Least Variance Ratio (LVR); Properties of various estimators
- 5. Techniques of Data Reduction (10 lectures)**
 - Principal component Analysis – Estimation of loadings of the Principal Components – Test for the Significance of loading – Applications

References

Gujarati D. Basic Econometrics, Tata Mc Graw Hill, New Delhi.

Johnston and Dinardo, Econometric Methods, Mc Graw Hill.

Maddala, GS – Econometrics, Mc Graw Hill, N.Y.

Koutsoyiannis: Theory of Econometrics.

Maddala, G.S (1983), Limited-Dependent and Qualitative Variables in Econometrics, Econometric Society Monographs, Cambridge

Stock, James H. and Mark W. Watson (2007), Introduction to Econometrics, 2/E, Pearson

Semester - III
Compulsory Papers

INDIAN ECONOMIC SCENARIO (ECN 301)

Full Marks: 50

Lecture Hours: 70

- 1. Planning: (8 Lectures)**
 - Indication planning Vs Imperative planning overview of strategy of India's development plans. Objectives of recent plans, financing the plans, center-State financial relations.
- 2. Agricultural Sector: (10 Lectures)**
 - Trends in Agricultural production and productivity, Issues in Indian agricultural policy, agricultural price policy, agricultural taxation, Food Security, Public distribution system in India, Agriculture and W.T.O.
- 3. Industrial Sector: (10 Lectures)**
 - Trends in Industrial production and productivity, Role of small-scale industries in Economic development, Development of entrepreneurship in India.
- 4. Foreign Sector: (8 Lectures)**
 - India's foreign trade – Value, composition and Direction, India's BOP problem, Foreign capital and foreign aid.
- 5. Structural Changes: (8 Lectures)**
 - Occupational structure and economic development – growing importance of the tertiary sector, an analysis of trends since 1951 -
- 6. Labour Market: (8 Lectures)**
 - Unemployment and Underemployment – Wages & Remunerations – Discrimination in Labour Market
- 7. Poverty & Inequality: (8 Lectures)**
 - Poverty and Inequality – Inequality & Growth

References

- Ahluwalia. I.J. and I M D Little (Eds.) (1999) India's Economic Reforms and Development (Essays in honour of Manmohan Singh), Oxford University Press, New Delhi.
- Bardhan, P.K. (9th Edition) (1999) The Political Economy of Development in India, Oxford University Press, New Delhi.

- Bawa, R.S. and P.S. Raikhy (Ed.) (1997) *Structural Changes in Indian Economy*, Guru Nanak Dev University Press, Amritsar
- Bhaduri, Amit and Deepak Nayyar - *Intelligent person's guide to Liberalisation*.
- Brahmananda, P.R. and V.R. Panchmukhi (Eds.) (2001), *Development Experience in the Indian Economy Inter State Perspectives*, Bookwell, Delhi.
- Byres, T.J. (Ed.) (1998) *The Indian Economy Major Debates Since Independence* Oxford University Press, New Delhi.
- Chakravarty, S. (1987) *Development Planning; The Indian Experience*, Oxford University Press, New Delhi.
- Dantwala, M.L. (1996) *Dilemmas of Growth; The Indian Experience*, Sage Publication New Delhi.
- Datt, R. (Ed.) (2001) *Second Generation Economic Reforms in India*, Deep & Deep Publications, New Delhi.
- Dutt, R and KPS Sundaram – *Indian Economics (Latest Edition)*
Government of India, *Economic survey (Annual)*, Ministry of Finance, New Delhi.
- Jain A K (1986) *Economic planning in India*, Ashish Publishing House, New Delhi.
- Jalan B. (1992) *The Indian Economy - Problems and Prospects*. Viking, New Delhi,
- Jalan, B (1996) *India's Economic Policy - Preparing for the Twenty First Century*, Viking, New Delhi.
- Joshi, V, and I M D Little (1999) *India: Macro Economics and Political Economy, 1964-1991*, Oxford University Press, New Delhi.
- Misra and Puri – *Indian Economics (Latest Edition)*
- Morris, Sebastian – *Growth and Transformation of Small Firms in India*, OUP
- Parikh, K.S. (1999) *India Development Report-1999-2000*, Oxford University Press, New Delhi.
- Reserve Bank of India, *Report on Currency and Finance(Annual)*
- Sandesara, J C (1992) *Industrial Policy and Planning,1947-1991 Tendencies, Interpretations and issues*, Sage Publications, New Delhi.
- Sen, R.K. and B. Chatterjee (2001) *Indian Economy Agenda for 21st Century (Essays in honour of Prof. P.R. Brahmananda)*, Deep & Deep Publications, New Delhi.

DEPARTMENTAL MINOR ELECTIVE PAPER
BASIC FINANCIAL ECONOMICS (ECN 302)
Full Marks: 50
Lecture Hours: 70

- 1. Introduction:** (10 Lectures)
Financial Assets; Securities – Types and Attributes; Financial Markets; Capital Market – Primary & Secondary; Trading of Stocks.
- 2. Security Analysis:** (10 Lectures)
Fundamental – Economic Analysis, Industry Analysis, Company Analysis; Technical Analysis.
- 3. Efficient Market Hypothesis:** (10 Lectures)
Efficient Versus Perfect Market; Allocation, Internal & External Efficiencies; weak, Semi-strong and Strong Forms of Pricing Efficiency-Meaning and Tests.
- 4. Portfolio Analysis :** (15 Lectures)
Risk and Return of Individual Security, Portfolio Risk and Return, Efficient Portfolios, Portfolio Selection Models.
- 5. Capital Market Theories :** (10 Lectures)
Capital-Asset Pricing Model, Arbitrage Pricing Theory and Multi-factor Models of Risk.
- 6. Foreign Exchange Rates and Markets:** (15 Lectures)
Determination of Foreign Exchange Rates ; Functions of Foreign Exchange Markets – Spot Market, Forward Market ; Interest Arbitrage – Uncovered and covered ; Theories of Foreign Exchange Rate Movements - Purchasing Power Parity Theory, Expectations Theory, International Fisher Effect Theory, Interest Rate Parity Theory.

References

1. Yuh-Dauh Lyuu : Financial Engineering and Computation, Cambridge University Press.
2. Bodie, Kane, Marcus & Mohanty: Investments, Tata McGraw-Hill Publishing Company Limited.
3. Tinic & West: Investing in Securities: An Efficient Markets Approach Addison-Wesley Publishing Company.
4. Fischer & Jordan: Security Analysis and Portfolio Management, Prentice-Hall of India Private Limited.
5. Rick Bensignor (Ed.): New Thinking in Technical Analysis, Viva Books Private Limited.
6. Ravi M. Kishore: Financial Management, Taxmann Allied Services Pvt. Ltd.

7. I.M. Bhole : Financial Institutions and Markets, Tata McGraw Hill Publishing Company Limited
8. Giancarlo Gandolfo: International Finance and Open-Economy Macroeconomics. Springer, 2002.
9. Elton and Gruber: Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.
10. Fuller and Farrel (Jr.): Modern Investments and Security Analysis, McGraw Hill Book Company.

DEPARTMENTAL MINOR ELECTIVE PAPER
BASIC ENVIRONMENTAL ECONOMICS (ECN 303)

Full Marks: 50

Lecture Hours: 70

- 1. Relationship between Environment and Economy: (Lecture Hours : 5)**
 - Laws of Thermodynamics.
- 2. Basic concept of Public Good and Private Good: (Lecture Hours: 6)**
 - Environmental asset as public good – Concept of externality and market failure – Pareto optimality in the presence of external effects in production.
- 3. The Theory of Environmental policy: (Lecture Hours: 18)**
 - Pollution as negative externality – optimal pollution
 - The concept of property right - Coase theorem
 - Potential for market bargain in externality – criticism of Coase theorem.
 - Taxation and optimal pollution – The optimal Pigovian tax – Pollution changes and property right – Pollution changes and abatement cost.
 - Environmental standards – The inefficiency of standard setting – Taxes Vs Standards – Baumol and Oates least cost theorem.
 - Tradable pollution permits – The basic theory of TPPs – Type of permits – advantage of TPPs.
- 4. Economics of Renewable Resource: (Lecture Hours : 15)**
 - Economic of fishery - Growth function – logistic model – The sustained yield function – Schaefer model - Underlying assumptions – Drawbacks of MSY – Static model of fishery – Profit maximization – Comparison of MSY and open access condition.
 - Economics of forestry – The volume function and the mean annual increment – optimal single rotation – The rotation. Timber supply the short run and in long run – The comparative static effects.
- 5. Economics of Non Renewable Resource: (Lecture Hours: 8)**
 - Basic concepts – Hotelling rule – The concept of backstop-A simple model of optimal depletion – Perfect competition and monopoly in non-reasonable resource market.
- 5. Sustainable Development: (Lecture Hours: 8)**
 - Context and the concept – Difference between growth, Economic Development and sustainable development – Values and measures of S.D.
- 6. Environment and Development (Lecture Hours: 8)**
 - Tradeoff between development and environment, Environmental Kuznets' Curve- Concept and Genesis. Explanations of the inverse U shape, Empirical evidence, the Indian experience.

References:

- 1. D Pearce and RK Turner: Economic of Natural Resources and the Environmen, Prentice.**
- 2. N. Hanley, J. Shogren and B. White : Environmental Economics in Theory and Practice, Macmillan.**
- 3. R.N. Bhattacharyya (Ed.) : Environmental Economics, OUP**
- 4. J.M. Conrad and C. Clark : Natural Resource Economics, CUP**
- 5. J.M. Conrad : Resource Economics, Cambridge Univ. Press**

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ADVANCED ECONOMETRICS – I (ECN 304A)

Full Marks: 50

Lecture Hours: 70

- 1. Introduction** (Number of Classes: 8)
 - Importance and Significance of the Time Series Econometrics
 - Basic Regression and Time Series Regression
 - Serial Correlation Theory: AR, MA, ARMA; Yule-Walker Equation; ACF, PACF and Correlogram Analysis
 - Diagnostic Tests of Stationarity/Non-stationarity: Bartlett Test, Box-Pearce Q Test, Ljung-Box Test
- 2. The Random Walk Model** (Number of Classes: 15)
 - Definition and Alternative Specifications RWM
 - TSP and DSP and their Fundamental Difference with respect to Shocks/Innovations
 - Basic Unit Root Theory: DF, ADF, DFGLS, PP, KPSS, ERS, and NP
 - Concepts and Importance of Integration and Co-integration and Tests of Cointegration.
 - Error Correction Model
- 3. Forecasting from an Equation** (Number of Classes: 10)
 - Computing and Framing Rule and Forecasting for AR, MA, ARMA and ARIMA
 - Box Jenkins Process (BJP)/ARIMA: Identification, Estimation and Diagnostic Testing and Forecasting
 - Test of Exogeneity – (i) Granger's Causality; (ii) Wu-Hausman Test
- 4. Multiple Equation Model** (Number of Classes: 20)
 - Vector Auto-regression and Error Correction
 - Vector Auto-regression (VAR)
 - Simple and Higher Order VAR Model.
 - Estimation of VAR Model - Testing the Order of VAR; Test of Granger's Causality; Forecasting and Variance Decomposition;
 - Impulse Response Function - Orthogonal Innovations; Variance Decomposition; Pareto Optimal Allocations
 - Vector Error Correction Model - Testing of Co-integration Rank: Johansen's Co-integration test; Estimation of Co-integrating Vectors; Estimation of a Vector Error Correction Model
- 5. ARCH and GARCH Model** (Number of Classes: 15)
 - ARCH Models
 - Meaning and Importance; Testing for ARCH: Correlogram Test, LM Test, Residual Test; Estimation under ARCH; Asymmetric ARCH Models; The Component ARCH Model
 - GARCH Models
 - Meaning and Importance; Testing for GARCH; Exponential GARCH model; Estimation under GARCH
 - TARARCH Models
 - Meaning and Importance; Testing for GARCH; Estimation under TARARCH

Suggested Readings

Walter Enders, Applied Time Series Econometrics.

Johnston and Dinardo, (1997), *Econometrics Methods*, 4th edition, McGraw Hill International Edition.

Granger and Newbold, (1986), *Forecasting Economic Time Series*, 2nd edition, Academic Press.

Amisano, Gianni and Carlo Giannini (1997). *Topics in Structural VAR Econometrics*, 2nd ed, Springer. Segerstrom. P. (1998).

Blanchard, Olivier and Danny Quah (1989). "The Dynamic Effects of Aggregate Demand and Aggregate Supply Disturbances," *American Economic Review*, 79, 655-673.

Greene, William H. (1997). *Econometric Analysis*, 3rd Edition, Prentice Hall.

Hamilton, James D. (1994a). *Time Series Analysis*, Princeton University Press.

Hamilton, James D. (1994b). "State Space Models", Chapter 50 in Robert F. Engle and Daniel L. McFadden (eds.), *Handbook of Econometrics*, Volume 4, North-Holland.

Hodrick, R. J. and E. C. Prescott (1997). "Postwar U.S. Business Cycles: An Empirical Investigation," *Journal of Money, Credit, and Banking*, 29, 1-16.

Judge, George G., W. E. Griffiths, R. Carter Hill, Helmut Lütkepohl, and Tsoung-Chao Lee (1985). *The Theory and Practice of Econometrics*, 2nd edition, John Wiley & Sons.

Lütkepohl, Helmut (1991). *Introduction to Multiple Time Series Analysis*, Springer-Verlag.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ADVANCED ECONOMETRICS – II (ECN 305A)

Full Marks: 50

Lecture Hours: 70

Group-A (25 Marks)

[Requires knowledge of basic computational tools and Spreadsheet operations. Continuous assessments shall be based on computer practical and real data handling]

- 1. Applied Econometrics - Production Function Estimation (8 lectures)**
 - Econometrics of Production function - Modelling Firms' Behaviour - Problems of Identification and Solution
 - Estimating Translog Production function-OLS and SURE
 - Estimating CD Function - Estimation using MP Relations - Reduced Form Method - Factor Share Method - Instrumental Variable Technique
 - Estimate of CES Production Function - By Kmenta's Approximation - By Kmenta's ILS Method
- 2. Data reduction and Classification Techniques (8 lectures)**
 - Discriminant Analysis.
 - Cluster Analysis.
- 3. Multiple Discrete Choice Models (8 lectures)**
 - Ordered Probit / Logit; Sequential Probit / Logit; Methods of estimation;
 - Multinomial Logit (MNL); Applications
 - Independence of Irrelevant Alternatives (IIA) assumption; Nested Logit.
- 4. Truncated and Censored Models (8 lectures)**
 - Sample selection bias; the truncated regression model; marginal effects; the Tobit model; interpretation of Tobit model coefficients; testing for normality; limitations of the Tobit model;
 - Selectivity and Heckman Filter model; two-step and full-information estimation methods; interpretation of model coefficients; diagnostic testing;

References

- Amemiya, T. (1985). *Advanced Econometrics*, Basil Blackwell; Chapters 9, 10
- Amemiya, T. (1984). Tobit Models: A survey, *Journal of Econometrics*, 24, 3-61
- Greene, W. H. (2000). *Econometric Analysis (4th ed.)*. Prentice Hall.**
- Gujarati - Basic Econometrics, Tata McGraw Hill;**
- Heckman, J. (1990). Varieties of Selection Bias, *American Economic Review*, May,**
- Heckman, J. J. (1976). The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimation for such models. *Annals of Economic and Social Measurement*, 5 (4), 475-492.
- Heckman, J. J. (1978). Dummy endogenous variables in a simultaneous equation system. *Econometrica*, 46 (6), 931-959.
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, 47 (1), 153-161.
- Intrilligator - Econometrics with Economic Applications**
- Joshua D. Angrist & Jörn-Steffen Pischke (2009) *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton Univ Press**

Klecka, W. R. (1980) - Discriminant Analysis, (Sage University Paper Series on Quantitative Applications in the Social Sciences, No. 07-119), Sage, Beverly Hills, CA.

Lee, B., & Marsh, L. C. (2000). Sample selection bias correction for missing response observations. Oxford Bulletin of Economics and Statistics, 62 (2), 305-323.

Maddala, G.S. (1983). Limited-Dependent and Qualitative Variables in Econometrics CUP

McFadden, D. L. (1973). Conditional Logit Analysis of Qualitative Choice Behavior. Frontiers in Econometrics, Academic Press.

Rao & Miller – Applied Econometrics

Stock, James H. and Mark W. Watson (2007), Introduction to Econometrics, 2/E, Pearson

Group-B (25 Marks)

5. An Introduction to Stochastic Processes (15 lectures)

- Introduction
- Definition and broad classification of stochastic processes
- Markov Chains
- Gambler's ruin (martingales, branching processes)
- Random walk
- Continuous parameter processes
- Poisson processes
- Normal processes

Reference:

Goon, Gupta and Dasgupta: An outline of Statistical theory

6. Measures of Income Inequality (15 lectures)

- Positive and normative measures
- Positive Measures
- The range; Mean absolute difference and deviation; Variance and coefficient of variation; Gini measure-various forms of Gini coefficient, geometrical interpretation, Gini measures for Pareto distribution and Log normal distribution; Entropy Measure
- Normative Measures
- Dalton's Measure; Atkinson's measure; Sen's measure

References

Amartya Sen-"On Economic Inequality"

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ADVANCED ECONOMIC THEORY – I (ECN 304B)

Full Marks: 50

Lecture Hours: 70

Group A: Game Theory (25 marks) (35 Lectures)

1. *Static Games of Complete Information*: Dominated Strategies, Iterated Elimination of Strictly Dominated Strategies; mixed strategies: Nash equilibrium with mixed strategies and applications.
2. *Dynamic Games of Complete Information*: Backwards induction, sequential bargaining; imperfect information: subgame perfection; Repeated Games: two-stage repeated games, infinitely repeated games; Dynamic Games of Complete but Imperfect Information, subgame perfect Nash equilibrium and applications.
3. *Static Games of Incomplete Information*: Static Bayesian Games and Bayesian Nash equilibrium, applications;
4. *Dynamic Games of Incomplete Information*: Perfect Bayesian equilibrium, signaling.

References:

Ken Binmore - Fun and Games

Kreps, D. - Game Theory: A Non technical Introduction

Gibbons .- Game Theory

Fudenberg, D., and J. Tirole, - Game Theory

Oz Shy - Industrial Organization.

Mass-Colell, A., M. Whinston and J. Green (1995); Microeconomic Theory, Oxford University Press, New Delhi.

Tirole, J. (1988), Theory of Industrial Organization, MIT Press.

Group B: Advanced Macroeconomic Theory (25 marks) (35 Lectures)

Macroeconomics in Practice:

- (1) A case study of the Great Depression in 1930s.
- (2) Evolution of different school of thoughts in macroeconomics: Classical – Keynesian-Neoclassical—New Keynesian-Structural-Heterodox macroeconomics.
- (3) Currency Crisis: First generation approach and Latin American currency crisis.
Second generation approach and EMU crisis.
Third generation approach and Asian crisis.
Subprime crisis

References:

Romer, C., The Great Depression, *Journal of Economic Perspectives*.

Mishkin, Frederic S., (1999) Global Financial Instability: Framework, Events, Issues, *Journal of Economic Perspectives*, vol. 13, No. 4, p. 3-20

Bordo, M.D., and A.J. Schwartz (1999) Monetary Policy Regimes and Economic Performance: The Historical Record, in *Handbook of Macroeconomics* (ed.), John B. Taylor and Michael Woodford, vol. 1A, Elsevier.

Keynes, J. M., (1935): *The General Theory of Employment, Interest and Money*.

Montiel (2003): *Macroeconomics in Emerging Markets*, CUP

Agenor and Montiel (1999): *Development Macroeconomics*, Princeton University Press.

Sarno and Taylor (2002): *Economics of Exchange Rates*, CUP

Helpman and Sadka (2003): *Economic Policy in the International Economy*, CUP

Robert M. Solow (1998): *Monopolistic Competition and Macroeconomic Theory*, CUP.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ADVANCED ECONOMIC THEORY – II (ECN 305B)

Full Marks: 50

Lecture Hours: 70

Industrial Organization

1. Structure, conduct performance paradigm
2. Concentration, merger and Entry Deterrence
3. Monopoly: Durable goods monopoly.
4. Duopoly: Cournot competition with n sellers, Bertrand paradox.
5. Product Differentiation: degree of differentiation, Cournot and Bertrand competition with differentiated products, location models, horizontal and vertical differentiation.
6. Advertising: Dorfman –Steiner condition , Persuasive and informative advertising
7. Innovation and R&D: process and product innovation, patents, optimal patent length.

References:

Ken Binmore - Fun and Games

Kreps, D. - Game Theory: A Non technical Introduction

Gibbons .- Game Theory

Fudenberg, D., and J. Tirole, - Game Theory

Oz Shy - Industrial Organization.

Mass-Colell, A., M. Whinston and J. Green (1995); Microeconomic Theory, Oxford University Press, New Delhi.

Tirole, J. (1988), Theory of Industrial Organization, MIT Press.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)
AGRICULTURAL ECONOMICS – I (ECN 304C)

Full Marks: 50

Lecture Hours: 70

- 1. The farm household Models: (15 Lectures)**
Chayanov farm household model - Extension of chayanov's model incorporating labour market.
New Home Economics: - Essential Features of New Home Economics
The Barnum-Squire Farm Household Model
The Low Farm Household Model.
- 2. Rural Credit Markets and Interlinkage: (15 Lectures)**
Nature of Rural Credit Market-Forms of Rural Credit
The Lender's Risk Hypothesis-Monopolistic Market - Market Fragmentation
Bhaduri's Model of Semi-feudalism.
Potential risk and the emergence of Interlinkage –
Partial equilibrium in an interlinked market - Interlinkage and Intertemporal Earnings Approach - Moral Hazard and Interlinkage.
- 3. Agricultural Diversification and Sustainability (10 lectures)**
- 4. Market, State and Agriculture - (20 lectures)**
Reform and Changing Agrarian Structure- Food Security Food Subsidies Agricultural Subsidies Implications of New Economic Policies for Agriculture
- 5. Agrarian Village Studies – (10 lectures)**
Field experience through survey and Project preparation

References

1. Peasant Economics- *Farm households and agrarian development*, Frank Ellis , Cambridge University Press
2. A Bhaduri, A(1973): 'A study in agricultural backwardness in semi-feudalism', *Economic Journal*, Vol. 83
3. Rudra, A(1982): *Myths and Realities, Allied Publishers / Political Economy of Indian Agriculture*.
4. Braverman,A and Stiglitz, J.E(1981): 'Sharecropping and interlinking of agrarian markets' , *American Economic Review*, Vol. 72
5. Kausik Basu: *Less Developed Economy*, OUP
6. Peter Hazell & Steven Haggblade et al (1993), "Farm-Nonfarm Growth and Welfare of the Poor", in Michael Lipton & Jacques van Der Gaag (eds.), *Including the Poor*, The World Bank, Washington, D.C.
7. John Harriss (1991), "Agriculture/Non-agriculture Linkages and the Diversification of Rural Economic Activity: A South Indian Case Study", in Jan Breman & Sudipto Mundle (eds.), *Rural Transformation in Asia*, Oxford University Press, New Delhi.

8. • Benjamin Devis et al. (2002), *Promoting Farm/Non-farm Linkages for Rural Development*, Food & Agriculture Organisation, Rome
9. • Caroline Ashley and Diana Carney (1999), *Sustainable Livelihoods: Lessons from Early Experience*, DFID, London
10. • Diana Carney (2002), *Sustainable Livelihoods Approaches: Progress and Possibilities for Change*, DFID, London.
11. Kaushik Basu (eds) agrarian Themes
12. Sonar Bangla
13. Barabara Harriss White-
14. Amit Bhaduri Unconventional Essays
15. *Socio-Economic Surveys of Three Villages in Andhra Pradesh: A Study of Agrarian Relations* Edited by V. K. Ramachandran, Vikas Rawal and Madhura Swaminathan
New Delhi: Tulika Books. 2010

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)
AGRICULTURAL ECONOMICS – II (ECN 305C)

Full Marks: 50

Lecture Hours: 70

- 1. Agricultural Labour Market** (15 lectures)
A model of two-tiered agricultural labour market –Eswaran Kotwal’s model of agrarian class formation-Problem of surplus labour-issues in agrarian power
- 2. Tenancy and Land Market** (15 lectures)
Efficiency of share cropping -Marshall and Cheung , Risk and Land contract,
- 3. Agricultural Growth & Instability** (10 lectures)
 - Methodological issues in the Indian Context
 -
- 4. Agrarian Experience of select Countries** (15 lectures)
- 5 International Perspectives** (10 lectures)
Trade Liberalisation and Agriculture, GATT, WTO and recent international issues

References:

1. Boyce – Agrarian Impasse in Bengal (O.U.P.).
2. KBasu-One Kind of Power Indian Journal of Agricultural Economics, 1980
3. Eswaran and Kotwal- A theory of two tiered labour market (AER 1971)
4. Eswaran and Kotwal-Access to credit and agrarian class formation (AER 1971)
5. K. Basu – Less Developed Economy.
6. Debraj Ray – Development Economics
7. Barbara Harriss-White -Rural Commercial Capital -Agricultural Markets in West Bengal
8. Agricultural Markets From Theory To Practice: Field Experience In Developing Countries by Barbara Harriss-White
9. *Paths of capitalist Agrarian transition in the past and in the contemporary world/* Terence J. Byres
10. *Agrarian Studies: Essays on Agrarian Relations in Less-Developed Countries* Edited by V.K. Ramachandran and Madhura Swaminathan, New Delhi: Tulika Books. 2002. ISBN 81-85229-57-0
11. *Indian agriculture in the world economy/* Utsa Pattnaik

Semester - IV

COMPULSORY PAPERS

ECONOMICS OF GROWTH AND PLANNING (ECN 401)

Full Marks: 50

Lecture Hours: 70

- 1. Introduction (2 lectures)**
 - Stylized Facts of Economic Growth and Development: A Quick Look at the Facts and Fictions.
 - The Objectives/Agenda
- 2. The Neoclassical Growth Model (8 lectures)**
 - Preferences, Technology and Demographics - Characterization of Equilibrium - Definition of Equilibrium - The Consumer Problem - Equilibrium Prices - Optimal Growth - Steady-State Equilibrium - Transitional Dynamics - Technological Change and the Canonical Neoclassical Model - The Role of Policy - Variants of the Neoclassical Model
- 3. Growth with Overlapping Generations (8 lectures)**
 - Problems of Infinity - Overlapping Generations and Over Accumulation - Demographics, Preferences and Technology - Consumption Decisions - Equilibrium
 - More Specific Utility Functions - Pareto Optimality - Role of Social Security in Capital Accumulation - Fully Funded Social Security - Unfunded Social Security
- 4. Endogenous Growth (12 lectures)**
 - First-Generation Models of Endogenous Growth - AK Model Revisited - Demographics, Preferences and Technology – Equilibrium - Transitional Dynamics - The Role of Policy - The Extended AK Model - Growth with Externalities
 - Preferences and Technology – Equilibrium - Pareto Optimal Allocations - Multiple Equilibria and the Process of Development - Multiple Equilibria From Aggregate Demand - Preferences and Technology - Equilibrium
 - Human Capital Accumulation with Imperfect Capital Markets - A Simple Case With No Borrowing - The Galor and Zeira Model - Learning-by-Doing, Structural Change and Non-Balanced Growth - Demographics, Preferences and Technology - Equilibrium
- 5. Endogenous Technological Change (15 lectures)**
 - Expanding Variety Models - The Lab-Equipment Model of Growth with Product Varieties - Demographics, Preferences and Technology - Digression on Continuous Time Value Functions - Characterization of Equilibrium - Definition of Equilibrium - Steady State - Transitional Dynamics - Pareto Optimal Allocations - Policy in the Endogenous Technology Model - Growth with Knowledge Spillovers - The Role of Competition Policy - Growth without Scale Effects - Models of Quality Competition - Baseline Model - Pareto Optimality - Directed Technical Change - Basics and Definitions –

Definitions - Basic Model – Implications - Equilibrium Technology Bias:
Some More General Results - Endogenous Labor-Augmenting Technological
Change - Demographics, Preferences and Technology - Consumer and Firm
Decisions - Asymptotic and Balanced Growth Path

Suggested Readings for Topics 1 to 5

- Philippe Aghion and Peter Howitt (1998), *Endogenous Growth Theory* Cambridge: MIT Press.
- Barbier, E. B. (1999). Endogenous Growth and Natural Resource Scarcity. *Environmental and Resource Economics* (14), pp. 51-74. (1998), *Endogenous Growth Theory* Cambridge: MIT Press.
- Blankenau, W. and N. Simpson (2004). Public education expenditures and growth. *Journal of Development Economics* 73, pp. 583-605.
- Bravo-Ortega, C. and J. De Gregorio (2005). The Relative Richness of the Poor? Natural Resources, Human Capital, and Economic Growth. World Bank Policy Research Working Paper No. 3484.
- Bretschger, L. and S. Smulders (2006). Sustainable Resource Use and Economic Dynamics, *Environmental and Resource Economics* 36 (1), pp. 1-13.
- Barro, Robert J. and Xavier Sala-i- Martin (1995), *"Economic Growth"*, McGraw-Hill, Inc., Singapore

6. Solow-Romer Model

(5 lectures)

- Background and description – General - Research sector - Manufacture of capital goods - Production of final output - Market structures, prices and wages – Consumption - The dynamic system - Condensation of the model equations - The steady-state - Phase-space of the Solow-Romer system - Dynamic response to economic shocks - Increase in the savings rate(s) - Increase in the productivity of researchers - Increase in the savings rate(s) - Rise in the profit share of income

Suggested Readings

- Philippe Aghion and Peter Howitt (1998), *Endogenous Growth Theory* Cambridge: MIT Press.
- Dynamic Analysis of a 'Solow-Romer' Model of Endogenous Economic Growth Gordon Schmidt, *Centre of Policy Studies, Monash University*

7. Trade and Growth

(5 lectures)

- Interdependence and Growth in the Open Economy - Human Capital and Technology (Nelson-Phelps) - Trade and Technology Diffusion - The Basic Krugman Model - Understanding the Effects of Trade - Trade, Specialization and the World Income Distribution – The Model – Equilibrium – Implications - Growth with Factor Price Equalization

Suggested Readings

- Sebastian Edwards (1997), "Openness, Productivity, and Growth: What Do We Really Know?" NBER
- Jeffrey Frankel and David Romer (1996), "Trade and Growth: An Empirical Investigation," NBER.
- Philippe Aghion and Peter Howitt (1998), *Endogenous Growth Theory* (Cambridge: MIT Press)

8. Some Special and Advanced Issues

(5 lectures)

- Level and Growth Effects of Human Capital - Growth and the Initial per Capita Human Capital Level - Defining convergence; The Convergence Hypotheses and Tests of the Convergence – Hypothesis - Human Capital in an Aggregate Production Function - Human Capital, Resource Constraints and Intergenerational Fairness - Growth, Fairness and Social Discounting

Suggested Readings

- Rebelo, S. (1991). Long-Run Policy Analysis and Long-Run Growth. *Journal of Political Economy*, 99 (3), 500-521.
- Romer, P. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94 (5), 1002-10037, 16.
- Romer, P. (1990). Endogenous Technological Change. *Journal of Political Economy* 98, (5), part 2, S71-106.
- Segerstrom. P. (1998). Endogenous Growth without Scale Effects. *American Economic Review*, 88 (5), 1290-1310.
- Barro, Robert, "Economic Growth in a Cross Section of Countries," *Quarterly Journal of Economics*, May 1991.
- Baumol, William, and Edward Wolff, "productivity growth, Convergence, and Welfare: A Reply," *American Economic Review*, December 1988.
- Benhabib, Jess, and Boyan Jovanovic, "Growth Accounting and Externalities," *American Economic Review*, March 1991.
- Barro, R. J. and X. Sala-i-Martin. 1996. Convergence. *Journal of Political Economy*, 100, 223-251.
- Romer, P. M. 1986. Increasing returns and long run growth. *Journal of Political Economy* 94, 1002- 1037.

COMPULSORY PAPERS
COMPUTER APPLICATIONS AND PROJECT (ECN 402)

Full Marks: 50

This paper is basically a Project paper, which aims to enhance the academic understanding of the students and provide them a ground-level experience of socioeconomic conditions in the hinterland of the university. It will also equip the students with computational capabilities and provide training on Computer Applications in Social Sciences. The paper will consist of training on Computer Applications in the laboratory, a Socio-economic Survey, writing of a Survey Report and Viva-voce. **This paper also contains the Social Outreach component of the syllabus where the reports of the students are shared with local administration for evaluation of government programs and policy suggestions.** The distribution shall be as follows:

Assignments on Computer Applications –	10marks	1 credit
Practical on Computer Applications –	10marks	1 credit
Socio-economic Survey & Report Writing –	10marks	1 credit
Presentation of Report (Social Outreach component) –	10marks	1 credit
Viva-Voce –	10marks	1 credit

The paper will be evaluated internally except the viva-voce part which will have a panel of examiners including external member.

The part on Computer Applications shall consist of the following:

1. Overview of Computer Operating Systems – DOS & WINDOWS
2. Overview of Programming
3. MS Office Applications – Word, Excel, Power Point.
4. Computer Application Packages
 - (A) Database handling with FOXPRO, MS-ACCESS
 - (B) Econometric Software - SPSS, EVIEWS, STATA, LIMDEP, STATISTICA, SHAZAM (Any Three)
5. Economic Applications
 - (A) Linear Estimations
 - (B) Maximum Likelihood Estimation
 - (C) Qualitative Variables
 - (D) Time series analysis – AR, MA, ARMA. and ARIMA.
 - (E) Principal Component Analysis
 - (F) Forecasting and Simulations
 - (G) Pictorial Presentations
6. Report Writing and Presentations

COMPULSORY PAPERS

PUBLIC ECONOMICS (ECN 403)

Full Marks: 50

Lecture Hours: 70

- 1. Foundations (6 lectures)**
 - Role of Government Economic Activity – Allocation, Distribution and Stabilization functions.
- 2. Public Policy (20 lectures)**
 - Private, Public and Merit Goods; Non-Exclusion Principle.
 - Public Budget – Kinds of Budget; Zero Based Budgeting; Concepts of Budget Deficit; Budget in India.
 - Public Debt as consequence and instrument of Fiscal Policy; Budget Deficit and Public Debt; Government Debt Management; Types of Public Debt – Internal and External; Public Debt as Deferred Taxation; Burden of Public Debt;
- 3. Taxation (12 lectures)**
 - Incidence of Taxation; Theory of Optimum Taxation; Income Tax and Commodity Tax; Elasticity & Buoyancy; Taxable Capacity; Tax Evasion; Efficiency Loss of Taxation
- 4. Fiscal Policy (12 lectures)**
 - Fiscal Policy as part of Macro Policy; Objectives of Fiscal Policy; Constituents of Fiscal Policy; Automatic Fiscal Policy Changes; Discretionary Fiscal Policy Changes; Instruments of Fiscal Policy Changes; Effectiveness of Fiscal Policy; Fiscal Policy in Developing Countries
- 5. Fiscal Federalism (20 lectures)**
 - Fundamental Issue of Fiscal Federalism; Why have a Federal Structure – Stigler; Oates – Decentralisation Theorem; Theory of Clubs; Dynamics of Jurisdiction Formation; Optimal Federalism and Redistribution; Role of Grants-in-Aid.
 - Fiscal Federalism in India

References

- Joseph E. Stiglitz, Economics of the Public Sector, W.W. Norton & Company, 3rd edition, 2000.
- R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition, 1989.
- John Cullis and Philip Jones, Public Finance and Public Choice, Oxford University Press, 1st edition, 1998.
- Harvey Rosen, Public Finance, McGraw Hill Publications, 7th edition, 2005.
- Mahesh Purohit, Value Added Tax: Experiences of India and Other Countries, 2007.
- Kaushik Basu and A. Maertens (ed.), The Oxford Companion to Economics in India, Oxford University Press, 2007.
- M.M. Sury, Government Budgeting in India, 1990.
- M. Govinda Rao, Changing Contours of Federal Fiscal Arrangements in India, Amaresh Bagchi (ed.), Readings in Public Finance, Oxford University Press, 2005.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

FINANCIAL ECONOMICS – I (ECN 404A)

Full Marks: 50

Lecture Hours: 70

- 1. International Financial Market: (20 Lectures)**
IMF ; IBRD ; IDA ; ADB ; IFC ; Euro Currency Market – Functions, Instruments , Rates ; Euro Issues ; Features and Innovations in the International Bond Market ; Global Depository Receipts and American Depository Receipts. Models of Financial Crisis & Debt Crisis.
- 2. Foreign Exchange Risk Management: (10 Lectures)**
Meaning and Types of Foreign Exchange Exposure – Translation Exposure, Transaction Exposure, Economic Exposure, Operating Exposure ; Management of Foreign Exchange Exposure – Internal Techniques, Netting, Marketing, Leading and Lagging, Pricing Policy, Asset and Liability Management and External Techniques.
- 3. Fixed Income securities: (10 Lectures)**
Types, Interest rate and Bonds, Bond Returns, Arbitrage-Enforced Valuation of Bonds.
- 4. Bond Pricing: (15 Lectures)**
Yield to maturity, Duration- definition and calculation, modified duration, properties of duration. Foreign currency denominated bonds.
- 5. Mutual Funds and Performance Evaluation : (15 Lectures)**
Closed-End and Open-End Funds, Mutual Fund Objectives, Calculating Fund Returns, Risk-Adjusted Performance – Comparison of Performance Measures (Sharpe, Treynor, Jensen, Fama).

References :

1. Ross, Westerfield and Jordan: Fundamentals of Corporate Finance, Tata McGraw Hill.
2. Elton and Gruber: Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.
3. Bodie, Kane, Marcus and Mohanty: Investments, Tata McGraw Hill.
4. Fuller and Farrel (Jr.): Modern Investments and Security Analysis, McGraw Hill Book Company.
5. R.M. Kishore: Financial Management, Taxmann Allied Services.
6. Fischer and Jordan: Security Analysis and Portfolio Management, Prentice-Hall of India Pvt.Ltd.
7. A. Damodaran : Valuation, John Wiley and Sons

8. M.Avellaneda: Quantitative Analysis in Financial Markets, Vol. I, Vol. II and Vol. III, World Scientific.
9. Olivier de La Grandville: Bond Pricing and Portfolio Analysis, Prentice-Hall of India Private Limited.
10. A.O. Krueger: Exchange Rate Determination, Cambridge University Press, 1983.
11. B. Tew: Evolution of International Monetary System, Wiley: New York, 1995.
12. P.R. Joshi: Global Capital Markets, Tata-McGraw Hill: New Delhi, 1996.
13. David F. DeRosa: Managing Foreign Exchange Risk, Probus : Chicago, 1991.
14. V. Sharan: International Financial Management, Prentice-Hall of India: New Delhi, 2003.
15. Giancarlo Gandolfo: International Finance and Open-Economy Macroeconomics. Springer, 2002.
16. J.C. Hull: Options, Futures & Other Derivatives, Prentice-Hall of India: New Delhi, 2002.
17. R. W. Kolb: Futures, Options and Swap. Blackwell, 2003.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

FINANCIAL ECONOMICS – II (ECN 405A)

Full Marks: 50

Lecture Hours: 70

- 1. Financial Derivatives – An Overview: (10 Lectures)**
Meaning; Types; Uses; Historical Background of their Development; Features; Trading Mechanism.
- 2. Futures: (15 Lectures)**
Terminology; Margin Accounting System; Pricing – Without Dividend and with Dividend ; Strategies – Static and Dynamic Hedging ; Speculation in Futures Market.
Indian Commodity Future market & trading.
- 3. Options: (15 Lectures)**
Terminology; Option Pay-off; Pricing and Put-Call Parity; Option Strategies – Strangle, Straddle, Spreads, Butterfly. Option Pricing: replicating portfolio, Binomial tree, Black-Scholes formula, Greeks and Volatility.
- 4. Swaps: (15 Lectures)**
Interest Rate Swaps – Meaning & Valuation; Currency Swaps – Meaning & Valuation; Other Types of Swap and Swaption.
- 5. Behavioural finance: (15 Lectures)**
Academic Finance vs. Behavioural Finance, Features of Behavioural Finance, Behavioural Finance and stock market efficiency.

References

1. V. Sharan: International Financial Management, Prentice-Hall of India: New Delhi, 2003.
2. J.C. Hull: Options, Futures & Other Derivatives, Prentice-Hall of India: New Delhi, 2002.
3. K. Cuthbertson and D. Nitzsche: Financial Engineering – Derivatives and Risk Management, John Wiley and Sons Ltd. New York, 2001.
4. J. Cvitanic and F. Zapatero: Introduction to the Economics and Mathematics of Financial Markets; Prentice Hall of India: New Delhi, 2005.
5. J.Y. Campbell, A.W. Lo and A.C. Mackinlay: The Econometrics of Financial Markets, Princeton University Press: New Jersey, 1997.
6. R. W. Kolb: Futures, Options and Swap. Blackwell, 2003.
7. A. Damodaran : Valuation, John Wiley and Sons
8. M. Avellaneda: Quantitative Analysis in Financial Markets, Vol. I, Vol. II and Vol. III, World Scientific.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ECONOMICS OF RESOURCE, ENVIRONMENT AND ENERGY – I (ECN 404B)

Full Marks: 50

Lecture Hours: 70

Economics of Resource

- 1. Dynamic model of fishery** (Lecture Hours 10)
 - Geometric exposition , derivation of catch locus, Mathematical derivation(through use of control theory) of optimum stock, optimum effort, optimum yield, optimum net present value of profit, open access condition

- 2. Common pool resources** (Lecture Hours 10)
 - Tragedy of the commons, nature of dependence on common pool resources- empirical studies

- 3. Optimum extraction of exhaustible resources** (Lecture Hours 10)
 - General model, imperfect competition, exploration and externality, non convexity, efficiency and equilibrium in exhaustible resource depletion

- 4. Uncertainty, irreversibility and option value** (Lecture Hours 10)

- 5. Natural resource scarcity** (Lecture Hours 10)
 - Malthusian and Ricardian scarcity, physical measures and economic measures, resource scarcity mitigation , recycling and substitution

- 6. Environmental Accounting:** (Lecture Hours 10)
 - Basic Theory. A Dynamic Optimization Model on National Income, Hawtrick’s rule and sustainable income. Environmentally adjusted national product and sustainable resource management-illustrations with various types of non-renewable and renewable resources.

- 7. Regulation** (Lecture Hours 10)
 - Regulation under Imperfect Market and Transaction Cost: Issues of efficiency in water transfer.

References:

1. N. Hanley, J. Shogren and B. White : **Environmental Economics in Theory and Practice, Macmillan.**
2. J.M. Conrad : **Resource Economics, Cambridge University Press.**
3. Phillip Neter : **Natural Resource Economics.**
4. Anthony Fisher : **Environmental and Resource Economics, Edward Elgar**
5. Kanchan Chopra, Purnamita Dasgupta “**Natural Resource Dependence on Common Pool Resources : An Empirical Study EPW Feb 23-29, 2008.**
6. D. Browley (Ed.) **The Handbook of Environmental Economics, Blacked**

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

ECONOMICS OF RESOURCE, ENVIRONMENT AND ENERGY – II (ECN 405B)

Full Marks: 50

Lecture Hours: 70

Economics of Energy & Environment

Group A

Energy Economics

- 1. Introduction** (4 Lectures)
 - Why Energy?
 - Classification of Energy by Sources and Use
 - Integrated National Energy Planning
 - Energy Flows in the Economy - Basic Concepts, Problems of Measurements, Usual Conventions
 - Energy Data & Features of Energy Statistics;
- 2. Energy-Macroeconomic Linkages** (5 Lectures)
 - Energy and Growth
 - Energy Intensity of GDP
 - Recent Changes in Energy Intensity
 - Macroeconomic Impact of Energy Price Changes
 - Forward & Backward Linkages
- 3. Energy-Economic Modelling** (8 Lectures)
 - Aggregation and Disaggregation Problems
 - The Aggregation Problem - Thermal and Economic Approaches to Aggregation
 - The Disaggregation Problem – Data Availability
 - Network Model - Reference Energy Systems (RES)
- 4. Energy Demand Forecasting** (16 Lectures)
 - Energy Accounting Framework
 - Overall Energy Balance: Structure, Format and Conventions
 - Alternative Approaches for Energy Accounting
 - Methods of Energy Demand Analysis
 - Sectoral Demand Analysis
 - Baseline Analysis
 - Trend Analysis
 - Process Modelling
 - Econometric Energy Demand Modelling

References

- 1. M. Munasinghe and P. Meier: Energy Policy Analysis and Modelling, Cambridge University Press, 1993.**
- 2. R. S. Pindyck and D. L. Rubinfeld: Econometric Models and Economic Forecasts, 4th Edition, McGraw-Hill, New York, 1998.**
- 3. J. B. Taylor: Principles of Macroeconomics, 3rd Edition, Houghton Mifflin, Boston, 2001.**
- 4. M. S. Bazaraa and J. J. Jarvis: Linear Programming and Network Flows, John Wiley and Sons, N. Y., 1990.**

5. R. Miller and P. D. Blair: Input-Output Analysis: Foundations and Extensions, Prentice-Hall, N.J, 1985.
6. John P. Weyant (ed.), Energy and Environmental Policy Modeling, Kluwer Academic Publishers, Boston, 1999.
7. IEA: World Energy Outlook: International Energy Organization, Paris, 2002.
8. Energy Economics
9. Energy Journal
10. Lecture Notes and Hand-outs

Group B
Environmental Economics

1. **Global Issues and the Environment** (6 Lectures)
 - Trade, Development and Environment – The Capital Flight Hypothesis,
 - The Pollution Haven Hypothesis – Ecological Dumping
 - International/ Interregional Cooperation – The Issue of Trans-boundary pollution.

2. **Environmental Valuation and Impact Assessment** (10 Lectures)
 - Environmental Valuation and Cost-benefit Analysis
 - Revealed preference Approach (Household Production Function, Travel cost, Hedonic Price, Statistical value of life);
 - Stated Preference Approach (Contingent Valuation Method)
 - Environmental Impact Assessment: A Case Study

3. **Climate Change** (20 lectures)
 - Economics of Climate Change
 - Climate Change Policies
 - Scientific Evidences
 - Impact of Climate Change
 - Adaptation
 - Mitigation
 - Cost & Burden Sharing

References

- Banerjee (2001): Economic Valuation of Environmental Benefits/ Costs in Bhattacharyya (ed.) *Environmental Economics: Indian Perspective*, OUP.
- Baumol & Oates (1988): Theory of Environmental Policy (2/e), Chs 3,4,11 12.
- Bhattacharyya, R.N. (2001)(ed.) *Environmental Economics: Indian Perspective*, OUP.
- Chakraborty (2001): Global Environmental Issues and Initiatives in Bhattacharyya (ed.) op.cit.
- Chattopadhyay (2006): Dirtier Trade for India? The Story of Globalization in *Arthaniti*
- Chichilinsky (1994): North-South Trade and the Global Environment, *AER*.
- Forest Reinhardt and Patia McGrath. 2002. “Global Climate Change After Marrakech (A)”, *Harvard Business School Case 9-702-075*.
- Gerking & Stanley (1986): An Economic Analysis of Air Pollution and Health: The Case of St. Louis. *REStat*.

- Harrington & Portney(1987): Valuing the Benefits of Health and Safety Regulations, *J. of Urban Economics*.
- India Development Report – Recent Issues
- IPCC Reports
- K.G. Maler (2000): International Environmental Problems in Kolstad (ed): *Environmental Economics*, OUP
- Markandya & Murty (2001): Measuring Non-user Benefit from Cleaning ganges in *Cleaning up the Ganges: a Cost-benefit Analysis of the Ganga Action Plan*, OUP.
- Metz, Bert (2010) *Controlling Climate Change*, CUP
- Murty, *et al* (2005): Measuring benefits from reduced air pollution in the cities of Delhi and Kolkata in India using hedonic property prices model in Bhattacharyya & Mitra (ed.) *Studies in Macroeconomics and Welfare*, Academic Press.
- P. Newman and J. Kenworthy. 1988. “The transport energy trade-off: Fuel efficient traffic versus fuel efficient cities,” *Transportation Research Part A: General*, 22(3): 163-174.
- Parikh, et. al (2005): Economic Valuation of Air Q uality Degradation in Chembur, Mumbai in Bhattacharyya & Mitra (ed.) *Studies in Macroeconomics and Welfare*, Academic Press.
- Parry (1997): Reducing Carbon Emissions: Interactions with the Tax System, Resources
- Parry, Ian W H and Kenneth A. Small. 2005. “Does Britain or the United States Have the Right Gasoline Tax?” *American Economic Review*, 95(4): 1276-1289.
- Sanyal (2001): International Trade and the Environment in Bhattacharyya (ed.) op. cit.
- Scott Barrett (1999): Montreal Versus Kyoto.
- Stern, Nicolas (2007) *The Economics of Climate Change: The Stern Review*, CUP
- The Hindu Survey on Environment – Recent Issue
- Thomas Tietenberg. *Environmental and Natural Resource Economics*, seventh edition, (Boston, MA: Addison Wesley, 2006). Chapter 18
- Warick McKibbin and Peter Wilcoxon. 2002. “The Role of Economics in Climate Change Policy,” *Journal of Economic Perspectives*, Winter. 16(2): 107-129.

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

RURAL DEVELOPMENT – I (ECN 404C)

Full Marks: 50

Lecture Hours: 70

- 1. Rural Development - Background & Concept (10 Lectures)**
Rural Urban Disparity, Rural Poverty and Inequality
Concepts of Rural Area and Rural Development -Definition and Scope of Rural Development, Causes of Rural Backwardness; Need for Rural Development, Historical Evolution of the Concept of Rural Development in Indian Context
- 2. Rural Development Theories (10 Lectures)**
Rural development and social change , Concept of Social Change Theories and Factors of Social Change: Cyclical Theories , Linear Theories Conflict
- 3. Rural Development Policies – (15 Lectures)**
Approaches to Rural Development in India: Broad Front Approach, Sectoral Approach, Participatory Approach, Area Approach, Target Group Approach and Integrated Approach, Decentralized Planning, Panchayat Raj Institutions:Evolution Structure Functions 73rd Amendment Role of PRIs in Rural Development. Town and Village Enterprise (TVE)
- 4. Farm-Non-farm Linkages and Diversification of Rural Economy (10 Lectures)**
Concept of Rural Industrialization - Importance of Rural Industrialization for Rural Development - Policies and Programmes for the Development of Rural Industries - Concept, Characteristics and Types of Entrepreneurship Entrepreneurship and Rural Industrialization Development of Rural Entrepreneurship in India.
- 5. Infrastructure and Rural Development (15 Lectures)**
Roads, Irrigation, Water, Energy -Non Conventional Energy Sources Biogas, Solar and Wind, Health, Education Infrastructure
- 6. Climate Change and Rural Economy (10 Lectures)**
Impact of Climate Change on Crop Productivity
Impact on Rural Livelihood

References

- | | |
|---------------------|--|
| Misra & Sharma: | Problems and Prospects of Rural Development |
| Venkata Reddy K: | Rural Development In India Poverty and Development |
| Yasant Desai | A Study of Rural Economy |
| Nanavati & Anjalina | The Indian Rural Problems |
| Sharma & Malhotra | Integrated Rural Development |
| Battacharya S.N. | Rural Industrialization in India |
| Bepon Behari | Rural Industrialization in India |

Rao R.V.	Rural Industrialization in India
Bagli V	Khadi and Village Industries in the Indian Economy
Kripalani J.B.	Gandhian Thought
Vasant Desai	Organization and Management of Small Scale Industries
Vasant Desai	Problems and Prospects of Small Scale Industries in India
N.I.R.D.	Rural Development in India - Some Facets
Wilbert E. Moore	Social Change
Sreenivas M. N.	Social Change in Modern India
Sreenivas M. N. & S. Seshaiahs	Dimensions of Social Change in India
V. S. Parthasarathi	

DEPARTMENTAL MAJOR ELECTIVE PAPERS (Optional Papers)

RURAL DEVELOPMENT – II (ECN 405C)

Full Marks: 50

Lecture Hours: 70

- 1. Government Intervention and Rural Development (15 Lectures)**
- 2. Role of Micro Finance in Rural Development (15 Lectures)**
Micro Finance Sustainable Community Banking Empowerment of Poor and Marginalized, especially women Problems faced by Intervening Agencies
- 3. Role of Co-operative and SHG/ Community organisations (20 Lectures)**
Self-help, Selfhelp groups and Selfhelp promotion: Concepts, Elements, Stages , Savings Operations of SHGs Credit Operations of SHGs
Cooperative Institutions: Concept and Principles of Cooperation Types and Working of Rural Cooperatives: Credit Cooperatives Marketing Cooperatives Dairy Cooperatives Sugar Cooperatives Weavers Cooperatives
Community Based Organizations: Watershed Committes Village Forest Committes Water User Associations Village Education Committes Mothers Committes Role of CBOs in Sustainable Rural Development
- 4. Indian Experience in Rural Development (20 Lectures)**
IRDP, SGSY, EGS, MGNREGA, NRHM, ICDS, PURA, PMGSY, FOOD SECURITY ACT, DIRECT BENEFIT TRANSFER

References

- Vasant Desai: A Study of Rural Economy
Jain S.C. : Rural Development
Das Kumar B: Rural Development through Decentralization
Venkata Reddy K: Rural Development in India - Poverty and Development
Khanna B.S.: Rural Development in South Asia: Policies, Programmes and Orgnizations
Robert Chambers: Rural Development - Putting the Last First
Socio-Economic Surveys of Three Villages in Andhra Pradesh: A Study of Agrarian Relations Edited by V. K. Ramachandran, Vikas Rawal and Madhura Swaminathan
New Delhi: Tulika Books. 2010. ISBN
Yunus M: Rural Agricultural Credit Operations in Bangladesh
Susan Johnson and Ben Rogally : Micro Finance
Raja Sekhar D Savings and Credit Systems of the Poor; Some NGO Experiences, NOVIB and HIVOS
James Copestke NGO Sponsering of Group Lending in Rural India: Theory and a Case Study

SYLLABUS FOR MINOR
ELECTIVES FOR
EXTRA DEPARTMENTAL
STUDENTS

[For 2015-16 academic session only ECN 393 and ECN 394 shall be offered on First Come First Served Basis. Maximum 50 students shall be accommodated in any paper. Paper will be taught only if at least 15 students opt for it]

Minor Electives for Extra-departmental Students

[These papers are not offered to students from Economics department]

3rd Semester

ENVIRONMENT & ECONOMY (ECN 391)

Full Marks: 50

Lecture Hours: 40

4 credits (L4 + P0 + T0)

- 1. Basic Concepts: (10 Lectures)**
 - Environmental asset as public good; Concept of externality and market failure; Pollution as negative externality; Optimal pollution; Carbon Tax; Tradable pollution permits; Advantage of TPPs.
- 2. Sustainable Development: (10 Lectures)**
 - Context and the concept – Difference between growth, Economic Development and sustainable development – Values and measures of S.D.
- 3. Environment and Development (10 Lectures)**
 - Tradeoff between development and environment, Environmental Kuznets' Curve- Concept and Genesis. Explanations of the inverse U shape, Empirical evidence, the Indian experience.
- 4. Environmental Pollution (10 Lectures)**
 - Forms of pollution; Cost of pollution; Sources and causes and consequences of Pollution; Pollution control; Greenhouse gases and global warming

References:

1. N. Hanley, J. Shogren and B. White : Environmental Economics in Theory and Practice, Macmillan.
2. R.N. Bhattacharyya (Ed.) : Environmental Economics, OUP

3rd Semester

DEMOGRAPHY (ECN 392)

Full Marks: 50

Lecture Hours: 40

4 credits (L4 + P0 + T0)

- 1. Basic Concepts and Indicators (6 Lectures)**
 - Vital Rates – Fertility, Mortality, Age Pyramids, and Life Tables
- 2. Human Resource and Development (8 Lectures)**
 - From Development to Population; Theory of Demographic Transition; Historical Trends; Adjustment of Birth and Death Rates; Household Choice Models
 - From Population to Development; Malthusian View; Growth Impact; Population and Environment; Population and Innovation; Markets and Inputs.
- 3. Population Projection (6 Lectures)**
 - National Projection of Total Population and Age-Sex composition – Mathematical Methods and Cohort-Component Methods; Methods of National & Sub-National Projection of Population; Projection of the Economically Active Population
 - Concepts of Stable, Stationary, and Quasi-Stationary Population
- 4. Trends in Population and Population Policy in India (10 Lectures)**
 - Major demographic features of India's population – Spatial, Age, Sex, Occupational Structure of Indian Population; Birth rate, Death rate, Life Expectancy & Infant Mortality; Trends & Patterns;
 - Evaluation of family welfare programmes in India - National Population Policies - Manpower Planning in India.
 - Migration in India – Concepts, Determinants and Consequences; Measures of Internal Migration;
 - Urbanization in India – Components of Urban Population Growth; Forces of Urbanization in the Developed and Developing Countries and the Over-Urbanization Phenomenon

5. Aging and Demographic Change

(10 Lectures)

- Aging Process
- Ageing around the world
- The impact of demographic changes
- The changing balance of age groups
- Social, Economic, and Demographic Changes among the Elderly
- *Dependency ratio, Generational accounting and Pensions crisis*

READING LIST

Ray, Debraj - Development Economics

Bogue, D.J. (1971), *Principles of Demography*, John Wiley, New York.

Bose, A. (1996), *India's Basic Demographic Statistics*, B.R. Publishing Corporation, New Delhi

Chiang Choubey, P.K. (2000), *Population Policy in India*, Kanishka Publications, New Delhi.

Coale, A. J. and E. M. Hoover, *Population Growth and Economic Development in Low Income Countries*, Oxford University Press.

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Malthus, Thomas (1798), *An Essay on the Principle of Population* (first edition), Chapters 1-2.

Novell, C. (1988), *Methods and Models in Demography*, Bellhaven Press, London.

Pathak, J.B and F. Ram: *Techniques of Demographic Analysis*, Himalaya Publishing House

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Saxena, P. C. and Talwar P. P. (Eds.), *Recent Advances in the Techniques of Demographic Analysis*, Himalayan Publishers, Bombay, 1988.

Shryock, H., *The Methods and Materials of Demography*.

Sinha, V.C and E. Zacharia : *Elements of Demography*

Srinivasan, K. and A. Shariff (1998), *India: Towards Population and Demographic Goals*, Oxford University Press, New Delhi

Srinivasan, K., *Basic Demographic Techniques and Applications*, Sage Publications, New Delhi, 1992.

United Nations Publications, *The Determinants and Consequences of population Trends* (Series No.50)

Weil, David N., "The Economics of Population Aging" in Mark R. Rosenzweig and Oded Stark, eds., *Handbook of Population and Family Economics*, New York: Elsevier, 1997, 967-1014.

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3rd Semester

BASIC ECONOMETRICS (ECN 393)

Full Marks: 50

Lecture Hours: 40

4 credits (L4 + P0 + T0)

1. **Basics of Econometrics:** (05 Lectures)
Concept - Types – theoretical and applied econometrics- importance and role of econometrics in economics- Classical Methodology of Econometrics.
2. **The Classical Linear Regression Model (Two variable case)** (10 Lectures)
The Classical Ordinary Least Square Method (CLSM) – Axioms – estimation of parameters in two variable case – Properties of least-square estimators – testing of regression coefficients – The Gauss-Markov Theorem – Blue – Goodness of Fit- the Coefficient of determination R² – Numerical Problems.
3. **The Classical Linear Regression Model (Three variable case)** (10 Lectures)
The Classical Ordinary Least Square Method (CLSM) – estimation of parameters with two independent variables
4. **Violation of the Axioms of CLSM (Three variable case)** (15 Lectures)
 - A. **Multicollinearity**
Concepts and definition – sources – consequences – remedial measures
 - B. **Heteroscedasticity**
Concepts and definition – sources – consequences – remedial measures
 - C. **Autocorrelation**
Concepts and definition – sources – consequences – remedial measures

References

- Dominick Salvatore (2001): Schaum's Outline of Statistics and Econometrics, McGraw-Hill.
Gujarati D. Basic Econometrics, 4th ed, Mc Graw Hill, New Delhi.
Peter Kennedy (2004): A Guide to Econometrics, Blackwell Publishers.
[G. S. Maddala](#) (2001) : Introduction to Econometrics, Wiley

3rd Semester

INDIAN ECONOMY (ECN 394)

Full Marks: 50

Lecture Hours: 40

4 credits (L4 + P0 + T0)

- 1. Planning: (6 Lectures)**
 - Indication planning Vs Imperative planning overview of strategy of India's development plans. Objectives of recent plans, financing the plans, center-State financial relations.
- 2. Agricultural Sector: (6 Lectures)**
 - Trends in Agricultural production and productivity, Issues in Indian agricultural policy, agricultural price policy, agricultural taxation, Food Security, Public distribution system in India, Agriculture and W.T.O.
- 3. Industrial Sector: (6 Lectures)**
 - Trends in Industrial production and productivity, Role of small-scale industries in Economic development, Development of entrepreneurship in India.
- 4. Structural Changes: (5 Lectures)**
 - Occupational structure and economic development – growing importance of the tertiary sector, an analysis of trends since 1951
- 5. Poverty and Inequality in India (5 Lectures)**
 - Poverty and Inequality trends in India
- 6. Globalization and Indian Economy (6 Lectures)**
 - Trends liberalization and its impact
 - FDI inflow
 - Price locality
- 7. Inclusive Growth (6 Lectures)**
 - Concept and Ideas – Its Relevance
 - "Inclusive Growth: Measurement and Determinants"
 - . "Inclusive growth analytics: Framework and application

References

- Bawa, R.S. and P.S. Raikhy (Ed.) (1997) Structural Changes in Indian Economy, Guru Nanak Dev University Press, Amritsar
- Brahmananda, P.R. and V.R. Panchmukhi (Eds.) (2001), Development Experience in the Indian Economy Inter State Perspectives, Bookwell, Delhi.
- Byres, T.J. (Ed.) (1998) The Indian Economy Major Debates Since Independence Oxford University Press, New Delhi.
- Chakravarty, S. (1987) Development Planning; The Indian Experience, Oxford University Press, New Delhi.
- Dutt, R and KPS Sundaram – Indian Economics (Latest Edition)
- Misra and Puri – Indian Economics (Latest Edition)
- Sandesara, J C (1992) Industrial Policy and Planning, 1947-1991 Tendencies, Interpretations and issues, Sage Publications, New Delhi.
- Sen, R.K. and B. Chatterjee (2001) Indian Economy Agenda for 21st Century (Essays in honour of Prof. P.R. Brahmananda), Deep & Deep Publications, New Delhi.
- Kapila, Uma (2014) Indian Economy Since Independence
- Kapila, Uma (2006) India's Economy: A Journey in Time and Space
- Elena Ianchovichina and Susanna Lundstrom, "What is Inclusive Growth?", The World Bank, February 10, 2009.
- George, Justine "Growth and Development. . . . Inclusive Growth: What went wrong with Development?", MPRA 33182, 2011
- Elena Ianchovichina and Susanna Lundstrom, 2009. "Inclusive growth analytics: Framework and application", Policy Research Working Paper Series 4851, The World Bank.