Vidyasagar University

Midnapore-721102, West Bengal

The SYLLABUS for

POST-GRADUATE Programme

in

ECONOMICS

Under Choice Based Credit System (CBCS)

(Semester Programme)



[w.e.f. 2022-23]

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COURSE STRUCTURE OF **M.A./M. Sc.**IN **ECONOMICS**

SEMESTER	COURSE NO.	COURSE TITLES		FULL MARKS	CREDIT
I	ECO 101	ADVANCED MICROECONOMIC THEORY		50	5 (4-1-0)
	ECO 102	ADVANCED MACROECONOMIC THEORY		50	5 (4-1-0)
	ECO 103	QUANTITATIVE ECONOMICS		50	5 (4-1-0)
	ECO 104	INDIAN ECONOMY –I		50	5 (4-1-0)
	ECO 105	INTERNATIONAL ECONOMICS		50	5 (4-1-0)
	TOTAL			250	25
II	ECO 201	STATISTICS AND BASIC ECONOMETRICS		50	5 (4-1-0)
	ECO 202	THEORIES OF ECONOMIC GROWTH		50	5 (4-1-0)
	ECO 203	ENVIRONMENTAL AND RESOURCE ECONOMICS		50	5 (4-1-0)
	C-ECO 204	FUNDAMENTALS OF ECONOMIC THEORY (CBCS)		50	4 (3-1-0)
	ECO 205	FINANCIAL ANALYSIS		50	5 (4-1-0)
	TOTAL			250	24
III	ECO 301	ECO 301A	ECONOMETRICS-I	50	5 (4-1-0)
		ECO 301B	AGRICULTURAL ECONOMICS-I		
	ECO 302	ECO 302A	ECONOMETRICS-II	50	5 (4-1-0)
		ECO 302B	AGRICULTURAL ECONOMICS-II		
	ECO 303	ECO 303A	ECONOMETRICS-III	50	5 (4-1-0)
		ECO 303B	AGRICULTURAL ECONOMICS-III		
	ECO 304	CONTEMPORARY ISSUES OF INDIAN ECONOMICS (CBCS)		50	4 (3-1-0)
	ECO 305	ECO 305A	ECONOMETRICS-IV	50	5 (4-1-0)
		ECO 305B	AGRICULTURAL ECONOMICS-IV		
	TOTAL			250	24
IV	ECO 401 (Optional)	GENDER STUDIES AND HUMAN DEVELOPMENT	DATA ANALYTICS (THEORY + PRACTICAL)	50	5 (2-1-4)
	ECO 492	COMPUTER APPLICATION IN ECONOMICS (PRACTICAL)		50	5 (0-0-10)
	ECO 403	DEVELOPMENT ECONOMICS: THEORY AND EXPERIENCES		50	5 (4-1-0)
	ECO 404	INDIAN ECONOMY –II		50	5 (4-1-0)
	ECO 405	DISSERTATION/ FIELD STUDY/ INTERNSHIP		50	5 (0-0-10)
	TOTAL			250	25
	GRAND TOTAL			1000	98

Full Marks, 50 = END SEMESTER EXAMINATION (40) + INTERNAL ASSESSMENT (10)

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Distinctive features of course content:

- **Employability / entrepreneurship/ skill development :** ECO103, ECO201, ECO205, ECO301A, ECO302A, ECO303A, ECO303B, ECO305A, ECO305B, ECO401, ECO492, ECO405
- **Digital content:** ECO401, ECO492, ECO201, ECO205, ECO301A, ECO302A, ECO303A, ECO305A
- Ethics, gender, human values, environment & sustainability: ECO202, ECO203, ECO401, ECO404
- New course introduced: ECO401

Post-Graduate Syllabus in Economics, 2022- 23, Papers, Total Marks: 1000
Total No. of Papers – 20 with each paper of Full Marks 50. Each Semester contains 5 papers. Except for papers ECO-401, ECO-402 and – ECO-405, each paper of 50 marks includes 10 marks of Internal Assessment. Except for papers ECO-401, ECO-402 and – ECO-405, each paper consists of two groups of 25 marks including an internal assessment of 5 marks for each group. There are no internal assessments for papers ECO-401 and ECO-405

Distribution of Marks:
All papers (Except Paper – ECO-401, ECO-402 and ECO-405):

Group A (25 Marks): 2 Marks *2 Questions (out of 4) + 6 Marks*1 Question (Out of 2) + 10 Marks*1 (Out of 2) + Internal Assessment – 5 marks

Group B (25 Marks): 2 Marks *2 Questions (out of 4) + 6 Marks*1 Question (Out of 2) + 10 Marks*1 (Out of 2) + Internal Assessment – 5 marks

Papers – ECO-401 and ECO-405:

Paper – ECO-401: Optional Paper: 50: Students need to opt any one paper out of two papers.
Group A (25 Marks): 2 Marks *2 Questions (out of 4) + 6 Marks*1 Question (Out of 2) + 10 Marks*1 (Out of 2) + Internal Assessment – 5 marks

Group B (25 Marks): 2 Marks *2 Questions (out of 4) + 6 Marks*1 Question (Out of 2) + 10 Marks*1 (Out of 2) + Internal Assessment – 5 marks

Paper- ECO-402: Computer Application in Economics: 50 Marks Practical

Paper – ECO-405: Dissertation/ Field Survey/ Internship: 50 (Paper -30 Marks, Viva Voce – 20 Marks)

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Programme Outcome

After completing the master's degree in economics from the Department of Economics with Rural Development, Vidyasagar University, the students are expected to have comprehensive knowledge of modern theories of economics as an academic discipline. They are also expected to analyse economic problems of different countries or regions, acquire skills for data analysis and data interpretation using statistical methods, evaluate economic and public policies using appropriate models, and exchange economic ideas. The programme will help students pursue higher studies in the subject or related disciplines. The programme is also expected to improve the analytical and argumentative skills of the students that are crucial for winning jobs in the present-day job market.

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SEMESTER -I

Course No: ECO 101: Advanced Microeconomic Theory 50 Marks 5 credits

Course Outcome:

Industrial Organisation provides a foundation for the study of many fields that rely on an understanding of interactions among firms in the economy, including business strategy, corporate finance, marketing, international trade, banking, and the economics of organizations. Upon successful completion of this course, students will be able to explain how to price and non-price competition among firms affect economic welfare, explain how market structure affects behaviour and vice versa, analyse and evaluate models of monopoly, oligopoly and competitive markets, and analyse basic antitrust and regulatory policy issues among others.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1. Role of Economic Organisation in the functioning of Economy and Existence and Nature of Firm
2. A Review of Consumer Behaviour and Choice under Uncertainty
3. Market Economy, Pareto Optimality, General Equilibrium and Partial Equilibrium
4. Analysis of Market Failure: Role of externality
5. The Optimum Firm
6. Financial Decision making of Firm

References:

a) Coase, R. H., The Nature of the Firm, Economica 1937
b) Alchian, A. and Demsetz, H. Production, Information Cost and Economic Organisation, American Economic Review, 1972 c) Arrow, K. J., Limits to Economic Organisation
d) Robinson, E. A. G., Structure of the Competitive Industry
e) Bator, F. M., An Anatomy of Market Failure, Quarterly Journal of Economics 1958
f) Marris, R. L. The Theory of Managerial Capitalism g) Koutsoyiannis, A. Non-Price Decisions, Ch. 8-10

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1. **Market Power:** Static models of Oligopoly, Repeated interaction, The Competitive Limit.
2. **Uncertainty and imperfect information:** Uncertainty, Probabilities and Expected Values, Attitudes towards risk, Insurance and Gambling, Asymmetric Information: The market for lemons. Analysis of Market Failure- Asymmetric information, Moral Hazard.
3. **Adverse Selection, Signaling and Screening:** Informational asymmetries and adverse selection, Signaling, Screening, The Insurance Market and Adverse Selection.
4. **The Principal-Agent Problem:** Hidden Actions (Moral Hazard), Hidden information and Monopolistic screening, Hidden Actions and Hidden Information: Hybrid Models, Subjective probability theory: The Allais paradox and The Ellsberg paradox.

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5. **The Positive Theory of Equilibrium:** Equilibrium: Definition and Basic Equations, Existence of Walrasian Equilibrium, Local Uniqueness and the index Theorem, The Sonnenschein-Mantel-Debreu Theorem.

References:

1. Mas-Colell, A., Whinston, M. D., & Green, J. R. (1995). *Microeconomic theory* (Vol. 1). New York: Oxford university press.
2. Mandala, G. S., & Miller, E. (1989). Microeconomics, Theory and Applications.
3. Varian, H. R. (2016). Grundzüge der Mikroökonomik. In *Grundzüge der Mikroökonomik*. De Gruyter Oldenbourg.
4. Andreu, M. C., Michael, D. W., & Jerry, R. G. (1995). Microeconomic theory.
5. Jehle, G. A. (2001). *Advanced microeconomic theory*. Pearson Education India.
6. Diewert, W. E. (1982). Duality approaches to microeconomic theory. *Handbook of mathematical economics*, *2*, 535-599.

Course No: ECO 102: Advanced Macroeconomic Theory 50 Marks 5 credits

Course Outcome:

As the given course is named Advanced Macroeconomics it presents an in-depth analysis of modern macroeconomic theories including different schools of thought such as new classical, real business cycle and new Keynesian. In specific terms, it explains how income and employment are determined by the structure of rational expectations, technological shocks and sticky wages justified by market imperfections. The course also deals with the disequilibrium macroeconomic models and the origins and practicability of the Phillips curve. The course provides an advanced overview of the field as well as a rigorous analysis of the field's foundations. Students who do not necessarily intend to specialize in macroeconomics are thereby exposed to the most up to date theories, while those students who plan to pursue higher research in macroeconomics are well equipped with the latest techniques and know-how.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1. A Brief overview of evolution of macroeconomic theories
2. New Keynesian and New Classical macro models

a). Sticky Wage and Sticky Price Model (New Keynesian Model)

b). Imperfect Information and Workers' Misperception Model (New Classical model)

3. Overlapping generation Model

a). Decentralized and planned economy

b) Dynamic inefficiency

4. Rational Expectations and Real Business Cycles theories:

a). Lucas Critique and Policy irrelevance

b) Effect of shocks on the real economy

5. Ideas of Keynesian Involuntary Unemployment and Disequilibrium Macroeconomics

a) Disequilibrium model of Clower

b) Disequilibrium model Barro-Grossman

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References:

1. Mankiw, N.G. (1990), "A Quick Refresher Course in Macroeconomics", Journal of Economic Literature, American Economic Association, 28(4), 1645-60, December.

2. Ghosh, C. and Ghosh, A. (20116), Macroeconomics, PHI.

4. R.J. Barro and H.I. Grossman.A General Disequilibrium Model of Income and Employment, American Economic Review, 61, 82-93, 1971.

5. Robert W. Clower. The Keynesian Counter-Revolution: A Theoretical Appraisal, in R. W. Clower, ed., Monetary Theory. London Penguin Books, 1969.

6. Romar, D., *Advanced Macroeconomics*, Mcgraw-hill Economics.

Group B: 25 Marks (Written -20, Internal Assessment -05)

1. Theories of Unemployment: Disequilibrium model of Malinvaud and Benassy and Modern theories of unemployment
2. Phillips Curve and the Natural Rate of Unemployment Hypothesis
3. Adaptive Expectation, Rational Expectation and the Lucas Critique- A Market clearing
4. Model with Rational Expectation
5. Money Demand under Hyperinflation, The Cagan Model
6. Policy irrelevance: Problem of time inconsistency and rule versus discretion: basic issue.
7. Monetary policy under Neo-Classical and New Keynesian Phillips Curve with an application to Price Level and Inflation Targeting.

References:

1. Cagan P. (1956), 'The Monetary Dynamics of Hyperinflation', *Studies in the quantity theory of Money*, edited by Milton Friedman, Chicago, pp. 25-117.
2. Clower, Robert, W. (1969), "The Keynesian Counter-Revolution: A Theoretical
3. Appraisal, in Clower, R. W., ed., *Monetary Theory*, London Penguin Books.
4. Friedman, & Hahn (1990), *Handbook of Monetary Economics, Vols. 1 and 2*, Elsevier, North-Holland.
5. Friedman, B.N. & Michael Woodford (2010), *Handbook of Monetary Economics, Vols.3*, Elsevier, North-Holland
6. Froyen, R.T.: Macroeconomics Theories and Policies, Pearson Education, 7th edition.
7. Mankiw, N.G. (2000), *Macroeconomics*, Fourth Edition, Harvard University Press.
8. Stiglitz, Joseph E. (2011), 'Rethinking of Macro Economics: What Failed, and
9. How to Repair It', Journal of the European Economic Association, August 2011. l) Walsh (1998): Monetary Theory and Policy, MIT Press
10. J.P. Benassy. Macroeconomics: An Introduction to the Non-Walrasian Approach, Academic

Press, New York, 1986.

Course No: ECO 103: Quantitative Economics 50 Marks 5 credits

Course Outcome:

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The course covers some important mathematical techniques that are often encountered in economics. Students will learn quantitative techniques like nonlinear programming, set theory, game theory and dynamic optimisation. These mathematical techniques will equip the students to learn and analyse various economic problems. The course will be helpful to other courses in the programme.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1. Linear Programming
   A. Nature and formulation of Linear Programs
   B. Duality
   C. Economic Applications

2. Nonlinear Programming
   A. Nature of Nonlinear Programming
   B. Kuhn-Tucker Conditions
   C. The Constraint Qualification
   D. Sufficiency Theorems
   E. Economic Applications

3. Real Analysis
   A. Sets and set operations
   B. Functions
   C. Numbers

References:

a) Chiang, A.C.: Fundamental Methods of Mathematical Economics, Third Edition, 2005.

b) Chiang, A.C. and Wainwright, K.: Fundamental Methods of Mathematical Economics, Fourth Edition, McGraw-Hill, 2005.

c) Intrilligator: Mathematical Optimization and Economic Theory, Prentice-Hall, 1971.

d) Henderson, J.M. and Quandt, R.E.: Microeconomic Theory: A Mathematical Approach, 3rd Edition, McGraw-Hill Book Company, 1980.

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1. An Outline of Game Theory:
   A. Introduction to Game Theory
   B. Solving Static and Dynamic Games under perfect and imperfect information
   C. Game Applications
2. Dynamic Optimization:
   A. An introduction to economic dynamics
   B. Simultaneous systems of differential equations, Stability analysis and linear phase diagrams
   C. Introduction to Optimal Control Theory- the maximum principle, Optimisation problems involving discounting.

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References:

a) Gibbon Robert, Game Theory for Applied Economists, Princeton University Press 1992.
b) Gibbon Robert, A primer in Game theory, Harvester Wheatsheaf London 1992.
c) Aliprantis C. D. and S.K. Chakraborty, Games and Decision Making, Oxford University Press
d) Binmore Ken, Game Theory -A Very Short Introduction, OUP,2007.
e) Luce R D and H Raffia, Games and Decisions, John Wiley and Sons, 1957.
f) Myerson R.B., Game Theory – Analysis of Conflict, Harvard Univesity Press, 1991
g) G. Owen, Game Theory, Academic Press 1991.
h) Mas-Colell A., M.D. Whinston and J R Green, Microeconomic Theory, OUP
i) Varian H R, Intermediate Micro Economics, W. W. Norton & Company
j) Eric Rasmusen, Games and Information: an introduction to Game Theory, Blackwell Publishing,2001.
k) Chiang, A.C., Fundamental Methods of Mathematical Economics, McGraw-Hill, 2005.
l) Chiang, A.C., Elements of DynamicOptimisation, McGraw-Hill, 1993.
m) Shone Ronald, Economic Dynamics, Cambridge University Press,1997.
n) Hoy, M., Livernois, J., McKenna, C., Rees, R., &Stengos, T. (2011). *Mathematics for economics*.MIT press.

Course No: ECO 104: Indian Economy –I 50 Marks 5 credits

Course Outcome:

The course is critically analyzing the issues, challenges and opportunities of development experiences of the Indian economy. By this, the students will be able to understand the current economic scenario and their routes in history.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1. Industrial Sector of Indian Economy:-

A. Growth & Diversification, Challenges and Prospects in the wake of Financial Recovery Growth since 2007-08), Major debates and Controversies in the study of Indian Industrial Sector.

B. Understanding the Database of the Indian Industrial Sector (IIP, NAS, ASI, CMIE).

C. Relation between Growth of Industrialization and Employment since1991,

D. Energy Intensity in Indian Industries- Trends over Time- are the industries becoming energy efficient over time?

E. SSI and Globalization.

2. Financial Sector:-Reforms and its impact, Financial Performance of Banks, NBFI, Capital Market, Major Policy Initiatives, Challenges and Outlook.

References:

a) Dutta and Ruddar (2003), Economic Reforms, labour and employment, Deep and Deep Publication.
b) Sandesera, J.C. (1992) Industrial Policy and Planning: 1947-1951, Sage Publication. c) Kapila, Uma (ed) Indian Economy since Independence, Academic Foundation
d) Sen, Rajkumar (ed), 2005, Social Sector Development in India, Deep and Deep e) Joshi, V, and Little, I.M.D. India's Economic Reforms: 1991-2001, OUP
f) Govt. of India Economic Survey 2004-05.

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g) Bhagwati, J. 2004; In Defense of Globalization, OUP.
h) Tisdell, Clem and Sen, Rajkumar (ed): economic Globalization, 2004.
i) Bala, Subrahmanya, M. H. (2004), 'Small Industry and Globalisation Implications, Performance and Prospects', Economic and Political Weekly, vol. 39, NO: 18
j) Goldar, B N (2010), Energy Intensity of Indian Manufacturing Firms: Effect of Energy Prices, Technology and Firm Characteristics, Delhi: Institute of Economic Growth, http://www.mse.ac.in/Frontier/m13%20Goldar%20A.pdf
k) Nayyar, Deepak (1994) Industrial Growth and Stagnation: The Debate in India, editor, Bombay; Oxford University Press.

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1. Economic Growth and Structural Change in India
2. Employment and Unemployment Situation in India: Trends and patterns of employment and unemployment, Interrelationship between Growth and Employment; Economic reforms and Informal Sector
3. Poverty in India: Measurement of Poverty– Monetary and Multidimensional Poverty; Trends of Poverty- Across Regions, States, Social Castes etc.
4. Food and Nutritional Insecurity in India
5. India and the SDGs

References:

1) Das, P., Paria, B. &Firdaush, S. Juxtaposing Consumption Poverty and Multidimensional Poverty: A Study in Indian Context. Soc Indic Res 153, 469–501 (2021).
2) Uma, K. (ed.) Indian Economy since Independence, Academic Foundation.
3) India Development Reports, 2017, IGIDR, Oxford University Press.
4) Das, Pinaki (2012), 'Growth Trajectory and Its Implications for Employment in
   a. India', *Indian Journal of Economics*, Special Issue, 2012.
5) Das, Pinaki (2012), 'Trends of Employment in India: Reflections from Recent NSS Data', *VidyasagarUniversity Journal of Economics*, Vol. XVI.
6) 13. Himangshu (2007), 'Recent Trends in Poverty and Inequality: Some Preliminary Results', EPW, 10 February.
7) Das, Pinaki &SkMdAbulBasar (2021), Are the Non-poor Households Nutritionally Secure? An Assessment from NSSO Unit Level Data in India Between 2004–2005 and 2011–2012, IJHD, 14(2)
8) SDG India Index & Dashboard 2020-21: Partnerships In The Decade Of Action

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Course No: ECO 105: International Economics 50 Marks 5 credits

Course Outcome:

This course is meant to learn the basics of international trade, both in goods and services as well as in factors like labour and capital at an advance level, and its effect upon economic growth and development. Also, to have an idea of (neo-) protectionism, it discusses the different trade policies countries are taking to restrict international trade at their desired level. Along with this, it also gives scope to learn the interrelationships between international trade, finance, exchange rate and the functioning of the domestic macroeconomy under the head of international macroeconomics. In this way, it provides the basic knowledge we require to understand a country's available fiscal as well as monetary policy options and their pros and cons in today's world.

Group-A: Trade Theory and Policy: 25 Marks(Written -20, Internal Assessment -05)

1. Review of General Equilibrium Trade Models: HOS and Specific Factor and Hybrid Trade Models
2. Ricardian Theory of Continuum of Goods
3. Models of International Trade with Imperfect Competition and Increasing Return to Scale
4. International Trade and Migration
4. Trade Policy under Imperfect Competition, Political Economy of Protection

References

1).Acharyya,R.:InternationalEconomics:An Introduction toTheory and Policy,Oxford.

2).Beladi,H.andMarjit,S.(1992),"ForeignCapitalandProtectionism,"CanadianJournalof Economics,CanadianEconomicsAssociation,vol.25(1),pages233-238,February.

3).Bhagwati,J.N., Panagariya,A.andSrinivasan,T.N.:LecturesonInternationalTrade, Oxford.

4). Borjas, George J. (1994), The Economics of Immigration, Journal of Economic Literature Vol. XXXII (December), pp. 1667–1717

5). Caves, R. E., Frankel, J. A. and Jones, R. W. (2007).*World Trade and Payments: An Introduction*, 10th Edition, Pearson

6). Chandra, V. and Khan, M. A. (1993). Foreign investment in the presence of informal sector.Economica,60,79–103.

7). Corden, W M & Findlay, Ronald, 1975. "Urban Unemployment, Intersectoral Capital Mobility and Development Policy," Economica, London School of Economics and Political Science, vol. 42(165), pages 59-78, February.

8).Helpman,E.andKrugman,P–TradePolicyandMarketstructure,MITPress.

9). Harris, J.R. and Todaro, M.P. (1970) Migration, Unemployment and Development: A Two-Sector Analysis. American Economic Review, 60, 126-142.

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10).Jones,R.W.(1965),"TheStructureofSimpleGeneralEquilibriumModels",*Journal of political economy*,Vol.73,No.6,December,pp.557-572.
11).Jones,R.W.(1971),"AThreeFactorModelinTheory,Trade,andHistory,"inBhagwati, Jones,MundellandVanek(eds),*Trade,BalanceofPaymentsandGrowth*,North-Holland publishing company.
12).Krugman,P.R.andObstfeld,M.:InternationalEconomics: Theory and Policy, 8th Edition, Pearson.
13). Marjit, Sugata and Saibal Kar (2005), Emigration and wage inequality, Economics Letters 88 , 141 – 145)

Group-B- International Economics: 25 Marks(Written -20, Internal Assessment -05)

1. Introductory Topics: Domestic economy and sources of tradable goods and services, sovereign debt crises; International capital flow puzzles Determination of Exchange rate in International Asset Market, Interest Rate Parity, Covered Interest Rate Parity, Measuring trade openness and international competitiveness
2. Accounting of Balance of Payments: Accounting of BOP in a book keeping system involving current account, capital account and financial account, Global Imbalances, Sustainability in the Current Account, Current Account Determination in a Production Economy
3. Models of Balance of Payments: Absorption approach to BOP, Elasticity approach to BOP using the Marshall-Lerner Condition, The multiplier approach- Standard Keynesian and New Keynesian model with open economy, Monetary approach to BOP
4. Mundell-Fleming Model: Capital Mobility and Stabilization Policies under Fixed and Flexible Exchange Rate, Fiscal and monetary policy effects under fixed and flexible exchange rates with perfect and imperfect capital mobility conditions, Impossible Trinity, J curve, Dealing with Financial Crisis in Mundell-Fleming Model, Socio-political Cost of Devaluation

References

Caves, R. E., Frankel, J. A. and Jones, R. W. (2007). *World Trade and Payments: An Introduction*, 10th Edition, Pearson

Gandolfo, G. (2016). International Finance and Open-Economy Macroeconomics, 2nd Edition, Springer Text

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SEMESTER -II

Course No: ECO 201: Statistics and Basic Econometrics 50 Marks 5 credits

Course Outcome:

The course will enable the students to learn some sophisticated statistical and econometric tools to deal with statistical data. In a sense, they will learn about sampling methods, distributions and estimations and Hypothesis Testing. They will also have knowledge of ANOVA. In econometrics, this course offers a deep understanding of the problems of Multicollinearity, Heteroscedasticity, Autocorrelation and Dummy variables. The course also deals with Simultaneous equation models.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1. Sampling and Sampling Methods, Sampling distributions of statistics.
2. An Introduction to Classical Inference Estimation and Hypotheses Testing; point and interval estimation; Tests of significance.
3. Frequency χ^2: Goodness of Fit, Test of Homogeneity, Test of Independence.
4. Analysis of Variance: One way & Two-way analysis.
5. Two variable linear models- the linear specification; basic assumptions; least square estimators and their properties; tests of goodness of fit; inference in the least square model

References

a) Goon, Gupta and Dasgupta- Fundamentals of Statistics b) Mathai A. M &Rathie P. N- Probability & Statistics

c) Maddala, G.S. Introduction to econometrics

d) Kmenta, J. Elements of Econometrics e) Johnston, J. Econometric Methods

f) Gujarati, D.N. Basic Econometrics

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1. General linear model: OLS Estimators and their properties; tests of goodness of fit; inference in the OLS model,
2. Some econometric problems:
3. A. Multicollinearity, heteroscedasticity, and auto-correlation (basic concepts, problems and remedial measures only)

B. Dummy variables- Nature and use of dummy variables; case of dependent dummy variables, Dummy variable trap.

4. Simultaneous equations Models: Structural and Reduced form equations; identification problems.

References

g) Goon, Gupta and Dasgupta- Fundamentals of Statistics h) Mathai A. M &Rathie P. N- Probability & Statistics

i) Maddala, G.S. Introduction to econometrics

j) Kmenta, J. Elements of Econometrics k) Johnston, J. Econometric Methods

l) Gujarati, D.N. Basic Econometrics

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Course No: ECO 202: Theories of Economic Growth 50 Marks 5 credits

Course Outcome:

This course will discuss basic and some typical theories of economic growth. Solow model and endogenous growth theories are the two main pillars of the syllabus. The understanding of economic growth will help us to understand the movements of macroeconomic variables more confidently. This course will give a broad idea about the measurement and causes of fluctuation in the economic growth path. The macroeconomic variables and their behaviour can be vigorously grasped by the learners.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1) Neo-Classical Growth Model: Solow-Swan,
2) Kaldor and Pasinetti,
3) Joan Robinson
4) Technical Progress- Hicks, Harrod and Arrow
5) Convergence of Growth- Absolute v/s Conditional Convergence; β Convergence and σ convergence

References

a) Sen, A.K. (1990), *Growth Economics*, Penguin Books.

b) Barro, R. and Sala-I-Martin, (2004*), Economic Growth (2nd*Ed), McGraw-Hill. c) Jones, Charles. I (2002), Introduction to Economic Growth, W.W. Norton.

d) Solow R.M. (2000*), Growth Theory-An Exposition (* 2nd Ed), OUP,

e) Romer, D. (2001), *Advanced Macroeconomics (2ndEd)*, McGraw-Hill.

f) Robert J. Barro and Xavier Sala-i-Martin (1992), 'Convergence', *Journal of Political Economy*, Vol. 100, No. 2, pp. 223-251.

g) Young, Higgins and Levy (2008), 'Sigma Convergence versus Beta Convergence', Journal of Money, Credit and Banking, Vol. 40, No. 5.

Group- B: 25 Marks (Written -20, Internal Assessment -05)

1. Ramsey model with optimization of savings in an intertemporal system
2. One factor endogenous growth model-The AK Model
3. Endogenous Growth with human capital formation – Lucas Model
4. Endogenous Growth with R&D – Romer Model
5. Endogenous growth with public institutions-Barro Model
6. Endogenous growth with natural and conservation capital

References

1. Barro and Sala-i-Martin,' Economic Growth', McGraw-Hill, 2004, 2nd Edition
2. David Romer, Advanced Macroeconomics, McGraw-Hill, 2001, 2nd Edition
3. Lucas, Robert (1988). "On the Mechanics of Economic Development". *Journal of Monetary Economics*. 22 (1): 3–42
4. Paul M. Romer, (1990). 'Endogenous Technological Change', Journal of Political Economy, Vol. 98 5)
5. Robert J. Barro (1990). 'Government Spending in a Simple Model of Endogenous Growth, Journal of Political Economy, Vol. 98

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6. Chambers, D. and Guo, Jang-Ting (September 3, 2007). Natural Resources and Economic Growth: Theory and Evidence, University of California Riverside Working Paper
7. Donna Theresa J. Ramirez, MadhuKhanna and David Zilberman (2002). Conservation capital and sustainable economic growth, AAEA Annual Meeting

ECO 203: Environmental and Resource Economics 50 Marks 5 credits

Course Outcome:

After completion of this course, the students should be able to learn and understand different issues of environmental economics and resource economics. Some of the topics that will be covered in the course are- Environmental Externalities and Valuation of environmental goods. Market and non-market instruments for pollution control, Sustainable Development Management of natural resources like renewable, nonrenewable and common property.

Group –A: Environmental Economics 25 Marks (Written -20, Internal Assessment -05)

1. Economy- Environment Interaction, Market failure for environmental goods, Optimum Pollution: Coase Theorem , Pigovian tax
2. Valuation of environmental goods: Contingent Valuation Method, Travel Cost Method , Hedonic Pricing Method
3. Instruments for pollution control and their relative effectiveness in LDCs: Command and Control, Market Based Instruments and Hybrid instruments
4. Sustainable Development, Environmental Kuznets Curve (EKC), Green Accounting.

References:

a) Kolstad C D- Intermediate Environmental Economics, Oxford University Press, Second Edition, 2011.

b) Berck P and G. Helfand, The Economics of the Environment, First Edition, Addison-Wesley, 2011.

c) Hanley N., F. Shogran and B. White, Environmental Economics in Theory and Practice, McMillan, 2004.

d) Hanley N., F. Shogran and B. White, An Introduction to Environmental Economics, OUP, 2004.

e) Pearce D.W. and R.K Turner, Economics of Natural Resources and the Environment, Harvester Wheatsheaf. 1991.

f) Harris, J. M., & Roach, B. (2013). Environmental and natural resource economics: A contemporary approach. ME Sharpe.

g) Sankar, U. (2001). *Environmental economics*. Oxford University Press.

h) Thampapillai, D. J., & Ruth, M. (2019). *Environmental economics: Concepts, methods and policies*. Routledge.

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Group B: Resource Economics: 25 Marks (Written -20, Internal Assessment - 05)

1. **Renewable Resources:** Growth Curve, The Rate of Exploitation, Costs and Revenue, Preservation Value, Implication of time in the exploitation of renewable resources
2. **The Extinction of Renewable Resources:** The Problem of Extinction, Open Access and Resource Extinction, Profit Maximization and Extinction, Reasons of Extinction
3. **Exhaustible Resources:** A Resource Taxonomy, The Fundamental Principle of Exhaustible Resource Use, Resource Scarcity, Resource Prices and Backstop Technology, Monopoly and the Rate of Extraction, Irreversibility and Uncertainty in Environmental Processes
4. **Storable, Renewable Resources: Forests and Fisheries:** Characterizing Forest Harvesting Decisions- Special Attributes of the Timber Resource, The Biological Dimension, The Economics of Forest Harvesting, Extending the Basic Model. Sources of Inefficiency- Perverse Incentives for the Landowner, Perverse Incentives for Nations. Poverty and Debt; Sustainable Forestry; Public Policy. Fisheries Economics and Management. Water Management and Economics

References:

a) Kolstad C D- Intermediate Environmental Economics, Oxford University Press, Second Edition, 2011.

b) Berck P and G. Helfand, The Economics of the Environment, First Edition, Addison-Wesley, 2011.

c) Hanley N., F. Shogran and B. White, Environmental Economics in Theory and Practice, McMillan, 2004.

d) Hanley N., F. Shogran and B. White, An Introduction to Environmental Economics, OUP, 2004.

e) Pearce D.W. and R.K Turner, Economics of Natural Resources and the Environment, Harvester Wheatsheaf. 1991.

f) Harris, J. M., & Roach, B. (2013). Environmental and natural resource economics: A contemporary approach. ME Sharpe.

g) Conrad, J. M. (1999). *Resource economics*. Cambridge University Press.

h) Conrad, J. M., & Clark, C. W. (1987). *Natural resource economics: notes and problems*. Cambridge University Press.

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C-ECO 204: Fundamentals of Economic Theory (CBCS) 50 Marks 4 credits

Course Outcome:

Since the students of inter-disciplinary departments are required to have knowledge of the application of economic subjects it is desirable to construct the curriculum for them to provide basic knowledge on micro and macroeconomics. The course thus deals with aims and scopes of economics, the market behaviour of economic agents like consumers and producers in the goods market and service markets, the determination of consumer's willingness to pay for a good and producers' willingness to sell a good, discussion of firms' behaviour to determine prices of the goods in different market structures, etc. On the other side, it deals with the process of calculating national income, identifying its components, demonstrating the circular flow of income, analysing the various income identities with government and international trade, demonstrating investment multiplier understanding the 'Say's Law' of market, classical theory of employment and Keynes objection to the classical theory, demonstrate the meaning and function of money, identifies types of banks, explain the meaning and function of commercial banks, illustrate how banks create credit, and suggest the instruments to control credit. It finally deals with international trade theories and their linkages with the product and monetary sectors. The course will be helpful to the inter-disciplinary students in analyzing different facets of the Indian economy.

Group A: 25 Marks (Written -20, Internal Assessment - 05)

1. Exploring the subject matter of economics

Scope and Method of Economics, Positive and Normative economics, Microeconomics andMacroeconomics.

2. Demand and Supply

Law of demand, Determinants of demand, derivation of the demand curve, elasticities of demand; Law of supply and supply curve, Determination of equilibrium price

3. Production and Cost

The Production Process; TP, AP & MP and their relation; Costs in the short and the long run, Concept of Profit Maximisation

4. Market Structure

Types of Markets and their features-Perfect competition, Monopoly, Monopolistic competition and Oligopoly; Price and Output decisions of a competitive firm

Group B: 25 Marks (Written -20, Internal Assessment - 05)

1. National Income and its Measurement

Methods of measurement of national income, the relationship among Gross National Product, Gross Domestic Product, Net National Product, National Income and Personal Income

2. The Simple Keynesian Model

Aggregates expenditure and equilibrium output. Fiscal policy at work - the multiplier effect

3. Money and Inflation

Money and its functions, monetary institutions, monetary policy and credit creation, inflation and its control

4. International Trade

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Comparative advantage and Gains from Trade; Balance of payments, exchange rate and its determination

References:

1) Lipsey and Crystal- Economics, OUP
2) Samuelson and Nordhaus, Economics, McGraw Hill
3) Pindyck and Rubinfeld-Microeconomics, Pearson
4) Dornbusch and Fischer- Macroeconomics, McGraw Hill

ECO 205: Public Economics and Corporate Finance 50 Marks 5 Credits

Course Outcome:

In the first half of this course we will discuss in detail the federal structure, govt. spending and the debt sustainability issues. They will be introduced to the debate on the optimal role of Govt. in this era of liberalization. From this students will not only learn to analyse the present fiscal policy, the impact of its changing paradigm on the overall economy but also can make an opinion about to what extent the government should intervene in the economic activities.

Group A: Public Economics 25 Marks (Written -20, Internal Assessment -05)

1) Role of Govt. in the Era of Liberalisation: Analysis of historical evidences, Relevance of fiscal policy, Merit goods, Externalities.
2) Analysis of Fiscal Policy and Public debt from the Macroeconomic Perspective: Govt Budget, Different deficits and its implications and optimality, Analysis of burden of public debt in IS-LM framework, Sustainability issues and its different approaches
3) Fiscal Federalism: Rationale, Theory of club, Voting by feet theory, Vertical-Horizontal imbalances, Economies of grants, Flypaper effect, Finance Commission

References:

a) Bagchi, A. (Ed.): Readings in Public Finance, Oxford.
b) Ghosh, A. and Ghosh, C: Economics of the Public Sector, PHI.
c) Mundle, S. (Ed.): Public Finance: Policy Issues for India, Oxford. d) Rakshit, M.: Money and Finance in the Indian Economy, Oxford.
d) Rakshit, M. (1991), “The Macroeconomic Adjustment Programme A Critique”, *EPW*, August 23, pp. 1977-88.
e) Rakshit, M. (1994), “Money and Public Finance under Structural Adjustment: The
f) Indian Experience”, *EPW*, April 16-23, pp. 923-35.
g) Rakshit, M. (1995), “Puzzles in Budgetary Policies”, *EPW*, May 6-13, pp. 1061-66.

Group B: Corporate Finance 25 Marks (Written -20, Internal Assessment -05)

1) Corporate financial statements: Balance Sheet and P/L Accounts
2) Financial Ratio Analysis: Liquidity ratios, Profitability Ratios, Activity Ratios, Return on Investment
3) Portfolio Theory: Mean-Variance Criterion-Systematic & Unsystematic risk, Portfolio Diversification, Efficient Frontier & Capital Market Line, Capital Asset Pricing Model, Financial derivatives

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4) Capital Budgeting: Project Classification, Investment criteria, Different Techniques of Capital Budgeting

References:

a) Chandra, P.: Financial Markets, Tata McGraw Hill Education, Second edition, 2008.
b) Kevin, S.: Portfolio Management, Prentice Hall of India, 2001.
c) Damodoran A., Valuation: Security Analysis for Investment and Corporate Finance, John Wiley and Sons, 2006.
d) Farrell, Jr. J.L., Portfolio Management, Theory and Application, Second edition, McGraw Hill, 1997.
e) Francis, J.C. Investments Analysis and Management, McGraw Hill, 1991.
f) Stephen A. Ross, Randolph Westerfield, Bradford D. Jordan: Fundamentals of
g) Corporate Finance, Richard D Irwin, 1998.

SEMESTER -III

Special Paper: Econometrics

ECO 301A: Econometrics I 50 Marks 5 credits

Crouse Outcome:

This course is the first course for the students opting for Econometrics as the special paper. This course is meant to learn the Linear Econometric Model when the basic assumptions of the Simple Model learnt in the general course in Semester II are violated. Students are expected to learn through this course the real-life problems of using a Simple Linear Regression Model. They also learn here different ways to solve those problems.

Group A: 25 Marks (Written -20, Internal Assessment -05)

1. Violation of Assumptions in Classical Linear Regression Model- Non-Zero Mean; Non-Normality; Autocorrelation-Causes, Consequences, Tests and Remedies; Heteroscedasticity-Causes, Consequences, Tests and Remedies;
2. Stochastic Regressors, Large Sample Properties, Method of Moments, Instrumental Variable Estimation Method
3. Multicollinearity- Causes, Consequences, Types of Multicollinearity: Enhancement synergism, Change sign, Tests and Remedies: Relative importance explanatory variables in Multiple Linear Regression Model
4. Model Specification and Diagnostic Testing-Model Selection Criteria, Consequences and Tests of Specificationerror, Nestedand Non-Nested Models.

References:

a) Gujrati, D.: Basic Econometrics, McGrawhill Higher Education, 2003.
b) Judge, G.G., Hill, R.C., Griffiths, W.E.: Learningand Practicing Econometrics, Wiley, New York, 1993.
c) Maddala, G.S.: Introduction to Econometrics, 3rd edition, John

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d) Wiley & Sons Ltd, 2005. d) Johnston, J.: Econometric Methods, 3rd Edition, McGraw-Hill/Irwin; 4th edition, 1996. e) Greene, W.H.: Econometric Analysis, 4th edition, Pearson Education, 2000.

e) Judge, G.G., Hill, R.C., Griffiths, W.E, Lütkepohl,H., Lee,T.: Introductionto the Theoryand Practice of Econometrics, Wiley, New York, Second Edition.

f) Johnston, J. and Dinardo, D.: Econometric Methods, Fourth Edition, McGraw-Hill,

g) 2006.

h) Wooldridge, J.W: Introductionto Econometrics, South-Western, Division of Thomson Learning; Internationaled edition, 2005.

i) Kmenta, J.: Elements of Econometrics, Macmillan Publishing company, 1991.

j) Intriligator, M.: Econometric Models, Techniquesand Application, Prentice-Hall, Private India Ltd, New Delhi, 1980.

k) Perron,P.: The Great Crash, The Oil Price Shockand The Unit Root Hypothesis", Econometrica, vol.57 (6), pp1361 to 1401, 1989.

GROUP B: 25 Marks (Written -20, Internal Assessment - 05)

1. Non-linear Models (at least one): Maximum Likelihood Method of estimation: Two and K variable case, Properties of the estimators, Restricted Maximum Likelihood Function, Likelihood Ratio Test; Limited information maximum likelihood method of estimation; Generalized Method of Moment estimator.
2. Tests of Structural Change – The Chow Test, CUSUM, CUSUMSQ, Models of Structural Break Analysis.
3. Dummy variables: Estimation and Interpretation, Dummy Variable Trap, Interaction Effect, Application of Dummy Variables (at least one)- Seasonal Analysis, Limited Dependent Variable model, Least Squares Dummy Variable (LSDV).

References:

a) Gujrati, D.: Basic Econometrics, McGrawhill Higher Education, 2003.

b) Judge, G.G., Hill, R.C., Griffiths, W.E.: Learningand Practicing Econometrics, Wiley, New York, 1993.

c) Maddala, G.S.: Introductionto Econometrics, 3rd edition, John Wiley & Sons Ltd, 2005.

d) Johnston, J.: Econometric Methods, 3rd Edition, McGraw-Hill/Irwin; 4th edition, 1996.

e) Greene, W.H.: Econometric Analysis, 4th edition, Pearson Education, 2000.

f) Judge, G.G., Hill, R.C., Griffiths, W.E, Lütkepohl,H., Lee,T.: Introductionto the Theoryand Practice of Econometrics, Wiley, New York, Second Edition.

g) Johnston, J. and Dinardo, D.: Econometric Methods, Fourth Edition, McGraw-Hill, 2006.

h) Wooldridge, J.W: Introduction to Econometrics, South-Western, Divisionof Thomson Learning; Internationaled edition, 2005.

i) Perron,P.: The Great Crash, The Oil Price Shock and The Unit Root Hypothesis", Econometrica, vol.57 (6), pp1361 to 1401, 1989

Special Paper – Agricultural Economics

ECO 301B: Agricultural Economics I 50 Marks 5 credits

Course Outcome:

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From this course, we will learn how and why the process of analysis should be different in analyzing the features of backward agriculture from that of the advanced ones. It also discusses the transition of backward agriculture towards commercialization and the impact of globalization along with other newer arrangements like FDI, contract farming etc. it mainly from the theoretical point of view. It will help us to conduct or examine any survey of a developing country's agricultural sector keeping in mind its special characteristics and before pooling and generalizing the available data, it will remind us to give importance to the differences among the peasantry not only in terms of regions or products but also in terms of class, techniques, institutional arrangements etc.

Group A: 25 Marks (Written -20, Internal Assessment -05)

1) Mode of Production in Agricultural Sectors and Transition to Capitalist Farming and Commercialisation of Agriculture
2) Structure of Backward Agriculture: Forced Commerce in Semi-Feudal Agrarian System
3) Peasant Economy – Chayanov's Approach to Peasant Farming: Different Type of Peasants and Their Technology Adoption, Intra-Household relationship, Women in Agriculture

References:

a) Bhaduri, A.(1983), The Economic Structure of Backward Agriculture, Macmillan India Limited.
b) Ellis, Frank: Peasant Economics: Farm Households and Agrarian Development, Cambridge University Press.
c) Pingali, P.L. (1997), 'From subsistence to commercial production system: The transformation of Asian agriculture, *American Journal of Agricultural Economics*, 79(2) 628-634.

Group B: 25 Marks (Written -20, Internal Assessment -05)

1) Analysis of Rural Markets: Interliknage
2) Agriculture under WTO Agreements with Particular Reference to India
3) Recent Issues of Agricultural Development: Crop Insurance, Contract Farming, FDI in Retail Trade

References:

a) Basu, K (1997), Analytical Development Economics, MIT Press.
b) Government of India (2014), *Report of the Committee to Review the Implementation of Crop Insurance Schemes in India*, Department of Agriculture & Cooperation, Ministry of Agriculture, GOI, May.
c) Gulati, Ashok, Rajesh Mehta and Sudha Narayanan (1999), 'From Marrakesh to Seattle: Indian Agriculture in a Globalising World', *Economic and Political Weekly*, Vol. 34, No. 41, pp. 2931-2942.
d) Gulati, Ashok, P.K. Joshi, Maurice Landes, *Contract Farming in India: An Introduction*, *available at*http://www.ncap.res.in/contract_%20farming/Resources/1.Introduction.pdf
e) Nair, Reshmy (2010), 'Crop Insurance in India: Changes and Challenges, *Economic & Political Weekly,*February 6, Vol. xlv no 6.
f) Raju, S.S. and Ramesh Chand (2008), 'Agricultural Insurance in India Problems and Prospects', *NCAP Working Paper No. 8,* National Centre for Agricultural Economics and Policy Research (Indian Council of Agricultural Research), March.

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g) Rao, Hanumantha C. H. (2001), 'WTO and Viability of Indian Agriculture', *Economic and Political Weekly*, Vol. 36, No. 36, pp. 3453-3457.
h) Sarkar, Abhirup (2013), 'Understanding FDI in Retail, What Can Economic Principles Teach Us?' *Economic & Political Weekly,* Vol. 48, Issue No. 01, 05 Jan.

Special Paper: Econometrics

ECO 302A: Econometrics II 50 Marks 5 credits

Course Outcome:

At the end of the course students will be able to: learn the basics of time series data and panel data, understand the stationary time series models and advantages of panel data, perform forecasting with time-series data, fixed effects, random effects model, LSDV model and dynamic panel also, apply time series techniques to state ARCH and multivariate time series, conduct research on panel data after knowing panel data handling, and opportunities for employability in marketing, finance and other business houses.

Group A: 25 Marks (Written -20, Internal Assessment -05)

1. **Basic Concepts of Time Series and Univariate Time Series Modeling:** Stochastic process, stationary stochastic process, White-noise stochastic process, Non-stationary stochastic process- Random walk, Unit root stochastic process.AR, MA and ARIMA Process.
2. **Tests for Stationarity:** Graphical approach, Autocorrelation Function and Correlogram, Unit Root test- Dickey-Fuller Test, Augmented Dickey-Fuller Test, Phillips-Perron Test. Limitations of unit root test, Sources of Non-stationarity. Spurious Regression Problem.
3. **Cointegration and Error Correction Mechanism:** Engle-Granger Cointegration test; Error-Correction Mechanism
4. **Vector Autoregressive Model:** Specification, Estimation and Forecasting. Vector Error Correction Model, Impulse response analysis, Variance Decomposition, merit and demerits of VAR. **ARCH and GARCH for Modeling Volatility.**
5. **Models of Expectations and Distributed Lags:** Models of expectations- Naïve models of expectations, The adaptive expectations model. Estimation with the adaptive expectations model- Estimation in the autoregressive form. Estimation in the distributed lag form

References:

a) Johnston &Dinardo (2006), *Econometric Methods*, McGraw Hill International Edition.
b) Green (2009), Econometric Analysis, Pearson Education.
c) Enders, Walter (2004):*Applied Econometric Time Series*, John Wiley. d) Maddala (2009), *Introduction to Econometrics*, John Willy and Sons (Asia) Pte. Ltd.

Group–B: 25 Marks (Written-20, Internal Assessment-05)

1) Panel Data: Types; Advantages and Disadvantages
2) Panel Data Regression Models-Simplest Case, Fixed Effects Model(FEM), Random Effects Model(REM) and their Estimations

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3) Selection of Appropriate Panel Data Regression Model: LM test, Restricted F test, Hausman test
4) Within-and-Between-Groups Estimators
5) Panel Unit Root, Panel Co-integration, Panel VAR, Panel VECM: Basic Concepts and Applications with EViews

References:

a) Baltagi(2008),EconometricAnalysis of Panel Data, JohnWiley.
b) Johnston &Dinardo(2006),*Econometric Methods*, McGraw Hill International Edition. c) Green(2009),*Econometric Analysis*,PearsonEducation.
c) Wooldridge(2002), Econometric Analysis of Cross Section and PanelData, MIT-Press, Cambridge.

Special Paper – Agricultural Economics

ECO 302B: Agricultural Economics II 50 Marks 5 credits

Crouse Outcome:

This paper on Agricultural economics concerns itself with the study of backwardness, growth with equity and the relation between farm size and productivity. Upon completion of the course, students would be able to understand the status of Indian agriculture, realize the need to exploit and utilize through development and improvement of production techniques,Gain knowledge of the causes of regional variations in productivity and production and suggest appropriate measures for the whole economy.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1) Indian Agriculture: Issues and Priorities, Growth and Distribution
2) Technology and Agriculture, Farm size, Productivity and Efficiency in Indian agriculture.

Rural Indebtedness in India: Causes, Consequences and Measures for Removal of Rural Indebtedness

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References*:*

a) Gulati, A., Mauruce R. Landes, Ganguly, K.: Indian Agriculture: Managing Growth with Equity, A publication of the Agricultural & Applied Economics Association, 2009.

b) Dandekar, M.L.: Growthand Equityin Agriculture, International Journalof Agricultural Economics, 1987.

c) Sen, A.K. and Rudra, A.: Farm size and labouruse: Analysisand policy, Economic & Political Weekly, *Vol. 15, Issue No.5-6-7, February 16, 1980.*

d) Rudra, A.: Indian Agriculture: Myths and realities, 1984.

e) Ramesh Chand, P A, Lakshmi Prasanna, Aruna Singh: Farm Sizeand Productivity: Understanding the Strengths of Smallholdersand Improving Their Livelihoods, Economic & Political Weekly Supplement, June 25, 2011, vol. XLVI, nos. 26 & 27.

f) India: Issuesand Prioritiesfor Agriculture, http://www.worldbank.org/en/news/feature/2012/05/17/india-agriculture-issues-priorities.

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1) Econometric Framework for Analyzing Farmers' Production Decisions
2) Private and Public Capital Formation in Agriculture sector: Theory and empirical findings from major developing countries including India
3) Green Revolution in India and Its Significance in Economic Development
4) Total Factor Productivity Growth in Indian Agriculture: Growth Accounting Approach
5) Role of FDI in agriculture with particular reference to developing economies

References:

a) Sasmal, J. (2016). Resources, Technology and Sustainability: An Analytical Perspective on Indian Agriculture, Springer Book

b) Bisalia, S. and Dev, S. M. (2010).Privatecapital formation in Indian agriculture:an analysis of farm-level data, Commission for Agricultural Costs & Prices (*CACP), India, Working paper*

c) Fujita, K., A. Kundu and W.M.H. Jaim, (2003). "Groundwater Market

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and Agricultural Development in West Bengal: Perspectives from A Village Study", *Japanese Journal of Rural Economics*, 5, 51-65.

d) Fujita, K. (2010). Green Revolution in India and Its Significance in Economic Development: Implications for Sub-Saharan Africa, JICA-RI Working Paper, No 17, June

e) Solow, R. M. 1957. Technical Change and the Aggregate Production Function,*Review of Economics and Statistics* 39: 312-20

f) Liu, P. (2014). Impacts of foreign agricultural investment on developing countries: Evidence from case studies, FAO Commodity and Trade Policy Research Working Paper No. 47

Special Paper: Econometrics

ECO 303A: Econometrics III 50 Marks 5 credits

Course Outcome:

After taking the course, the students are expected to grasp the techniques like Generalised Linear Regression Model and Its Applications, GMM and its application in Dynamic Panel Data Model, Principal Component Analysis, and Simultaneous Equation Methods. Students will be able to learn when and how to apply the above econometric methodologies to analyse economic problems.

Group–A: 25 Marks (Written-20, Internal Assessment-05)

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1) Generalised Linear Regression Model and Its Estimation
2) CHTA and CCTA Models and their Estimations
3) Error Component Model and Seemingly Unrelated Regression
4) GMM and its application in Dynamic Panel Data Regression Model.
5) Advanced topics in limited dependent variables models- multinomial and ordered Logit, Probit and Heckman Selection models

References:

a) Kementa J., Elements of Econometrics,Macmillan Publishers Limited,1986
b) Baltagi(2008),Econometric Analysis of Panel Data, John Wiley.
c) Collin Cameron and P.K.Trevedi. Micro Econometric Methods and Applications, Cambridge University Press, 2005
d) Johnston & Dinardo (2006),*EconometricMethods*,McGrawHillInternationalEdition. Green(2009),*Econometric Analysis*, PearsonEducation.
e) Wooldridge (2002),Econometrics Analysis of Cross Section and Panel
f) Data, MIT-Press, Cambridge.

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1) Regression models with qualitative response – Linear Probability Model, Logit Model, Probit Model and Tobit Model
2) Simultaneous Equation Methods: Single Equation Methods of Estimation –OLS, ILS, LIML, 2SLS; System Methods of Estimation – 3SLS, FIML
3) Principal Component Analysis.

References:

a) Kementa J., Elements of Econometrics, Macmillan Publishers Limited, 1986
b) Johnston &Dinardo (2006), *Econometric Methods*, McGraw Hill International Edition. c) Green W H (2009), *Econometric Analysis*, Pearson, 2007.
c) Johnston J. *Econometric Methods,* McGraw-Hill Inc.,US, 1984.
d) Koutsoyiannis A., Theory of Econometrics, Palgrave Macmillan Limited, 2001.
e) Maddala G S, Introduction to Econometrics, Wiley India Pvt. Ltd, 2012.
f) Pindyck R.S. and D.L.Rubinfeld, Econometric Models and Economic Forecasts, Mc-GraW Hill International Edition.
g) Richard A.J. and D.W. Wichern, Applied Multivariate Statistical Analysis, Pearson
h) Hair, Black, Babin, Anderson and Tatham, Multivariate Data Analysis, Pearson Education.
i) Gujrati D and Sangeetha, Basic Econometrics,The McGraw Hill Companies, Fourth Edition.
j) Intriligator M. D., Econometric Models, Techniques, and Applications, Prentice Hall,

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Special Paper – Agricultural Economics

ECO 303B: Agricultural Economics III 50 Marks 5 credits

Course Outcome:

After taking the course, the students are expected to grasp thoroughly the following that is used to analyse the problems of agricultural economics: Production function analysis, Pricing of agricultural products, Agricultural marketing: Farm Management, and Applications of operation research in agricultural economics. At the end of the course students will be able to: understand agriculture as the foundation of economic growth and development, and analyse the progress and changing nature of the agricultural sector. Opportunities for employability in the "Agricultural Research Institutions" and different departments related to Indian agriculture.

Group A: 25 Marks (Written -20, InternalAssessment - 05)

1) Agricultural production function analysis, Agricultural supply response behaviour, Theories of marketable surplus.
2) Demand for agricultural products. Elasticities of demand for agricultural products,
3) Pricing of agricultural products- intertemporal behavior of prices, pricing efficiency, instability in agricultural prices, Futures market.
4) Agricultural Marketing – Marketing Efficiency, Marketing channels, market infrastructure.

References:

a) Krishna, K. L.(1997). *Econometric applications in India*. Oxford University Press
b) Singh, A., Sadhu, A. N., & Singh, J. (2017). *Fundamentals of Agricultural Economics*. Himalaya Publishing House.
c) Schmidt, P. (1985). Frontier production functions. *Econometric reviews*, *4*(2), 289-328.
d) S.Ghatak and K.Insergent, Agriculture and Economic Developmentby, Select Book Service Syndicate, 1984.
e) World Bank 1996. Managing Price risks in India's liberalized agriculture: can futures markets help? Report No.15453-IN. Washington, DC., World Bank.
f) Schofield, N. C. (2021). Commodity derivatives: markets and applications. John Wiley & Sons.
g) S S Acharya and N.L. Agarwal (1994), Agricultural Prices- Analysis and Policy, Oxford and IBH, New Delhi.
h) Barkley, A., & Barkley, P. W. (2016). *Principles of agricultural economics*. Routledge.
i) Acharya, S. S. (2004). *Agricultural Marketing In India, 4/E*. Oxford and IBH publishing.

Group B: 25 Marks (Written -20, Internal Assessment -05)

1) Farm Management – Meaning and scope, economic principles applied to farm management
2) Farm Planning – Good farm plan, farm budgeting
3) Applications of operation research techniques in farm management
4) Farm Efficiency Measures

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5) Management of farm resources

References:

a) Rane, A. C. Deorukhkar, Economics of Agriculture, Atlantic
b) Rosson C. Parr III, Capps Oral Jr., Penson John B. Jr., Introduction to Agricultural
c) Economics, Prentice-Hall.
d) Reddy S.S., P. Raghu Ram, TVN Sastry, Agricultural Economics, Oxford and
e) IBH Publishing Co. New Delhi.

C-ECO 304:Contemporary Issues of Indian Economy (CBCS)50 Marks 4 credits

Course Outcome:

As the paper has been designed for the students from inter-disciplinary departments it offers the overall structure of the applied Indian economy from various perspectives. It deals with trends and structural breaks in the growth rate of income, employment, savings and investment during the post-independence period. It also deals with the contributions of different sectors to the aggregate economy along with financial sectors, international trade, foreign capital and natural resources, among others. Finally, it deals with the role of the public sector in overall economic growth, governance and developments in the realm of different reform programmes initiated on economic, social and environmental fronts. The students from the inter-disciplinary departments will be immensely benefitted from this course in terms of having inter-departmental resources along with future research programmes with the interrelated subjects.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

1) Macro Perspective of the Indian Economy – growth, structural change, saving & Investment and inflation
2) Economic Reforms and its impact on Indian Economy- Agriculture, Industry and Services
3) Government budget, fiscal deficit and public borrowing in India
4) Resource & Environmental Degradation and Sustainable Growth of India

Group –B: 25 Marks (Written -20, Internal Assessment -05)

1) Employment in India – Nature and trend of employment, the problem of unemployment, Growth of Informal sector
2) Trade Liberalisation in India- Balance of Payments, International Capital Movement and FDI, Convertibility of foreign currency.
3) Financial Sector Reforms in India- Banks & Non-Bank Financial Institutions, Money and Capital Market.
4) Poverty and Inequality in India – Measurement of poverty and inequality: Alternative approaches, trends of poverty and inequality.

References:

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a) Dutt and Sundaram(2015), Indian Economy.
b) Kapila, Uma (ed) Indian Economy since Independence, Academic Foundation,
c) Bhagwati, J. 2004; In Defense of Globalization, OUP.
d) Misra S.K and Puri V.K., Indian Economy, Himalaya Publishers
e) Joshi, V.& I. M. D. Little (2003), *India's Economic Reforms—1991-2001*, Oxford.
f) Ahluwalia, I.J. and I.M.D. Little (2003), *India's Economic Reforms and*
g) Development—Essays for Manmohan Singh, Oxford, 2003.
h) Jalan, B. (ed) "The Indian Economy – Problem and Prospects", Penguin Books. India Development Reports (2015), IGIDR, Oxford University Press.

Special Paper: Econometrics

ECO 305A: Econometrics IV 50 Marks 5 credits

Course Outcome:

After taking the course, the students will be equipped with various techniques to handle econometric data and will also have total grapes over applied econometrics. The course will provide sufficient knowledge regarding the econometric applications to households such as demand analysis, estimation of the consumption function, family budget study etc. Completing this course will also provide sufficient knowledge of econometric applications to firms, money market, labour economics, investment function etc. Again, this course also contains important aspects in the construction of HDI, evaluating structural breaks, trends in macro-econometric model construction and RBI- MSE macro model for the Indian economy.

Group –A: 25 Marks (Written -20, Internal Assessment -05)

Application of Econometric Models:
Application of Single Equation Estimation:

a) Application to Households – Demand Analysis, Consumption Function Estimation, Family Budget Studies & Engels Law.
b) Application to Firms – Production Function and Cost Functions, Growth &Profitability, Employment

Function and Economic Capacity Utilisation:

a) Application to Money Market – Demand for Money
b) Application to Labour Economics.
c) Estimation of Investment and Consumption Function.
d) Estimation of Export-Import Function

Group –B: 25 Marks (Written -20, Internal Assessment -05)

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1) Evaluating Structural Breaks: An application of dummy variable model
2) Measuring Economic Inequality
3) Construction of Human Development
4) The Trends in Macroeconometric Model Construction
5) Simultaneous – Equations Models of Money Demand and Supply.
6) System of Demand Equations- Linear expenditure system.
7) RBI-MSE Macro Model for Indian Economy.

References:

a) Michael D. Intriligator, Econometric Models, Techniques, and Applications
b) Julia Hebden, Applications of Econometrics
c) M. Desai, Applied Econometrics
d) Kerry Patterson, An Introduction to Applied Econometrics – A Time Series Approac

Special Paper – Agricultural Economics

ECO 305B: Agricultural Economics IV 50 Marks 5 credits

Course Outcome:

This course is the last course for the students opting for Agricultural Economics as the special paper. This course is meant for teaching some special topics of agricultural economics, like the nature of growth and fluctuation in Indian agriculture, the extent of labour absorption in agriculture, terms of trade and finally the necessity and possibility of nonfarm employment in the rural economy of India. Students are expected to learn through this course the real problems of Indian agriculture and possible ways to solve those problems.

Group–A: 25 Marks (Written-20, Internal Assessment-05)

1) Structural Change, the Rural Nonfarm Sector, and the Prospects for Agriculture: The Indian Perspectives
2) Farm-Nonfarm Linkages-Theory and empirics
3) Institutional aspects of agricultural development in emerging economies-finance, irrigation and subsidy
4) Aspects of New Agricultural Policy in India-Minimum support price, contract farming and insurance
5) Environmental Sustainability of Agricultural Growth-Aspects of Agriculture to Green Growth, Food Wastage, Methane emission

References*:*

a) B.S.Tyagi, (1979). FarmpriceandclassbiasinIndia,*EPW*,September
b) P. Das (2011). Rural Non-FarmEmploymentinIndia

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c) Hans P. Binswanger-Mkhize(2012).Structural Change, the Rural Nonfarm Sector, and the Prospects for Agriculture, Department of Agricultural and Resource EconomicsUniversity of California Working Paper, Berkeley, May
d) Bardhan, P.K. and A. Rudra, (1978). "Interlinkage of Land, Labour and Credit Relations: An Analysis of Village Survey Data in East India", *Economic and Political Weekly*, Annual Number, February, 367-384.
e) Chakrabarti, S., Kundu, A. and Nandi, A. K. (2011).Farm–Non-Farm Linkage in India:
f) A Structuralist Perspective, Indian Journal of Agricultural Economics, 66(2)
g) Pant, N., (1992).New Trend in Indian Irrigation: Commercialisation of Groundwater, New Delhi: Ashish Publishing House
h) Das, R. C. and Mukherjee, A. (2020).Interplays between Methane Emission and Agricultural Output:Time Series Outcomes for the World'sLow- to High-Income Groups, *International Journal of Social Ecology and Sustainable Development,* 11(4), IGI Global
i) Gulati, A. &Bathla, S. (2002).Institutional Credit to Indian Agriculture: Defaults and Policy Options, NABARD Occasional Paper-23
j) Das, R. C. (2022). Does MinimumSupportPrice HaveLong-Run Associations and Short-RunInterplays with YieldRates and Quantities of Outputs? A Study on Food and Non-food
k) Grains in India, Review of Market Integration, 13(1), 42-65, Sage
l) David Blandford ().The Contribution of Agriculture to Green Growth, OECD Working paper, www.oecd.org.

Group–B: 25 Marks (Written-20, Internal Assessment-05)

1) Price and terms of trade in Indian Agriculture
2) Growth and Fluctuation of Indian Agriculture
3) Labour absorption in agriculture.

Group B

a) Gulati, A., Mauruce R. Landes, Ganguly, K.: Indian Agriculture: Managing Growth with Equity, A publication of the Agricultural & Applied Economics Association, 2009.
b) Dandekar, M.L.: Growthand Equityin Agriculture, International Journal of Agricultural Economics, 1987.
c) Shah, C.H.: Growthand Inequalityin Agriculture, International Journal of Agricultural Economics, 1986.
d) Sen, A.K. and Rudra, A.: Farmsize and labouruse: Analysisand policy, Economic & Political Weekly, *Vol. 15, Issue No.5-6-7, February 16, 1980.*
e) Rudra, A.: Indian Agriculture: Myths and realities, 1984.
f) Ramesh Chand, P A, Lakshmi Prasanna, Aruna Singh: Farm Sizeand Productivity: Understandingthe Strengthsof Smallholdersand Improving Their Livelihoods, Economic & Political Weekly Supplement, June 25, 2011, vol. XLVI, nos. 26 & 27.

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SEMESTER -IV

ECO 401 (Optional): Gender Studies and Human Development 50 Marks 5 credits

Course Outcome:

This paper will define and evaluate gender as a social construct and will help to identify the ways gender, power, privilege, and oppression play out across a range of cultures and human experiences. It will demonstrate an understanding of gender as it intersects with sexuality, race, ethnicity, religion, class and other critical variables. This paper will also train students in integrating the perspectives of multiple disciplines, approach the research in human development with a critical eye, and develop the skills that will allow them both to conduct their own research and apply them to contemporary, real-world situations. Specifically, the student learning outcomes for Human Development include- demonstrating an understanding of how gender, ethnicity, class, historical period, and social location relate to the life course experience; understanding and working effectively with a diversity of individuals and communities; applying theory and research to contemporary problems and real-world situation; design and implement research, analyze data appropriately, and judge the significance of findings.

Group-A: Gender Studies 25 Marks (Written: 20, Internal Assessment: 05)

1) Gender: Meaning, Gender Socialisation, Gender Roles, Gender and Development, Gender Discrimination, Gender Budgeting
2) Approaches to Gender Development: Gender Development Index, Gender Empowerment Measure, Policies, Programs and Role of NGOs
3) Gender Issues with special reference to India (at least one): Gender and Health, Gender and Education, Gender and Environment, Violence against women, Problems of Girl Child, etc.

References:

a) Connell, R.W. (2002). “Gender”. Cambridge: Polity Press
b) S. Gunew (ed.) (1991). “A Reader in Feminist Knowledge”. London, Routledge.
c) Oakley A (1985). “Sex, Gender and Society”. London, Temple Smith.
d) Dr. Mahabaleshwar Rao, Gender, School Education (2017), VismayaPrakashana.
e) Dr. N. B. Kongavada et al., Gender School and Society (2018), Vidyanidhi Prakashana.
f) Nivedita Menon. Gender and Politics in India. Oxford University Press. 2001
g) Afreen, A. and Chakraborty, C. (2019). “Crime in India: A State-Level Analysis”, Vidyasagar University Journal of Economics, Vol. XXI, pp. 45-54, 1st November. (ISSN 0975-8003).
h) Chakraborty, C., Afreen, A. and Pal, D. (2021). “Crime against Women in India: A State-Level Analysis”, Journal of International Women's Studies, 22(5), June, pp 1-18. Available at :https://vc.bridgew.edu/jiws/vol22/iss5/1
i) Chakraborty, C. and Pal, D. (2022). “Environmental Sustainability, Growth Trajectory and Gender: Contemporary Issues of Developing Economies”. Emerald Insights.

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Group –B:Human Development 25 Marks (Written -20, Internal Assessment -05)

1) Approaches to Human Development

Earlier approaches to development

a) Redistribution with Growth Approach
b) Basic Needs Approach
c) Quality of Life Approach
d) Human Capital Approach

Human Development

a) Commodity Based system and Utility Approach
b) Capability Approach-role and relevance, capabilities and freedoms, criterion for selecting capabilities, introduction to other attempts, critique of the capability approach.

Theory of Justice

a) Rawls and other
b) Comparison of Rawlsian Approach and Capability Approach

2) Measurement of Human Development

Need for Indices- limitations of per capita GDP as an indicator

Earlier Indices

a) Physical Quality of Life Index (PQLI)
b) Disability Adjusted Life Years
c) Basic Capabilities Index

Emergence of Human Development Index and other indices

a) HDI as compared to per capita GDP
b) Method of computing HDI
c) Critique of HDI
d) Human Poverty Index-I & II
e) Happiness Index

3) Experience of Human Development

Achievements in Human Development-Perspectives from cross country comparisons and inter-state comparisons within India

Sustainable Development Goals- Rationale, progress so far and Challenges ahead

References:

a) Lerner, R. M. (2018). Concepts and theories of human development. Routledge.
b) Salkind, N. J. (2004). An introduction to theories of human development. Sage Publications.
c) Lerner, R. M. (1998). Theories of human development: Contemporary perspectives.
d) Green, M. G., &Piel, J. A. (2015). *Theories of human development: A comparative approach*. Psychology Press.
e) Anand, S., & Sen, A. (1995). Gender Inequality in Human Development: Theories and Measurement.

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f) Lerner, R. M., Lewin-Bizan, S., & Warren, A. E. A. (2011). Concepts and theories of human development.
g) Felice, E., &Vasta, M. (2015). Passive modernization? The new human development index and its components in Italy's regions (1871–2007). *European Review of Economic History*, *19*(1), 44-66.
h) Sagar, A. D., & Najam, A. (1998). The human development index: a critical review. *Ecological economics*, *25*(3), 249-264.
i) McGillivray, M., & White, H. (1993). Measuring development? The UNDP's human development index. *Journal of international development*, *5*(2), 183-192.
j) Noorbakhsh, F. (1998). A modified human development index. *World development*, *26*(3), 517-528.
k) Nussbaum, M. C. (2009). Creating capabilities: The human development approach and its implementation. *Hypatia*, *24*(3), 211-215.
l) Alkire, S., &Deneulin, S. (2009). Introducing the human development and capability approach. *An introduction to the human development and capability approach. London: Earthscan*.
m) Kukathas, C., & Pettit, P. (1990). Rawls: a theory of justice and its critics.
n) Rawls, J. (1973). Some ordinalist-utilitarian notes on Rawls's theory of justice. *The Journal of Philosophy*, *70*(9), 245-263.
o) Barry, B. M. (1973). The liberal theory of justice: A critical examination of the principal doctrines in a theory of justice by John Rawls.
p) Hare, R. M. (1973). Rawls' theory of justice--I.

ECO 401 (Optional): Data Analytics with R and Python 50 Marks (Practical) 5 credits
(Theory and Practical: Theory= 5+15 and Practical= 5+25)

Course Outcome:
By the end of this course, students will be able to:

- Gather sufficient relevant data, conduct data analytics using scientific methods, and make appropriate and powerful connections between quantitative analysis and real-world problems.
- Demonstrate a sophisticated understanding of the concepts and methods; know the exact scopes and possible limitations of each method, and show the capability of using data analytics skills to provide constructive guidance in decision making.
- Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
- Make better economics/business decisions by using advanced techniques in data analytics.

Group A: Data Analytics with R 25 Marks

1) Basic Concepts of Language and Programming with R-studio:
    a) Lists of Objects and Data Frames
    b) Reading and Writing Data Files

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c) Calling Functions; Conditions and Loops

2) Data Summarization and Visualization
    a) Elementary Statistics
    b) Basic Data Visualization
    c) Probability Distributions
    d) Sampling distribution
3) Statistical Testing and Modeling
    a) Hypothesis Testing, ANOVA
    b) Simple and Multiple Linear Regression
    c) Linear Model Selection and Diagnostics: Subset Selection Methods, Ridge Regression and the Lasso, Principal Components Regression, Partial Least Squares Regression
    d) Polynomial Regression: Step Functions, Splines, GAMs
4) Classification, Clustering and Decision Tree
    a) Logistic Regression
    b) Linear and Quadratic Discriminant Analysis
    c) Classification Using a Nearest Neighbour Analysis
    d) Clustering: K-means and Hierarchical;
    e) Decision Trees
5) Advanced Graphics
    a) Advanced Plot Customization
    b) Colours and Plotting in Higher Dimensions
    c) Interactive 3d Plots

References:

a) Johannes Ledolter(2013), Data Mining and Business Analytics with R, by; Publisher: Wiley
b) Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshiran(2013). *An Introduction to Statistical Learning with Application in R*, Springer
c) Tilman M. Davies (2016). The Book of R: A First Course in Programming and Statistics. no starch press, San Francisco

Group B: Data Analytics with Python 25 Marks

1) Python Fundamentals
    a) Python package for data science
    b) Importing and Exporting Data in Python
    c) Cleaning and Preparing the Data
2) Data Summarization and Visualization
    a) Descriptive Statistics; Basic of Grouping; ANOVA, Correlation etc,;
    b) Chi-square - Goodness of Fit Test, Test of Independence;
    c) Difference types Graphical presentation

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3) Model Development and Evaluation
    a) Simple and Multiple Linear Regression
    b) MLE and Logistic regression Model Evaluation Using Visualization
    c) R-squared and MSE for In-Sample Evaluation
    d) Prediction and Decision Making
    e) Model evaluation
4) Clustering analysis
    a) Similarity and dissimilarity, Distance matrix,
    b) Clustering methods: partitioning, K-means clustering, Hierarchical method of clustering
5) Classification and Regression Trees (CART)
    a) Basic concepts
    b) Attribute selection measures: Information Gain, Gain ratio, Gini Index and decision tree

References:

a) McKinney, W. (2012). Python for data analysis: Data wrangling with Pandas, NumPy, and IPython. " O'Reilly Media, Inc.".
b) Swaroop, C. H. (2003). A Byte of Python. Python Tutorial.
c) Jiawei Han and Micheline Kamber (2006). Data Mining: Concepts and Techniques.
d) Leonard Kaufman, Peter J. Rousseeuw (1990). Finding Groups in Data: An Introduction to Cluster Analysis. “John Wiley & Sons, Inc”.

ECO 492: Computer Applications in Economics 50 Marks 5 credits

(Computer Practical)

Course Outcome:

This is a course for computer application in economic analysis. It deals with basic knowledge of computers, data, and estimation of statistical tools by using software and analyzing the results of economic relationships, testing economic hypotheses and forecasting. By the end of the course, the student should be able: to become familiar with basic knowledge of computers; to become familiar with a statistical software; to draw distributive tables, graphs, and trend lines; to estimate the parameters of multiple regressions with the help of software and interpret it; to estimate weights, distributive tables, regression and any other relevant techniques by using real data.

1) Use of Computers through programmes: Computer Languages: FORTRAN, C etc.: Some simple programming problems (Sorting, Calculation of A.M., S.D., simple regression etc.).
2) Data Analysis with MS-Excel: Summary Statistics, Hypothesis Testing, ANOVA, Correlation and Regression,
3) Factor Analysis, PCA, Logit and Probit Analysis with SPSS/ STATA

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4) Data Analysis with EViews/ STATA: Summary Statistics, Hypothesis Testing, ANOVA, Correlation and Regression
5) Basic Econometric Applications in Time series Analysis with EViews / STATA.
6) Econometric Application in Panel data Analysis with STATA/EViews.

References:

a) McCormick, K, et al (2017), SPSS Statistics for Data Analysis and Visualzation, John Willy and Sons
b) M. Pal, Fortran 77, Asian Books Pvt. Ltd, 2003
c) Balagurusami E, Programming in ANSI C, Tata McGraw Hill, 2002.
d) Sankar Kumar Bhaumik(2015). "Principles of Econometrics: A Modern Approach Using EViews", OUP, India.

ECO 403: Development Economics: Theory and Experiences 50 Marks 5 credits

Course Outcome:

At the end of the course the students will be able to: learn the general concepts of development economics. They shall also be acquainted with some advanced topics: Understand what makes underdevelopment persist and what helps development succeed; the importance of the unorganized sector and the need for social protection programmes; familiar with cutting-edge research topics in the field; improvement in the analytical ability and their access to publishing in academic journals.

The second half of this course is designed to learn the interrelationship between the process of globalization and that of development in general. By studying both the successes and crises stories of different developing countries they will be able to understand the possible effects of different policies and/ or changes in the global economic order. Here, we will also discuss what drives different bilateral, and multilateral agreements under the WTO regime and how to look at its prospects and analyze its effect from the supporting facts.

Group A: Theories of Development: 25 Marks (Written -20, Internal Assessment -05)

1) Dual Economy: Structure; Rural-Urban Wage Gap and Labour Turnover Model; Surplus labour and Wage Productivity Model
2) Sen's Measure of Disguised Unemployment
3) Agricultural and Industry interaction – Harris- Todaro Model & Kaushik Basu's Formalization.
4) Informal Sector and Social Protection

References:

a) Debraj Ray, Development Economics, Princeton University Press (1998).
b) Kaushik Basu, Analytical development Economics: The Less Developed Economy Revisited, The MIT Press, Cambridge (203)

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c) Kanan, K.P., Sribastava, Sengupta (2006), 'Social Security for unorganised sector: A major national initiative', EPW, August 12.
d) NCEUS (2007), 'Social security for Unorganised Workers', New Delhi, May.

Group-B: Development under Globalisation: 25 Marks (Written -20, Internal Assessment -05)

1). Growth and Crisis of Developing Countries under Globalization
2). Impact of Trade on Employment, Poverty and Income Inequality: The Wage-Gap Debate
3). Economic Integration: Regional Blocs, Multilateralism and WTO

References:

a) Acharyya, R. And Kar, S.: International Trade and Economic Development, Oxford
b) Caves, R. E., Frankel, J.A. and Jones, R.W: World Trade and Payments- An Introduction, 9 th Edition, Pearson.
c) Marjit, S.:International Trade and Economic Development- Essays in Theory and Policy, Oxford.
d) Krugman, P., Currency and Crises, MIT Press.
e) Krugman, P.R. and Obstfeld, M.: International Economics: Theory and Policy, 8 Edition, Pearson.
f) Marjit, S. and Acharyya, R.: International Trade, Wage Inequality and the Developing Economy: A General Equilibrium Approach, Springer.
g) Sikdar, S., Contemporary Issues in Globalization: An Introduction to Theory and Policy in India, Oxford.
h) Stiglitz, J.E and Charlton, A.: Fair Trade For All: How Trade Can Promote Development, Oxford

ECO 404: Indian Economics-II 50 Marks 5 credits

Course Outcome:

The course is critically analyzing the issues, challenges and opportunities of development experiences of the Indian economy. By this, the students will be able to understand the current economic scenario and their routes in history.

Group A: 25 Marks (Written -20, Internal Assessment -05)

1) Growth, Break and Fluctuations in the Indian Economy: Nature and Causes
2) Human Development in India: Methodologies of measurement and their applications.
3) Inequality in India: Methodologies of measurement and their applications.

References:

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1. Bai, J. & P. Perron (2003), “Computation and Analysis of Multiple Structural Change Models”, Journal of Applied Econometrics, 18(1).
2. Bai, J. and P. Perron (1998). “Estimating and Testing Linear Models with Multiple Structural Changes” Econometrica, 66, pp.47–78.
3. Balakrishnan, P and M Parameswaran (2007) “Understanding Economic Growth in India: A Prerequisite” EPW (July14, 2007)
4. Boyce, J. K. (1987), Agrarian Impasse in Bengal – Institutional Constraints to Technological Change, Oxford, Oxford University Press.
5. Dholakia, R. H, and Sapre, A. A. (2011) “Estimating Structural Breaks Endogenously in India’s Post Independence Growth Path: An Empirical Critique” Journal of Quantitative Economics, Vol (9) No. (2) July 2011.
6. Dholakia, R. H. (2007). Understanding growth regimes in India: Some observations. Economic and Political Weekly, August 25th.
7. Perron, P. (1989). “The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis”, Econometrica, Vol. 57, No. 6, pp. 1361-1401
8. Zivot, E. and Andrews, D. (1992). Further evidence of great crash, the oil price shock and unit root hypothesis. Journal of Business and Economic Statistics, 10, 251-270.
9. Anand, S. and A. Sen (1994): Human Development Index: Methodology and Measurement, Occasional Paper 12, *Human Development Report Office, UNDP, New York*; **Reprinted** in S. Fukuda-Parr and A.K. Shiv Kumar (eds) Readings in Human Development (2003), *New Delhi: Oxford University Press.*
10. Anand, S. and A. Sen (2000): “The Income Component of the Human Development Index”, *Journal of Human Development* 1(1): 83–106.
11. Dholakia, R. (2003): Regional Disparity in Economic and Human Development in India, *Economic and Political Weekly*, 38 (39), pp. 4166-4172.
12. Klugman. J, F. Rodríguez & H-J Choi (2011): The HDI 2010: New Controversies, Old Critiques, *UNDP-Human Development Reports, Research Paper 2011/01.*
13. Mondal, D. (2005): Human Development Index-An Essay on Methodology and Implication, *FIRMA KLM Private Limited, Kolkata.*
14. National Human Development Report (India), Various Issues.
15. Ravallion, M. (2010): “Troubling Tradeoffs in the Human development Index”;Policy Research Working Paper 5484, World Bank, Washington DC
16. UNDP (United Nations Development Programme): *Human Development Reports, Various Issues.*
17. Dev Mahendra and S, Ravi C. “Poverty and Inequality: All-India and States, 1983-2005”, Economic and Political Weekly, 2007, 10.
18. Kolm S. C. (1976), “Unequal Inequalities I”. Journal of Economic Theory. 12:416-442.
19. Krtscha, M (1994), “A New Compromise Measure of Inequality,” in Models and Measurement of Welfare and Inequality, W Eichhorn (ed), Heidelberg: Springer-Verlag

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Group B: 25 Marks (Written -20, Internal Assessment -05)

1) Trade Liberalization in India- Balance of Payments, International Capital Movements and FDI, Convertibility of foreign currency, Associations between trade balance and current account balance, measuring trade openness and international competitiveness for India, Effects of devaluation in India, J-Curve for India, Roles of fiscal and monetary policies in restoring India’s internal and external balances, FOREX Reserves of India, Contractionary currency crashes in developing countries, Impact of recent Trade War on India
2) Public Finance in the context of India’s economic development-Functions of public finance in India, Mode of financing of public spending in India, Capital and revenue expenditures, Trends of capital and revenue expenditures and their impacts upon India’s GDP and Social Sectors
3) Green Growth and Sustainable Development in India-Concepts, measurement of green GDP, internal economy equilibrium with environmental sustainability, trends of conservation capital in India

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l) Das, R. C. (ed, 2021). Global Tariff War: Economic, Political and Social Implications, Emerald

ECO-405: Dissertation/ Field Study/ Internship 50 Marks 5 credits
50 Marks (Paper -30, Viva -20)

Course Outcome:

Upon successful completion, students will have the knowledge and skills to: plan and engage in, an independent and sustained critical investigation and evaluation of a chosen research topic relevant to the environment and society; systematically identify relevant theory and concepts, and relate these to appropriate methodologies and evidence, apply appropriate techniques and draw appropriate conclusions; engage in systematic discovery and critical review of appropriate and relevant information sources; appropriately apply qualitative and/or quantitative evaluation processes to original data; understand and apply ethical standards of conduct in the collection and evaluation of data and other resources; communicate research concepts and contexts clearly and effectively both in writing and orally.

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