

GOKHALE INSTITUTE OF POLITICS AND ECONOMICS

Deemed to be University u/s 3 of the UGC Act, 1956

PUNE 411004

(Approved by Board of Studies 26/02/2024 & 28/05/2024; Approved by Academic Council 5-6-2024)

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M.Sc. (Agribusiness Economics)

COURSE STRUCTURE & SYLLABUS

Program Outcomes

Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate /postgraduate program of study.

Communication Skills: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.

Critical thinking, Problem solving and Analytical reasoning: Capability to apply analytic thought to a body of knowledge; analyses and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories, philosophies.

Acquiring research-related skills, scientific reasoning and reflective thinking: A sense of inquiry and capability for asking relevant/appropriate questions; ability to recognize cause-and-effect relationships, define problems, formulate and test hypotheses, analyses, interpret and draw conclusions from data; ability to plan, execute and report the results of an experiment or investigation.

Self-directed lifelong learning: Capability to use ICT in a variety of learning situations; ability to work independently, identify appropriate resources required for a project; ability to acquire knowledge and skills, through self-paced and self-directed learning aimed at personal development.

Employability Options: All the programs prepare the students for job profiles that demand numerical, analytical, and problem-solving skills, such as financial management, market research, business planning, budgeting, resource allocation, etc.

The present curriculum goes with Learning Outcome-based Curriculum Framework (LOCF) for all its programs. The approach is envisioned to provide a focused, outcome-based syllabus with an agenda to structure the teaching-learning experiences in a more student-centric manner. The LOCF approach has been adopted to strengthen students' experiences as they engage themselves in the program of their choice. Each program vividly elaborates its nature and promises the outcomes that are to be accomplished by studying the courses. Our students became eligible for all competitive exams like SSC, Indian Administrators, Insurance sector, Data Analyst, Tourism, Environment Management, Bank PO's, Media, MNC, NGO, and to prepare them for start-ups. In short, each program prepares students for sustainability and life-long learning.

Program Specific Outcomes

- PSO 1: The students learn the history of the Indian policy making in the field of agriculture and rural development.
- PSO 2: The agribusiness module in particular focuses on subjects like Supply Chain Management, Cooperatives, Commodity Derivative, Agricultural Risk Management and Insurance that enables the students to deal with the current theory, data and issues surrounding the agribusiness sector in India.
- PSO 3: The course also allows students to have hands on experience on statistical computational tools like SPSS. In addition to numerous field trips during the program, students hone their practical skills in a 2-month internship with the leading sector organizations at the end of the first year of the program
- PSO 4: This program equips the students for careers in the agribusiness sector as managers in agro-based Industries, agricultural economists in Research Institutes and consultant in Banking and Financial sectors.

Pedagogy of this course

- Active learning by encouraging discussions in class.
- Inculcating team spirit by providing activities to be done in groups.
- Follow various modes of teaching, to help students adapt to different modes of work they will face post-graduation, to name a few, power point presentations, computer exercises etc.,
- Games and other simulation exercises since working in strategic environment with software packages and languages is inevitable these days.
- Encouraging to do literature review or to write summary of journal articles to keep them afloat with recent developments in the research frontiers.
- Assignments are given to be able to apply theories to real-world examples.
- Quizzes to have clarity of concepts.

Note: Various evaluation methods for students to develop different skills along the way.

I N D E X

Sr. No.	Course Code No.	Name of the Course
COMPULSORY PAPERS		
1	AE-A-01	Indian Agricultural Economics
2	C-01	Microeconomics
3	C-02	Macroeconomics
4	C-03	Statistics
5	C-04	Basic Econometrics
6	AE-A-06	Agricultural Policy Framework in India
7	AE-A-07	Agricultural Finance
8	AE-A-08	International Trade in Agriculture
9	AE-A-10	Agricultural Risk Management and Insurance
10	AE-A-11	Strategic Agro-Food Marketing
11	AE-A-13	Environmental Economics
12	AE-A-16	Supply Chain in Agriculture
13	AE-A-20	Accountancy & Financial Statement Analysis
14	AE-A-21	Advanced Econometrics
15	AE-A-22	Business Analytics
16	AE-A-23	Remote Sensing and GIS
OPTIONAL PAPERS (Any four to be opted)		
1	AE-B-02	Agricultural Cooperatives
2	AE-B-03	Agro-Processing Industries
3	AE-B-04	Organizational Structures in Agricultural Production
4	AE-B-05	Commodities and Commodity Derivatives
5	AE-B-08	Industrial Organization in Agribusiness
6	AE-B-09	Financial Economics
7	AE-B-10	Economic Growth and Development
8	AE-B-11	Political Economy of India's Development
9	AE-B-15	Farm Management Economics
10	AE-B-16	Linear Economics - I
11	AE-B-17	Linear Economics – II
12	AE-B-18	Mathematics for Economic Analysis
13	AE-B-20	Introduction to Game Theory
14	AE-B-21	Social Exclusion and Inclusive Policy
15	AE-B-22	Insurance Economics
16	AE-B-23	Insurance Economics (Advanced Practices)
17	AE-B-24	Urban Economics
18	AE-B-25	Economic Sociology
19	AE-B-26	Economics of Labour
20	AE-B-27	Advanced Microeconomics
21	AE-B-28	Strategic Finance and Investment Banking

Course Code: AE-A-01

Course Name: Indian Agricultural Economics

Course Outcomes:

The objective of this course is to provide a detailed treatment of issues in agricultural economics to those intending to specialize in this area. Its objective is to formalize students with policy issues that are relevant to Indian Agricultural Economics and enable them to analyse the issues, using basic macro-economic concepts

Module 1:

Scope and Subject matter of Agricultural Economics, Nature and Utility of Agricultural Economics, Role and Importance of Agriculture in National Economy: share in National income, Source of livelihood, Employment generation, Industrial development and trade and economic planning.

Module 2:

National Resource base of Indian agriculture; climate, land resources, water resources, India's position in World Agriculture, Comparison of India with other countries.

Module 3:

Agricultural Growth in India during pre and post-Independence period; contribution of area and yields, sources of agricultural, levels and growth of crop yields, value of crop output, challenges ahead.

Module 4:

Factors responsible for agricultural development in India, Growth in use of technological factors in production such as irrigation, seed, fertilizers, capital during last five decades

Module 5:

Land Utilization Pattern, Changes in agrarian structure in India, Patterns of Cropping in different regions, Shift in Cropping Pattern and its Implications on Food Security.

Module 6:

Credit in Indian agriculture: purposes of loans, Sources of finance and changes in these over the plan period. Factors determining demand for credit. Recent policy changes in regard to farm credit and their implications.

Module 7:

Marketing: Characteristics of primary agricultural markets in India, Regulated markets and market intervention, Marketing efficiency, Marketed and Marketable surplus, Marketing Channels and Functionaries

Module 8:

Farm prices, Trends in relative prices of farm products, Supply response to prices in agriculture; Behavior of marketed surplus, Price policy in India and its basis, Cost concepts

Suggested Readings:

- Acharya and Agarwal, 1987, *Agricultural Marketing in India*, Oxford & IBH Publishing Company.
- *Agricultural Research Data Book 2009*, Indian Agricultural Statistics Research Institute, Pusa, New Delhi 110 012
- *Agricultural Statistics at a Glance 2010*, Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi.
- Bhalla, G. S. and Singh G., 2001, *Indian Agriculture: Four Decades of Development*, Sage Publications.
- Bhalla, G.S., 2007, *Indian Agriculture since Independence*, National Book Trust, India.
- Chadha, G.K.; S. Sen and H.R. Sharma, 2004, *Land Resources, State of the Indian Farmer*, Vol. 2, Academic Foundation, New Delhi.
- Dantwala, M. L. and Others, 1991, *Indian Agricultural Development since Independence: A Collection of Essays*, Oxford & IBH Publishing Co., New Delhi.
- Dhawan, B. D., 1988, *Irrigation in India's Agricultural Development*, Sage Publications Pvt. Ltd.
- Report of the Working Group on Agricultural Marketing Infrastructure, Secondary Agriculture and Policy Required for Internal and External Trade for the XII Five Year Plan 2012-17, 2011, Agriculture Division, Planning Commission, GOI
- Report of The Research Study on Estimation of Marketing Efficiency of Horticultural Commodities under Different Supply Chains in India, 2010, NCAP, New Delhi
- *State of Indian Agriculture: 2012-13*, Ministry of Agriculture, Government of India, New Delhi
- Vaidyanathan, A., 1988, *India's Agricultural Development in a Regional Perspective*, Longman Limited.

Articles

- Acharya, S.S., 2007, "Agribusiness in India: Facts and Emerging Issues", *Agricultural Economics Research Review*, Vol. 20, Conference Issue, pp. 409-424
- Arora, V.P.S., 2010, Promoting Agribusiness in India, *Indian Journal of Agricultural Marketing*, Vol. 24, No. 3, p. 1-31.
- Chand, R., 2001, Emerging Trends and Issues in Public and Private Investments in Indian Agriculture: A Statewise Analysis, *Indian Journal Of Agricultural Economics*, Vol 56, No. 2, April-June 2001
- Chand, R. and Raju, S.S., 2009, Instability in Indian Agriculture During Different Phases of Technology and Policy, *Indian Journal of Agricultural Economics*, 64 (2): 283-88.
- Chand, R., Raju, S.S. and Pandey, L.M., 2007, Growth Crisis in Agriculture: Severity and Options at National and State Levels, *Economic and Political Weekly*, 42 (26): 2528-33.
- Chand, R., 2003, Government Intervention in Foodgrain Markets in the New Context, Policy Paper 19, NCAP, New Delhi
- Desai, B.M., D Souza, E., Mellor, J.W., Sharma, V.P. and Tamboli, P., 2011, Agricultural Policy Strategy, Instruments and Implementation: A Review and the Road Ahead, *Economic and Political Weekly*, Vol. 46, No. 53, pp. 42-50.
- Dev, S.M., 2012, Policies for Raising Agricultural Growth and Productivity in India, IGIDR Proceedings/ Project Series, PP-069-SMD1

- Dev, S.M. and Rao, N.C., 2010, Agricultural Price Policy, Farm Profitability and Food Security, Economic and Political Weekly, Vol. 45, Nos. 26 & 27, 53, pp. 174-182.
- Desai, B.M. and D Souza, E., 2011, Agricultural Policy Strategy, Instruments and Implementation : A Review and the Road Ahead, Economic and Political Weekly, December, 31st, 2011
- Gulati, A. and Sharma, P.K., 1991, Government Interventions in Agricultural Markets : Nature Impact and Implications, Journal of the Indian School of Political Economy, Vol 3, No. 2, April-June, 1991.
- Joshi, P.K., BIRTHAL, P.S. and Monot, N., 2006, Sources of Agricultural Growth in India: Role of Diversification towards High Value Crops, MTID Discussion Paper No. 98, International Food Policy Research Institute, Washington DC, USA
- Kannan, E. and Sundaram, S., 2011, Analysis of Trends in India's Agricultural Growth, Working Paper 276, ISEC, Bangalore
- Kumar, A., Singh, D.K. and Kumar, P., 2007, Performance of Rural Credit and factors Affecting the Choice of Credit Source, Indian Journal of Agricultural Economics, Vol. 62, No. 3, pp. 297-313.
- Kumar, A., Singh, K.M. and Sinha, S., 2010, Institutional Credit to Agriculture Sector in India: Status, Performance and Determinants, Agricultural Economics Research Review, Vol. 23, July December 2010, pp. 253-264.
- Mishra S.N. and Chand, R., 1995, Public and Private Capital Formation in Indian Agriculture: Comments on Complementarily Hypothesis, Economic and Political Weekly, June 24th, 1995
- Mitra, S. and Sareen, J.S., nd, Adaptive Policy Case Study: Agricultural Price Policy in India', Chapter 5, IISD-TERI-IDRC Adaptive Policies Project
- Mohan, R., 2006, Agricultural Credit in India: Status, Issues and Future Agenda, Economic and Political Weekly, March 18, 2006, pp 1013-1021.
- Mullen, K., Orden, D. and Gulati, A., 2005, Agricultural Policies in India: Producer Support Estimates 1985-2002, MTID Discussion Paper No. 82, IFPRI, Washington DC, USA
- Patnaik, G., 2011, Status of Agricultural Marketing Reforms, IGIDR Proceedings/ Project Series, pp-069-11b
- Ramaswami, B., 2002, Efficiency and Equity of Food Market Interventions, Economic and Political Weekly, March 23, 2002
- Rao, V.M., 2001, The Making of Agricultural Price Policy: A Review of CACP Reports, Journal of Indian School of Political Economy, Vol. 13, No. 1, Jan-March, pp. 1-28.
- Satyasai, K.J.S., 2008, Rural Credit Delivery in India: Structural Constraints and Some Corrective Measures, Agricultural Economics Research Review, Vol. 21, pp 387-394.
- Singh, S., 2002, Multi-national Corporations and Agricultural Development: A Study of Contract Farming in the Indian Punjab, Journal of International Development, Vol. 14, pp. 181-194.
- Srivastava, R., Saxena, N.C. and Thorat, S., 2008, Land Institutions, Policy and Reforms in India, in The Dragon and the Elephant, Agricultural and Rural reforms in China and India edited by Ashok Gulati and Shenggen Fan, Oxford 2008.

Course Code: C-01

Course Name: Microeconomics

Course Outcomes:

To acquaint the students with introductory consumer theory and the limitations with an orientation towards behavioural approach (Module I)

- To understand how the choice will be made under uncertainty and how the attitude towards risk will be determined. (Module II)
- To introduce to the students, the concepts associated with the functioning of a firm. (Module III)
- To study the various types of markets prevalent in an economy and the nature of their decision making (Module IV)
- To study the information economics i.e. role of asymmetric information and its way out, designing of optimum incentive scheme under information asymmetry (Module V)
- To acquaint the students with the basics of game theory (Module VI)

Module 1:

Consumer Theory (8 hrs)

- Preference Relation and Its Properties.
- Consumer Preferences and Representation of Preferences by Utility Functions.
- Budget Constraint, Utility Maximization and Derivation of the Demand Function, The Indirect Utility Function and Its Properties, Roy's Identity
- Revealed Preferences. Endowments in the Budget Constraint, Difference between revealed and normative preference
- Limitations of the Consumer Theory
- Behavioral Approach

Module 2:

Choice Under Uncertainty (12 hrs)

- The Expected Utility Model, Utility on Lotteries, Axioms and Preferences under Uncertainty
- Critiques of the Expected Utility Model, Prospect Theory
- Measures of Risk--Domar-Musgrave Index, Roy's Safety Index, Mean-Variance, Semi Variance Mini-max Regret
- Lotteries, Preference Relation over Lotteries, N-M Expected Utility Theory
- Basic Axiom and Representation Theorem Violations of EU theory.
- Subjective Probabilities
- Risk Aversion – Jensen's Inequality, Acceptance Set and Risk Aversion
- Various Measures of Risk Aversion like Arrow-Pratt Measure of Absolute Risk Aversion, Relative Risk Aversion
- Certainty Equivalent and Risk Premium
- Arrow-Pratt Approximation of Risk Premium
- Pratt's Theorem
- Classes of Utility Functions: Decreasing Absolute Risk Aversion (DARA), Constant Absolute Risk Aversion (CARA), Increasing Absolute Risk Aversion (IARA), Decreasing Relative Risk Aversion (DRRA), Increasing Relative Risk Aversion (IRRA), Constant Relative Risk Aversion (CRRA) etc. and their comparative statics

- Applications to Various Settings and Comparative Static Results.

Module 3:

Theory of Firm (6 hrs)

- Theory of Organization. Measurements of Inputs and Outputs
- Profit Maximization, Comparative Statics, Profit Function. Hotelling's Lemma, Factor Demand Functions, Supply Function.
- Cost Minimization, Cost Functions, Average and Marginal Cost Functions, Short-Run and Long-Run Costs, Marginal Cost Pricing, Aggregation – Industry Supply Function, Shephard's Lemma, Conditional Factor Demand Functions.
- The Duality Between Production and Cost Functions.

Module 4:

Theory of Market (8 hrs)

- Perfect Competition: Short-Run and Long-Run Market Equilibrium.
- Monopoly: Monopoly Power, Equilibrium Output and Prices, Effect on Welfare, Price Discrimination – First, Second, And Third-Degree, Quality Choice Under Monopoly. Market Power, Sources of Market Power, Monopoly & Regulation of Monopoly. HHI or Any Other Index Used to Measure the Concentration of Firms.
- Monopolistic Competition.
- Oligopoly: Cournot Equilibrium, Stability, Comparative Statics, Bertrand Equilibrium. Quantity Leadership, Price Leadership. Conjectural Variations.
- Spatial Competition: Linear City Model, Circular City Model.
- Market failure, public goods and introduction to welfare economics,

Module 5:

Information Economics (10 hrs)

- Introduction: The Elements of the Problem
- Types of Asymmetric Information Problems– Moral Hazard, Adverse Selection, Signalling
- Static Full Information Benchmark
- Hidden Action in a Two Action-Two outcome model as well as in a Simple Continuous Action and Continuous Outcome Case
- Solution through First Order Approach and its Validity
- Value of Information and Characteristics of the Optimal contract
- Adverse Selection and Signalling: Akerlof's Model of Lemons,
- Signalling in the Spence's Model of Education
- The Notions of Pooling and Separating Equilibria.

Module 6:

Game theory (introduction) (6 hrs)

- Description of a Game, Normal Form Representation of the Game, Extensive Form Representation of The Game
- Solution Concepts—Nash Equilibrium, Mixed Strategies, Repeated Games, Sequential Games.

Suggested Readings:

Books:

- Serrano.R and Feldman. M.A. (2018). A Short Course in Intermediate Microeconomics with Calculus. Cambridge University Press
- Gravelle, H. and Rees R, 2003, Microeconomics, 3rd Edition, *Prentice Hall*
- Kreps, David. (1992). A Course in Microeconomic Theory, Eastern Economy Edition, *Prentice Hall of India*
- Mas-Colell.A, Whinston &Green, Microeconomic Theory. (1995). Oxford *University Press*
- Perloff.J. (2019). Microeconomics, 7th Edition, *Pearson Education*.
- Pindyck, Robert S. and Rubinfeld, Daniel L. (2017), 9th Edition Microeconomics, *Pearson College*

Articles:

- Arrow, K.J. (1965) Aspects of the Theory of Risk Bearing. Yrjo Jahnssonin Saatio, Helsinki.
- Hadar, J. and Russell, W. (1969). **Rules for ordering uncertain Prospects.** AER.
- Yan Sun & Shu Li, 2010. **The effect of risk on intertemporal choice**, Journal of Risk Research, Taylor & Francis Journals, vol. 13(6), pages 805-820, September.
- Kahneman, D.and Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk.Econometrica. 47(2),pp263-291

Course Code: C-02

Course Name: Macroeconomics

Course Outcomes:

The course will enable the students:

- To familiarize the students with the contributions of various schools of thought in Macroeconomics. (Module 2 and 3)
- To provide a wider vision of present discourse in Macroeconomics. (Module 6)
- To develop aptitude to relate concepts with research and policy. (Module 5)
- To paraphrase macro-economic policy initiatives both in global and domestic context (Module 2)
- To demonstrate an understanding of the macroeconomic tools to manage business fluctuations. (Module 4)

Module 1:

Macroeconomic Measurement (8 hours)

- An overview of National Accounting.
- Conventions about National Accounting Sectors.
- Concept of value added by production.
- National Product at market price and factor cost.
- Gross and Net Production.
- Methods of Income estimation.
- The Product Approach, The Expenditure Approach, The Income Approach.
- Accounting for Environmental and Social Dimensions.
- Physical quality of life index and Human Development Index.
- Environmentally Adjusted Net Domestic Product.

Module 2:

Background Concepts. (8 hours)

- History of macroeconomic thought- Classical, Keynesian and schools of thought after Keynes.
- Behavioral foundations of Macroeconomics:
- Consumption Function: Keynes Psychological Law and Kuznet's consumption puzzle, Fisher's intertemporal Choice Model, Permanent Income Hypothesis, Life Cycle Hypothesis and Relative Income Hypothesis.
- Investment Function: Neo-Classical Theory of Investment, Stock Market and Tobin's q-ratio, Accelerator Theory of Investment (simple and flexible acceleration models)
- The Monetarist School: The quantity theory of money approach.

Module 3:

Rational Expectations and new Classical Macroeconomics (4 hours)

- The basic concepts – the Phillips curve and Lucas Supply equation

Module 4:

Real Business Cycle School (6 hours)

- Real Business Cycle School and inter temporal substitution of labor.
- Real Business Cycle theory- technology shocks- neutrality of money and flexibility of wages and prices.

- Real Business cycle view on great depression.

Module 5:

Micro Foundations of real and nominal rigidities: New Keynesian School (8 hours)

- Imperfect competition and price setting- Real rigidity- Coordination failure models.
- Real Non Walrasian Theories- Small Menu Cost model and Staggering of prices, implicit wage.
- Contract theory- efficiency wage theory- Insider- Outsider model.

Module 6:

Basic Infinite Horizon Models (8 hours)

- Ramsey Problem: Command Economy, Decentralized economy, dynamic efficiency - Government in the decentralized economy.
- Overlapping Generations Model.
- OLG with production: two period lives, dynamic inefficiency and altruism, Social Security Models under OLG

Suggested Readings:

Books:

- Barro, Robert J. & Sala-i- Martin, Xavier (1995), *Economic Growth*, McGraw Hill.
- Blanchard, Olivier (2000), *Macroeconomics*, Prentice Hall.
- Blanchard, Olivier and Stanley, Fischer (1989), “*Lectures on Macroeconomics*”, The MIT Press
- Dornbusch, Rudiger, Fischer, Stanley & Startz, Richard (2004), *Macroeconomics*, 9th Edition, McGraw Hill.
- Mankiw Gregory (2002), *Macroeconomics*, 5th Edition, Worth Publishers
- Romer, David (2003), *Advanced Macroeconomics*, 3rd Edition, McGraw Hill Publishers.
- Snowdon Brian and Vane Howard R, (2005) *Modern Macroeconomics: Its Origin, Development and Current State*, Edward Elgar Publishing Ltd.

Additional Reading List: Website Link

- <https://www.imf.org/en/Publications/WEO/Issues/2022/07/26/world-economic-outlookupdate-july-2022>
- <https://www.federalreserve.gov/newsevents/pressreleases/monetary20220727a.htm>
- <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220721~53e5bdd317.en.html>
- <https://www.ecb.europa.eu/press/blog/date/2022/html/ecb.blog220723~c2b1d4b654.en.html>
- https://www.ecb.europa.eu/ecb/educational/explainers/tell-memore/html/interest_rates.en.html
- https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=53904
- <https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=21035>
- <https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=21038>
- https://dea.gov.in/sites/default/files/MER%20June%202022_Final.pdf
- <https://www.indiabudget.gov.in/doc/frbm1.pdf> 16. <https://www.rbi.org.in>

Course Code: C-03

Course Name: Statistics

Course outcomes:

The course will enable the students:

- To acquaint the students with hypothesis testing and to familiarize its use in real life. (module 1)
- To familiarize the students with distribution and its various types. (module 2)
- To acquaint the students with estimation, inference and its various methods (module 3)
- To familiarize the students with various qualitative tests. (module 4)
- To identify the various types of nonparametric statistics. (module 5)
- To acquaint the students with operational research and its various solving methods. (module 6)
- To improve the students' analytical and problem-solving skills, familiarize the students with various real life examples of linear programming problems. (module 7)

Module 1:

Testing hypotheses.

- Simple versus composite hypothesis.
- critical region, type I and type II errors, power of a test.
- The Decision Rule, trinity of classical tests (Wald test, Lagrange multiplier, likelihood ratio).
- application of hypothesis testing with known and unknown variances, test for correlation.

Module 2:

Special Distributions.

- Introduction
- Various types of distributions (The Poisson Distribution, The Normal Distribution, The Geometric Distribution, The Negative Binomial Distribution, The Gamma Distribution,
- The Central Limit Theorem.

Module 3:

Estimation and Inference.

- Introduction.
- Estimating Parameters.
- The Method of Maximum Likelihood, the Method of Moments.
- Interval Estimation, Properties of Estimators, Minimum-Variance Estimators.
- The Cramer-Rao Lower Bound, Sufficient Estimators, Consistency, Bayesian Estimation.

Module 4:

Bivariate Distributions.

- Contingency tables, joint and conditional distributions.
- Odds ratio, test of independence.
- Analysis of Variance (ANOVA), analysis of covariance.

Module V: Nonparametric Statistics.

- Introduction.
- Sign Test, Wilcoxon Tests, The Kruskal-Wallis Test, The Friedman Test.
- Testing for Randomness, Comparing Parametric and Nonparametric Procedures.

Module 5:

Introduction to OR.

- Basic algorithms; Linear programming (LP).
- Graphical and Simplex.
- LP Formulation and LP with solver and sensitivity analysis.
- Transportation and transshipment models; Simulation; Decision Analysis.

Module 6:

Advanced algorithms in OR.

- Goal Programming; Queuing Theory, Networking Models.
- Markov chains; Data Envelopment Analysis (DEA); Analytical Hierarchical processing (AHP).

Reference list:

- Larsen, R. J., and Morris L. M. (2001): *An Introduction to Mathematical Statistics and its Applications*. 3rd ed. Upper Saddle River, NJ: Prentice Hall.
- Lewis M. (2011): *Applied Statistics for Economists*, Routledge.
- Newbold P. (2007): *Statistics for Business and Economics* (6th edition or later), Prentice Hall.
- Sweet, S. and Karen G.- M. (2008): *Data Analysis with SPSS: A First Course in Statistics*, Allyn & Bacon, 3rd Edition.
- Field A. (2013): *Discovering Statistics using IBM SPSS Statistics*. Fourth Edition, SAGE
- Render and Stair. (2012): *Quantitative Analysis for Managerial Decision Making*.
- Hiller and Liberman. (2011): *Operations Research*.
- Hamdy and Taha. (2013): *Operations Research*.

Course Code: C-04

Course Name: Basic Econometrics

Course Outcome:

The course will enable the students:

- To provide an overview of the subject and build understanding about the concepts and techniques used in econometrics. (Module 1, 6, 8 & 9)
- To examine basic econometric techniques that are widely used in empirical work in economics and other related disciplines. (Module 3 and 5)
- To enable conceptual understanding and ‘hands on’ applications using economic data drawn from real-world examples, rather than on formal theoretical proofs alone. (Module 2, 4 and 7)
- By the end of the course, students should be able to develop simple econometric models and interpret the econometric and statistical results reported in other studies.

Note: Students will be taught software packages for performing econometric applications. Computer exercises will be given.

Module 1:

The nature of Econometrics and Economic Data:

- Introduction, Model Specification and applied research
- The role of data in model specification
- The Structure of Economic Data
- Steps in Empirical Analysis
- Causality and the Notation of Ceteris Paribus in Econometrics, etc.

Module 2:

The Classical Linear Regression Model:

- Estimation and Inference: Ordinary least squares (OLS) estimation, the Classical assumptions, the Gauss-Markov theorem and properties of the OLS estimators
- Interval estimation and hypothesis testing and prediction
- Reporting and interpreting regression results
- Maximum Likelihood techniques
- Restricted Least Square estimation
- Likelihood Ratio (LR)
- Wald and Lagrange Multiplier (LM) Test
- Minimum Variance Bound (Rao-Cramer Inequality Theorem).

Module 3:

Non-linear regression:

- Conversion of non-linear forms into linear forms
- Testing linear verses non-linear functional form
- Appropriateness and relevance of the choice of functional form.

Module 4:

Regression Analysis with Qualitative information: Binary (or Dummy) Variables:

- Exogenous Dummy Variable- Formulating and interpreting coefficients on dummy explanatory variables
- Interactions involving dummy variables and use of dummy variables in seasonal analysis

- Piecewise regression analysis
- The dummy variable alternative to chow test.
- Discrete and Limited Dependent variable - Linear Probability Model, Problems relating to LPM
- Logit and Probit Model
- Multinomial Choice Models: Ordered Response Model; Unordered Response Model, Censored and Truncated Regression Model

Module 5:

Multicollinearity:

- Introduction, perfect versus imperfect Multicollinearity
- Consequences, tests for detection and remedies for Multicollinearity.

Module 6:

Violation of the OLS Assumptions:

- Introduction, Consequences of violation of OLS assumption
- GLS Estimation- Aitken's generalization of Gauss Marks Theorem.
- Heteroscedasticity & Autocorrelation: Causes and consequences, diagnostic tests and remedial procedural

Module 7:

Specifications: Choosing the Independent Variables and Functional Form

- Omitted variables: Too few variables, Irrelevant variables: variable overload, Criterion of choice, superfluous variables etc.
- The use and Interpretation of constant term
- Alternative Functional forms, Problem with incorrect functional form, test for choosing the appropriate functional form.

Module 8:

Lagged Variables and Distributed- Lag Models:

- Introduction, Consequences of applying OLS
- Almon's lag approach
- Koyak Transformation: Partial adjustment hypothesis and adaptive expectations hypothesis, estimation of distributed lag models etc.

Module 9:

Simultaneous Equation Models (SEM):

- Introduction, Structural, reduced form and final form model
- Rational behind the use of SEM - simultaneous bias and inconsistency of the OLS estimator
- Problem of Identification: Rank and Orders conditions
- Methods of estimation: ILS, 2SLS, Instrumental Variable, LIML (LVR), Mixed estimation Method, 3 SLS and FIML methods.

References

Books:

- Green, William H. (2014), *Econometric Analysis*, *Prentice Hall*.
- Griffiths, Hill and Judge (1993), *Learning and Practicing Econometrics*, *Wiley*, New York.
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Articles:

- Amemiya , Takeshi (1980), 'Selection of Regressors', *International Economic Review*, Vol. 21, No. 2, June, pp. 331-354,
- Amin and Islam (2014), 'Are There More Female Managers in the Retail Sector? Evidence from Survey Data in Developing Countries,' Policy Research Working Paper-6843, *World Bank*.
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- Halvorsen, R. and Palmquist, R. (1980), 'The Interpretation of Dummy Variables in Semi logarithmic Equations', *The American Economic Review*, Vol. 70, No. 3, June. pp. 474-475
- Harvey, A. C. (1976), 'Estimating Regression Models with Multiplicative

Course Code: AE-A-06

Course Name: Agricultural Policy Framework in India

Course Outcomes:

The objective of this course is to provide orientation to the students regarding the agricultural policies and its effect on sustainable agricultural development and to make them to understand the globalization and its impact on agricultural development.

Module 1:

Agricultural and Economic Development, Role of Agriculture in Economic/Rural Development, Theories of Agricultural Development, Population and Food supply, Need for sound Agricultural Policies

Module 2:

Planning for Agricultural Growth-Agricultural Policy and Programmes under Planning Periods

Module 3:

Policy on Agrarian Reforms: Abolition of intermediaries, Tenancy Reform, Ceiling of Agricultural Land holdings, Impact of Land Reforms on Farming Community, Fragmentation of Landholdings.

Module 4:

Agricultural Price Policy, Role of CACP, state intervention: Concept of Minimum Support Price and Procurement Price.

Module 5:

Reforms in Agricultural Produce Marketing Committee Act- Direct marketing, contract farming, private markets etc.

Module 6:

Attainment of Self Sufficiency in Foodgrains: Policy initiatives in respect of Agricultural Inputs (Water, Seed, Fertilizer Policy), Promotion of Plant nutrients, Fertiliser subsidy, Agricultural Credit and Insurance; Enforcement of Minimum Wage in Agriculture, policy options for sustainable agricultural development.

Module 7:

Development issues, poverty, unemployment and rural sector

Module 8:

Agricultural taxation

Module 9:

Agribusiness Policies - Concept and Formulation; and New Dimensions in Agri-business Environment and Policy.

Suggested Readings:

Books

- Bhalla, G.S. (2007), Indian Agriculture since Independence, National Book Trust, India.
- Chakaravathi, R. M. (1986), Under Development and Choices in Agriculture, Heritage Publication, New Delhi.
- Eicher K.C. and J. M. Staatz (1998), International Agricultural Development, Johns Hopkins Univ. Press.
- Frank E. (1992), Agricultural Policies in Developing Countries, Cambridge Univ. Press.
- Ghatak, S and K. Ingersent (1984), Agriculture and Economic Development, Select Book Service Syndicate, New Delhi.
- Ghatak, S and K Ingersent (1984) Agriculture and Economic Development, Select Book Service Syndicate, New Delhi
- Jhingan, M. L. (1998), The Economics of Development and Planning, Vrinda Publ.
- Jules, P. N. (1995), Regenerating Agriculture – Policies and Practice for Sustainability and Self Reliance, Vikas Publ. House.
- Report of the Expert Group to Review the Methodology for Estimation of Poverty, Government of India, Planning Commission, 2009
- Sharma, V. P. and Thaker, H. (2011), Economic Policy Reforms and Indian Fertilizer Industry, Allied Publishers, 2011
- Singh, G. (2009), Performance of Formal Rural Credit in India, Gurdev Singh, Allied Publishers
- Singh, S. (2010), Agricultural machinery Industry in India, Allied Publishers
- Thimmaiah, G. and K. Rajan (2004), Policy and Organizational Support, State of the Indian Farmer, Vol. 26, Academic Foundation, New Delhi

Articles

- Basu, K., 2011, India's Foodgrain Policy : An Economic Theory Perspective, Economic and Political Weekly, Vol XLVX, No. 5, p37
- Bhende, M.J., 2005, Agricultural Insurance in India: Problems and Prospects, NABARD, Occasional Paper-44
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- Chadha, G.K. and Bhaumik, S.K., 1992, Changing Tenancy Relations in West Bengal – Popular Notions, Grassroot Realities, Economic and Political Weekly May-16-23, 1992.
- Gadgil, M. and Utkarsh, G., 1999, Intellectual Property Rights and Agricultural Technology : Linking the Micro and Macro Scales, Indian Journal of Agricultural Economics, Vol 54
- Kumar, A.G., Gulati, A. and Cummings, R., 2007, Foodgrains Policy and Management in India, Responding to today's Challenges and Opportunities, Indira Gandhi Institute of Development and Research and International Food Policy Research Institute
- Kumar, P., Joshi, P.K. and Birthal, P., 2009, Demand Projections for Foodgrains in India, Agricultural Economics Research Review, Vol. 22, pp 237-243.
- Kumar, P., Kumar, A., Parappurathu, S. and Raju, S.S., 2011, Estimation of Demand Elasticity for Food Commodities in India, Agricultural Economics Research Review, Vol 24, pp 1-14.
- Panagariya, A., 2002, India at Doha: Retrospect and Prospect, Economic and Political Weekly, January 26th, 2002

- Rath, N., 2011, Measurement of Poverty: In Retrospect and Prospect, Economic and Political Weekly, October 15th, 2011
- Singh, I., 1989, Reverse Tenancy in Punjab Agriculture : Impact of Technological Change, Economic and Political Weekly, Vol. 24, No. 25, pp A86-A92.
- Suryanarayana, M.H., 2011, Expert Group on Poverty: Confusion Worse Confounded, Economic and Political Weekly, November, 12th, 2011.

Course Code: AE-A-07

Course Name: Agricultural Finance

Course Outcomes:

The course aims to make students proficient in concepts and techniques of agricultural financial management.

Module 1:

Agricultural Finance: Concepts and Scope, Importance of Agricultural Finance, Characteristics of farm financial decisions, Steps in the process of farm financial management, classification of loans or credit, role of credit in agriculture and rural development

Module 2:

Agencies of Agricultural Finance: Cooperative, Nationalized Banks, RRBs, NABARD, ARDC, AFC, Regional and All India Financial Institutions, Microfinance, outlines of recommendation of various committees, Programmes of Rural development (SFA, MFAL), Comprehensive Crop Insurance Scheme

Module 3:

Economic Principles Applied to Financial Management of the Farm- Importance of economic principles in the farm financial management, law of diminishing returns, Principle of Marginalism/Substitution /factor-factor/Product-Product relationships, Principles of Equimarginal returns, Principle of Comparative Advantage, Opportunity Cost principle and Cost principle

Module 4:

Tests of Farm Credit Proposal- Economic Feasibility Tests of Credit, Principles of Owners' Equity and Increasing Risk, Procedural Formalities in Sanction of Farm Loans, Repayment Plans

Module 5:

Tools of Financial Analysis: Farm Planning and Budgeting, Balanced Sheet or Net Worth statement.

Module 6:

Business Financing System in India, Money and Capital Markets, venture capital financing and its stages, and International financial management.

Module 7:

Warehouse Receipt Financing, Financing of Supply Chain, Channel Financing

Module 8:

Project Appraisal- B:C Ratio, Internal Rate of Return(IRR), Net Present Value (NPV), Pay Back period

Suggested Readings

Books

- Chandra, P. (2000), Financial Management, Tata McGraw Hill.
- Khan, M.Y. and P. K. Jain (2004), Financial Management: Text, Problems and Cases, Tata McGraw Hill.
- Pandey, I. M. (1997), Financial Management. Vikas Publication
- Ramachandran, N and R.K. Kakani (2005), Financial Accounting for Management, Tata McGraw Hill.
- Reddy, Subba S. and R. Raghu Ram (1996), Agricultural Finance and Management, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
- Singh, Surjit and Vidya Sagar (2004), Agricultural Credit in India, State of the Indian Framers, Vol. 7, Academic Foundation, New Delhi.
- Van Horne J C. (1997), Financial Management and Policy, Prentice Hall.

Articles

- Barton, D., 2000, What is a Cooperative? Mimeo
- Golait, R., 2007, Current Issues in Agriculture Credit in India: An Assessment, Reserve Bank of India Occasional Papers Vol. 28, No. 1, Summer 2007
- Desai, B. M., Objectives and Role of Institutional Finance for Agricultural and Rural Development, Vikalpa, Vol. 14, No. 2, pp. 25-33
- FAO, 2012, Agricultural Cooperatives: Key to Feeding the World.
- Kumar, A., Singh, K. M., and Sinha, S., 2010, Institutional Credit to Agriculture Sector in India: Status, Performance and Determinants, Agricultural Economics Research Review Vol. 23, pp. 253-264
- Mahajan, V., and Ramana, N. V., 2004, Agricultural Finance by Microfinance Institutions Problems and the Way Forward, Mimeo Murthy, C. M., Suresh, B. H., and Veena, K. P., 2009, Dimensions of Institutional Finance for Agricultural Activities: An Analysis, Indian Management Studies Journal, Vol.13, pp. 13-30
- Shah, M., Rao, R., and Shankar, P. S. V., 2007, Rural Credit in 20th Century India Overview of History and Perspectives, Economic and Political Weekly April 14, 2007, pp. 1351-1364
- Shylendra, H. S., 2006, Microfinance Institutions in Andhra Pradesh: Crisis and Diagnosis, Economic and Political Weekly, May 20, 2006, pp.1959-1963
- Shylendra, H. S., 2007, Missing the Forest for the Trees: An Assessment of the Microfinance Sector (Development and Regulation) Bill 2007, Institute of Rural Management Anand Working Paper No.200
- Vaidyanathan, A., 2013, Future of Cooperatives in India, Economic and Political Weekly, Vol. 48, No. 18, pp.30-34.

Course Code: AE-A-08

Course Name: International Trade in Agriculture

Course Outcomes:

The course provides insights into theoretical aspects as well as policy related issues in international trade in agricultural commodities. The objective is to acquaint the students with various principles and theories that explain basis for international trade and trade patterns, trends and patterns in international trade in agriculture, provisions of Agreement on Agriculture under WTO and their impact on agricultural trade with a focus on status of developing economies. The paper also deals with various issues relating to Indian agricultural trade and export import procedures and documents needed for conducting import export business.

Module 1:

Importance of Agriculture in development, trade and agriculture, Inter-regional verses international trade- importance of trade, case for free trade and for protectionism- globalization and agriculture – case of free trade and for protectionism in case of agriculture.

Module 2:

Mercantilist doctrine of balance of trade - Adam Smith and absolute advantage theory of trade - Ricardo and comparative advantage, its limitations - Comparative advantage in Heckscher Ohlin Model - Factor price equilisation theorem - Factor intensity reversal - the empirical evidence on Heckscher Ohlin theory - the Leontief Paradox. Stolper-Samuelson Theorem – Rybczynski Theorem- Trade theories and empirical evidence relating to trade patterns, applicability to India. Recent explanations of the basis of trade in terms of technological lead, domestic market size and product cycle approach – Linder’s hypothesis — Gravity models- empirical evidence.

Module 3:

Instruments of trade policy- Economic rationale and impact of tariffs - optimum tariff rate - quotas and subsidies – other instruments of trade policy - effective rates of protection. Trade policy of developing economies- Import substituting industrialization and export oriented industrialization.

Module 4:

Brief history of GATT- provisions relating to agri trade- factors leading to establishment of WTO- basic principles- functions and organization - Agreement on agriculture - main provisions - market access- domestic support - export subsidies-special and differential treatment, sanitary and phytosanitary provisions, export standards, TRIPS, various rounds and Doha impasse - emergence of various country groups /alliances and their participation in negotiations -Issues for further negotiations- implications of WTO provisions on Indian Agriculture - reduction commitments for India. Formation of regional trade blocks- reasons, types and performance – impact on trade.

Module 5:

Overview of Foreign Trade and trade policy of India, Indian agricultural trade-trends and features, Agricultural Trade policy- objectives, instruments of trade policy, trade policy for

various commodities, Competitiveness of Indian Agriculture, measures of competitiveness, competitiveness of various crops, domestic and international prices, competitiveness and commodity trade flows, measures for improving competitiveness of Indian exports- policy recommendations.

Module 6:

Export and import procedures and documentations: Introduction to international business- definition of international business and prerequisites to start export/ import business, Flow of foreign currency in cross border trade-NOSTRO and VOSTRO accounts- meaning of cross border trade settlement-methods of trade settlement with focus on foreign letter of credit- open account-advance payment-documentary credits, documentary collection, and consignment-forex market and broad features of market, Types of documents needed- clearance of goods in air and sea shipment- inco terms, Potential for agri export business in India- Functions and role of institutions involved in agri exports in India- DGFT- Customs- EXCISE – RBI – Shipping - ECGC and Insurance - EPC (APEDA)- EIA)

Module 7:

World agricultural trade: changing structure and pattern - status of developing economies - multilateralism and regionalism – impact on trade- various factors affecting international trade

Suggested Readings

Books

- Bhalla, G.S. (2004), Globalisation and Indian Agriculture, State of the Indian Farmers, Vol. 19, Academic Foundation, New Delhi.
- Chadha G. K. (2003), WTO and Indian Economy. Deep and Deep Publications.
- Datta Samar K. and Satish Y. Deodhar (2001), Implications of WTO Agreements for Indian Agriculture, Oxford and IBH Pub. Co., New Delhi
- Hooda and Gulati (2007), WTO Negotiations on Agriculture and Developing Countries, Oxford University Press, New Delhi
- Gulati, Ashok and Tim Kelley (1999), Trade liberalization and Indian Agriculture: Cropping Pattern Changes and Efficiency Gains in Semi-Arid Tropics, Oxford University Press in New Delhi, New York .
- Vashisht A. K. and Singh Alka (2003), WTO and New International Trade Regime- Implication for Indian Agriculture. Advance Publishing Concept.
- Krugman and Obstfeld (2009), 'International Economics; Theory and Practice' Pearson Publications, New Delhi.

Articles

- Aksoy, M.Ataman and John C. Beghin (2005), 'The Evolution of Agricultural Trade Flows' in M. Ataman Aksoy and John C. Beghin ed. Global Agricultural Trade and Developing Countries, The World Bank, Washington D.C.
- Deodhar, Satish, (2001), 'WTO Pacts and Food Quality Issues', Economic and Political Weekly , July 28, 2001 pg. 2813 to 2816.
- Deodhar, Satish (2001), 'WTO Agreements and Indian Agriculture: Retrospection and Prospects' in S.K. Datta and S. Y. Deodhar ed. Implications of WTO Agreements for Indian Agriculture, CMA Monograph No. 191, IIM-Ahmedabad.
- Export Import Bank of India (2007), Regional Trade Agreements - Gateway to Global Trade, Occasional Paper 120, October 2007.
- Roberts, T. Michael (2009), 'Technical Regulations and Trade: Current Issues, Trends and Long Term Prospects, in Alexander Sarris and Jamie Morrison ed. The Evolving Structure of World Agricultural : Trade Implications for Trade Policy and Trade Agreements, Food and Agriculture Organization of The United Nations, Rome.
- Rao, C. Niranjana (2004), 'Indian Seed System and Plant Variety Protection', Economic and Political Weekly, February 21, p.845-852
- Watal, Jayshree (1998), 'Intellectual Property Rights in Indian Agriculture', Working Paper No. 44, July, Indian Council for Research on International Economics Relations New Delhi.

Course Code: AE-A-10

Course Name: Agricultural Risk Management and Insurance

Objective:

To expose the students to the various kinds of risk in farming, risk management strategies and mechanisms and insurance policies.

Module 1:

Risks in Agriculture: Overview, Types of Risk, Risk Management Strategies and Mechanisms, decision making process in farm business management under risks and uncertainty.

Module 2:

Climatic Variability & Change: Climate Risks, Challenges in Climate Variability, Drought Risk, Floods & Cyclones, Catastrophe Protection for Non-Borrowing Farmers, Bankruptcy Law

Module 3:

Production Risks, Technological Change -Improved Varieties and Fertiliser Use/Moisture Stress/Pests/Riskiness of Net Returns, Evidence on Aggregate Instability, Output Stability

Module 4:

Risk Management through Agricultural Insurance: Introduction, National Agricultural Insurance Scheme (NAIS), Crop Insurance as Risk Mitigation Tool, Impact of Crop Insurance on Farmers, Suicides by Farmers

Module 5:

Crop insurance – Types, Crop Insurance – Benefits and Constraints, Crop Insurance Evolution, Crop Insurance Penetration, Fundamental Issues, Actuarial regime and Risk Transfer, Insurance and Credit Linkage, Insurance of Vegetables and Perennial Horticultural Crops

Module 6:

Weather Insurance, Farm Income Insurance, Livestock Insurance, Package Insurance, Private Sector Participation in Crop Insurance, Crop Insurance: Financial Implications for XI Plan period

Module 7:

Agriculture Insurance: Support Services- Scope for Using Satellite Imagery (Remote Sensing Technology, Insurance Delivery Strategies, Nationally Consistent Database

Module 8:

Price Support Measures: Introduction, Minimum Support Price (MSP), Market Intervention Scheme (MIS), Scheme for Tribals, Price Stabilization Fund Trust (PSFT), Credit Risk Fund

Module 9:

Emerging Commodity Markets: Pre-harvest Concerns, Commodity Futures, International Trade

Module 10:

Contract Farming as Price Risk Mitigation: Introduction, Contract Farming and Risk Management.

Suggested Readings:

- Acharya and Agrawal (1992), Agricultural Marketing in India, oxford and IBH Publishing Co. Pvt. Ltd.
- GOI (2007), Report of The Working Group on Risk Management in Agriculture for the Eleventh Five Year Plan (2007-2012) , GOI, New Delhi
- Ramaswami, Bharat ; Shamika Ravi And S.D. Chopra (2004), Risk Management, State of the Indian Farmer- A Millennium Study, Volume 22, Academic Foundation, New Delhi.

Course Code: AE-A-11

Course Name: Strategic Agro-Food Marketing

Course Outcome:

The course will enable the students:

- Understand the agri food marketing environment (Module I)
- Analysis of consumer behavior with respect to food choice (Module II, III)
- Comprehension of the marketing management (Module IV)
- Understand the structure and operation of the agri food marketing system (Module V, VI, VII)
- Evaluate and analyses the management strategies related to marketing agri-food products (Module VIII)

Module 1:

Marketing, scope of marketing, food industry India, features of food industry, food marketing problems, marketing management philosophies and process, marketing environment.

Module 2:

Consumer behavior and marketing strategy, a framework for consumer analysis, affect and cognition and marketing strategy, consumers' product knowledge and involvement, attention and comprehension, attitudes and intentions, consumer decision making.

Module 3:

Consumer markets and consumer buyer behavior, business market and business buyer behavior, customer driven marketing strategy, marketing research.

Module 4:

Marketing management: new product development strategy, pricing strategies, marketing channels, communicating customer value.

Module 5:

Food retail marketing system in India: organized and un-organized marketing system, formats of organized marketing systems (Reliance fresh, Tata **Star Bazaar**, D-Mart, **Godrej Natures Basket**, Subhiksha etc.). FDI and retailing in India.

Module 6:

Corporate houses in rural market place: ITC's Chaupal Sagar, Tata Kisan Sansar and Mahindra ShubhLabh.

Module 7:

Emerging ICT Applications in Agribusiness.

Module 8:

Strategic marketing cases: Coffee wars in India: Cafe Coffee Day takes on the global brands, Cargill India private limited, COFCO Xinjiang Tunhe company limited, Amul and Parle-G.

Suggested Readings

Books

- Armstrong, G. and P. Kotler (2012), 'Marketing: An Introduction', 11th ed. Prentice Hall, Upper Saddle River.
- Kotler, P and K. L. Keller, (2008), 'Marketing Management'. 13th ed. Upper Saddle River, New Jersey: Prentice Hall.
- Paul P. J. and J. Olson (2009), 'Consumer Behavior and Marketing Strategy', 9th ed. McGraw-Hill, United States.
- Cravens D. W. and Piercy N. W. (2016), ' Strategic Marketing'
- Crawford (1997), 'Marketing and Agribusiness Texts - Agricultural and Food Marketing Management.' FAO of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy.
- Padberg, D (1997), 'Agro-food Marketing'. Edited by D Padberg, Department of Agricultural Economics, Texas A&M University, USA, C Ritson, Department of Agricultural Economics and Food Marketing, University of Newcastle upon Tyne, UK, L Albisu, Centro Investigación Agroalimentaria de Aragón (CITA), Spain

Articles/Cases

- Barrenar et. al., (2015), "An Analysis of the Decision Structure for Food Innovation on the Basis of Consumer Age", International Food and Agribusiness Management Review, Volume 18 Issue 3.
- Ramasastry Chandra Sekhar and Miranda Goode (2010), "Parle-G", Ivey Publishing.
- Pirouz Dante and Ramasastry Chandra Sekhar (2013), "Cargill India Pvt.Ltd", Ivey Publishing.
- Ofek Elie (2016), "Customer Profitability and Lifetime Value", Harvard Business School.
- Yoffie David B. and Tanya Bijlani (2014), "Coffee Wars in India Café Coffee Day Takes on the Global Brands", Harvard Business School.
- Deshpande et al., (2016), "India's Amul: Keeping Up with the Times" Harvard Business School.
- Bell David E. and Aldo Sesia (2009), " COFCO Xinjiang Tunhe company limited", Harvard Business School.

Course Code: AE-A-13

Course Name: Environmental Economics

Objective:

This course is meant to provide some insights into the application of economic theory in the design and implementation of public policy related to the management of environment issues and problems. The course finds roots in welfare economics, national income accounting, macroeconomic policies and trade and development. Modules incorporated in this paper are devoted to issues of environmental microeconomic theory and problems, market induced correctives, environmental valuation, natural resources accounting, optimal use of natural resources, sustainable development and environmental resource problems in India.

Module 1:

Introduction: The Economics, Ecology, and interdependence of the subjects – resource scarcity and the material balance – production and consumption – development vs. environment, and concept of sustainable development.

Module 2:

Economics of Environmental Valuation: User value – Hedonic valuation (Indirect Method/Revealed Preference) – Travel Cost Method – Nonuser value – Contingent valuation (Direct Methods / Stated Preference), Property rights – Coase theorem – collective action, economic instruments (charges, taxes, subsidies, and marketable permits).

Module 3:

Microeconomic Theory Market failure: Externalities – environmental public goods – asymmetric information – risk – uncertainty – problems of free – rider, and moral hazard – transaction costs. Environmental Kuznet's curve

Module 4:

Sustainable Development and Natural Resource Accounting: Definition, approaches, and indicators of sustainable development – Environmentally corrected GDP.

Module 5:

Economics of Natural Resources: Basic concepts – Exhaustible resources (discount rate) – Renewable resources (economic and biological efficiency level) – Bio-diversity loss. Institutional Framework: Community participation and management of resources.

Module 6:

Economics of Environment Laws:

Theory of externality, Cost benefit analysis, Pigouvian Approach and Coase Theory Approach, Environmental protection laws and Court decisions, Principles and doctrines evolved by Supreme Court for protection of Environment, Air Pollution, Water pollution, Sound pollution, Automobile and industrial pollution, civil and criminal liability for environmental protection, Evolution of international environmental law and principles for environmental protection.

Basic Reading List

- Adrian Heyes & Nadkarni, M. V. (eds.) (2001), Poverty, Environment and Development, Studies of Four Countries and Pacific Region, UNESCO Principal Regional Office for Asia and Pacific, Bangkok, pp. 25-89
- Alexander Wood (eds.) (2000), The Root Cause of Bio-diversity Loss, Earthscan Publications Ltd., London
- Antweiler, Werner, Copeland, Brian R., and Taylor Scott M. (2001), Is Free Trade Good for the Environment? American Economic Review, 91(4) :877-908, September
- Baumol, W.J. and W.E. Oates (1988), The Theory of Environmental Policy, (2nd Edition), Cambridge University Press, Cambridge.
- Bromely, D.W. (Ed.) (1995), Handbook of Environmental Economics, Blackwell, London.
- Brookshire, D.S. et.al. (1982), “Valuing Public Goods; A Comparison of Survey and Hedonic Approaches”, American Economic Review, 72, pp. 165-177
- Chopra, K. Kadekodi, G. K. & Murty, M. N. (1990), Participatory Development: An approach to the Management of Common Property Resources, Sage Publications, New Delhi
- Coase, R.H. (1960), “The Problem of Social Cost”, Journal of Law and Economics, 3, pp. 1-44
- Copeland, Brian R., and Taylor Scott M. (1995), Trade and Transboundary Pollution, American Economic Review, 85(4): 216-737, September
- Cropper, M.L. (1992), “Environmental Economics: A Survey”, The Journal of Economic Literature, 30(2), pp. 675-740
- Devarajan Shantayanam & Fisher, A.C. (1981), “Hotelling’s Economics of Exhaustible Resources”, Journal of Economic Literature, 19, pp.67-73
- Fisher, A.C. (1981), Resource and Environmental Economics, Cambridge University Press, Cambridge.
- Hanley, N., J. F. Shogern and B. White (1997), Environmental Economics in Theory and Practice, Macmillan.
- Hussen, A.M. (1999), Principles of Environmental Economics, Routledge, London.
- Jeroen, C.J.M. van den Bergh (1999), Handbook of Environmental and Resource Economics, Edward Elgar Publishing Ltd., U.K.
- Kolstad, C.D. (1999), Environmental Economics, Oxford University Press, New Delhi.
- McGrathland, A. M. & Oates W. E. (1985), “Marketable Permits for the Prevention of Environmental Deterioration”, Journal of Environmental Economics and Management, 12(3), pp.207-228
- Ostrom, E. (1990), Governing the Commons: The Evaluation of Institutions for Collective Actions, Cambridge University Press, Cambridge
- Perman, R. Ma and J. McGilvary (1996), Natural Resource and Environmental Economics, Longman, London.
- Sankar, U. (Ed.) (2001), Environmental Economics, Oxford University Press, New Delhi.
- Tietenberg, T. (1994), Environmental Economics and Policy, Harper Collins, New York.
- Tutenlurg, Tom (2001), Environmental Economics and Policy
- Pearce, D.W. and R. Turner (1991), Economics of Natural Resource Use and Environment, John Hopkins University Press, Baltimore.

Additional Reading List

Module 1

- Becker, G.S. (1974), *Human Capital* (2nd Edition), National Bureau of Economic Research, New York.
- Crones, R. and T. Sandler (1989), *The Theory of Externalities and Public Goods*, Cambridge University Press, Cambridge.
- 'Market versus Non-market Allocation' in *Public Expenditure and Policy Analysis*, (Ed.), Haveman, R.H. and J. Margolis, Markham, Chicago.
- Sengupta, R.P. (2001), *Ecology and Economics: An Approach to Sustainable Development*, Oxford University Press, New Delhi.

Module 2

- Smith, V. Kerry (1996), *Estimating Economic Values for Nature: Methods for Non-market Valuation*, Edward Elgar, Cheltenham, U.K. Case Studies (India)
- Chopra, K. (1998), *Valuation of Bio-diversity within Protected Areas: Alternative Approaches and a Case Study*, Institute of Eco Growth, Delhi.
- Hadker, N. et al (1997), *Willing to Pay for Borivili National Park: Evidence form Contingent Valuation*, *Ecological Economics*, Vol. 21.

Module 3

- Dasgupta, P. S. and G.M. Heal (1985), *Economic Theory and Exhaustible Resources*, Cambridge University Press, Cambridge.
- Hanley, N. (1997), *Environmental Economics in Theory and Practice*, Macmillan, London.

Module 4

- Chopra, K. and K. Kadekodi (1999), *Operationalising Sustainable Development: Economic- Ecological Modelling for Developing Countries*, Sage, New Delhi.
- Dasgupta, P. S. and K. G. Maler (Ed.) (1997), *Environment and Emerging Devpt Issues*, Cambridge University Press, Cambridge, Mass.
- ESCAP (1997), *Accounting and Valuation of Environment — A Primer for Developing Countries*, Vol I, United Nations, New York.
- Hoel, M. (1997), 'International Coordination of Environmental Policies' in *New Dimensions in the Economic Theory of Environment*, Carrao Carlo and Domenico Siniscalco (Eds.), Cambridge University Press, Cambridge.
- United Nations (1993) *Integrated Environmental and Economic Accounting*, United Nations, New York.

Module 5

- Baland, J.M. and J.P. Plateau (1994), *Halting Degradation of Natural Resources: Is There a Role for Rural Communities*, Oxford University Press, Oxford.
- Bhattacharya, R.N. (Ed.) (2001), *Environmental Economics: An Indian Perspective*, Oxford University Press, New Delhi.
- Chopra, K., G. K. Kadekodi and M. N. Murty (1990), *Participatory Development: An Approach to the Management of Common Property Resources*, SAGE, New Delhi.
- Chopra, K. and S.C. Gulati (2000), *Migration and the Management of Common Property Resources: A Study in Western India*, Sage, New Delhi.
- Kerr, J.M. et al (Eds.) (1997), *Natural Resource Economics: Theory and Applications in India*, Oxford and IBH Publication Co. Pvt. Ltd., New Delhi.
- Markandya, A. and J. Richardson (Eds.), *The Earth Scan Reader in Environmental*

Economics, Earth Scan, London.

- Mehta, S., S. Mundle and U. Sankar (1995), *Controlling Pollution: Incentives and Regulation*, SAGE, New Delhi.
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- Ostrom, E. (1990), *Governing the Commons : The Evolution of Institutions for Collective Actions*, Cambridge Univ Press, Cambridge

Case Studies (India)

- Chopra, K., G. K. Kadekodi and M. N. Murty (1990), *Participatory Development: An Approach to the Management of Common Property Resources*, SAGE, New Delhi.
- Markandya, A. and M.N. Murty (2000), *Cleaning up the Ganges: Cost-Benefit Analysis of Ganga Action Plan*, OUP, New Delhi.
- Mehata, S., S. Mundle and U. Sankar (1995), *Controlling Pollution: Incentives and Regulation*, SAGE, New Delhi.
- Murty, M. N., A. James and S. Misra (1999), *The Economics of Water Pollution in India*, Oxford University Press, New Delhi.

Other References

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- Diamond, Peter A. and Jerry A. Hausman (1994), Is Some Number Better Than No Number? *Journal of Economic Perspectives*: 8(4) : 45-64, Autumn
- Ekins, P. (2002), Sustainable development in: E.A. Page and J. Proops (eds), Cheltenham : Edward Elgar, pp. 144-172
- England, R. W. (2001), ‘Alternatives to gross domestic product : a critical survey’, in C.J. Cleveland, D.I. Stern and R. Costanza (eds.) Cheltenham, U.K., Edward Elgar, 218-237
- Gowdy, John and McDaniel Cart (1999), ‘The physical destruction of Nauru : an example of weak sustainability’, 75, 333-38
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- Harbaugh, William, T. Levinson, Arik, and David Molloy Wilson (2002), Re-examining the Empirical Evidence for an Environmental Kuznets Curve. *Review of Economics and Statistics*, 84(3) : 541-551, August
- O’Connor, M. and Spash, C (1999), Cheltenham, U.K. Northampton, MA: E. Elgar Pub.
- Portney, Paul R. (1994), *The Contingent Valuation Debate. Why Economists should*

care? Journal of Economic Perspectives 8(4): 8-17, Autumn

Course Code: AE-A-16

Course Name: Supply Chain in Agriculture

Course Outcome:

The course will enable the students:

- Understand the supply chain and its feature (Module I)
- Designing of supply networks (Module II, III, IV)
- Designing and planning transportation networks (Module V)
- Evaluation and management of agricultural supply chain (Module VII)

Module 1:

Building a strategic framework to analyze supply chains: understanding the supply chain, supply chain performance: achieving strategic fit and scope, supply chain drivers and metrics.

Module 2:

Designing the supply chain network: designing distribution networks and applications to e-business, network design in the supply chain, designing global supply chain networks.

Module 3:

Planning and coordinating demand and supply in a supply chain: demand forecasting in a supply chain, aggregate planning in a supply chain, sales and operations planning: planning supply and demand in a supply chain, coordination in a supply chain.

Module 4:

Planning and managing inventories in a supply chain: managing economies of scale in a supply chain: cycle inventory, managing uncertainty in a supply chain: safety inventory, determining the optimal level of product availability.

Module 5:

Designing and planning transportation networks: transportation in a supply chain.

Module 6:

Managing cross-functional drivers in a supply chain: sourcing decisions in a supply chain, pricing and revenue management in a supply chain, information technology in a supply chain, sustainability and the supply chain

Module 7:

Case studies: Campbell Soup Co.: a leader in continuous replenishment innovations, McDonald's India optimizing the French fries supply chain, supply chain management at Wal-Mart, Amul, Nestle agricultural material sourcing within the concept of creating shared value (CSV), Barilla Spa.

Suggested Readings:

Books

Chopra, S. and P. Meindl (2016), "Supply Chain Management: Strategy, Planning, and Operation", 6th Edition, Pearson.

Articles/Cases

- Wheelwright, S. C. and Geoffrey K. Gill (1994), "Campbell Soup Co.", Harvard Business School.
- Hammond, J. H. (2008), "Barilla Spa" Harvard Business School.
- Lee, H. and Sonali Rammohan (2013), "McDonald's India Optimizing the French Fries Supply Chain", Stanford Graduate School of Business.
- Mishra and Asokan (2016), " Amul's IT-Enabled Service Delivery to Dairy Farmers" Ivey Publishing
- Johnson, F. P. (2006), "Supply chain management at Wal-Mart", Ivey Publishing.
- Goldberg, R. A. and Lorin A. Fries(2013), "Nestle: agricultural material sourcing within the concept of creating shared value (csv)" Harvard Business School.

Course Code: AE-A-20

Course Name: Accountancy and Financial Statement Analysis

Objectives:

The course aims at providing basic understanding of various essential concepts of accountancy and preparation of accounting statements, introduction to accounting standards and IFRS framework of accounting.

Module 1:

Basic Principles

Financial Accounting & Accounting Standards- Accounting Equations □ Users of Accounting Statements, Importance □ Objectives and Principles □ Accounting Concepts and Conventions □ Principle of Double Entry Book Keeping, Trends in Accounting principles, GAAP, IFRS, IAS

Module 2:

The Accounting Process

Preparation of Books of Original Records: Journals □ Subsidiary Book Problems on Cash Book and Petty Cash Book Ledgers & Trial Balance □ Classification of Capital and Revenue Expenses Final Accounts with Adjustments.

Module 3:

Preparation of Final Accounts/Statement

Sole traders with Basic Adjustments □ Preparation of Final Accounts / Statement of Companies (Both Horizontal & Vertical Form of Financial Statements) □ Brief Introduction to Partnership Account- Accounting for small, medium and large companies

Module 4:

Statement of Changes in Funds

Funds Flow Statement □ Cash Flow Statement □ Problems with Basic Adjustment on FFS & CFS □ Statement of Changes in Working Capital □ Funds from Operations □ Paid Cost and Unpaid Costs □ Distinction Between Cash Profits and Book Profits □ Preparation and Analysis of Cash Flow Statement and Funds Flow Statement.

Module 5:

Depreciation & Inventory Valuation

Concepts & Methods of Depreciation □ Problems on Straight Line & WDV Methods □ Inventory □ Concepts & Methods □ Problems on LIFO, FIFO & Weighted Average □ Valuation of Fixed Assets- Current and Non-current assets and liabilities-□ Tangible v/s Intangible assets □ Depreciation of Fixed Assets and Methods of Depreciation □ Inventory Valuation: Methods of Inventory Valuation and Valuation Of Goodwill □ Methods of Valuation of Goodwill.

Module 6:

Analysis of Companies' Annual Reports

Provisions of the Companies Act 1956 □ Provision Affecting Preparation □ Presentation & Analysis of Audit Reports & Directors' Reports.

Module 7:

Financial Analysis of Financial Performance of a Firm

Different Tools □ Ratio Analysis □ Different Types of Ratio's □ Inter-Relation Between Ratio's □ Due-point Analysis □ Common Size Statement of Inter Firm and Intra Firm □ Internal Revenue Code-Interpretation of Financial Statements From Investor and Company Point of View □ Horizontal Analysis and Vertical Analysis of Company Financial Statements □ Liquidity, Leverage, Solvency and Profitability Ratios □ Du Pont Chart □ A Case Study on Ratio Analysis

Reading List:

- Ghosh, T.P., (2010), *Understanding IFRS*, Taxmann.
- D'Souza, Dolphy, (2009), *Indian Accounting Standards and GAAP In 2 Vol.*, Snow White Publications Pvt. Ltd.
- International Accounting Standards Board (2007), *International Financial Reporting Standards 2007 (including*
- *International Accounting Standards (IAS(tm)) and Interpretations as at 1 January 2007*, LexisNexis, ISBN 1-4224-1813-8.
- *Case studies of IFRS implementation in Brazil, Germany, India, Jamaica, Kenya, Pakistan, South Africa and Turkey*, United
- Nations Intergovernmental Working Group on International Standards of Accounting and Reporting (ISAR). (Various years)
- Catty, James P. (2010), *Wiley Guide to Fair Value, Under IFRS [6]*, ISBN: 0470477083, John Wiley & Sons.

Course Code: AE-A-21:

Course Name: Advanced Econometrics

Course Outcomes:

- The course starts with advanced topics of econometrics, namely, the seemingly unrelated regressions. (Module 1)
- Various aspects of time series data are covered in time series econometrics. In particular, stationarity, trend and simultaneity of variables are discussed. (Module 2)
- Detailed account of panel data and its issues are covered in Module 3.
- Overall, the course allows students to form a foundation of advanced econometrics.

Module 1:

Seemingly Unrelated Regression (SURE):

Estimation by OLS, GLS and FGLS, testing for structural change and aggregation bias, case of autoregressive errors

Module 2:

Time Series:

- **2.1. Introduction to Time Series Analysis:** The nature of time Series data; Examples of time Series Regression Models: Static Models: Finite Distributed Lag Models. Trends and Seasonality: Characterizing Trending Time Series, Using Trending Variables in Regression Analysis. A Detrending Interpretation of Regressions with a Time Trend, Computing R-Squared when the Dependent Variable Is Trending Seasonality
- **2.2 Stationary Time-Series Models:** Stochastic Difference Equation Models, ARMA Models, Stationarity, Stationarity Restrictions for an ARMA(p, q) Model, The Autocorrelation Function, The Partial Autocorrelation Function, Sample Autocorrelations of Stationary Series, Box–Jenkins Model Selection, Properties of Forecasts, A Model of the Interest Rate Spread, Seasonality, Parameter Instability and Structural Change.
- **2.3 Models with Trend:** Deterministic and Stochastic Trends, Removing the Trend, Unit Roots and Regression Residuals, The Monte Carlo Method, Dickey–Fuller Tests, Examples of the ADF Test, Extensions of the Dickey- Fuller Test, Structural Change, Power and the Deterministic Regressors, Panel Unit Root Tests, Trends and Univariate Decompositions
- **2.4 Multiequation Time-Series Models:** Intervention Analysis, Transfer Function Models, Estimating a Transfer Function, Limits to Structural Multivariate Estimation, Introduction to VAR Analysis, Estimation and Identification, The Impulse Response Function, Testing Hypothesis, Structural VARs. , The Blanchard and Quah Decomposition.
- **2.5 Cointegration and Error-correction Models:** Linear Combinations of Integrated Variables, Cointegration and Common Trends, Cointegration and Error Correction, Testing for Cointegration -The Engle–Granger Methodology, Illustrating the Engle-Granger Methodology, Cointegration and Purchasing-Power Parity, Characteristic Roots, Rank, and Cointegration, Hypothesis Testing, Illustrating the Johansen Methodology, Error-Correction and ADL Tests, Comparing the Three Methods

- **2.6 Modeling Volatility:** Economic Time Series- The Stylized Facts, ARCH Processes, ARCH and GARCH Estimates of Inflation, A GARCH Model of Risk, the ARCH-M Model, Additional Properties of GARCH Processes, and Maximum Likelihood Estimation of GARCH Models.

Module 3:

Panel Data

- **3.1 Introduction Panel Data:** Some Examples, Benefits and Limitations
- **3.2 The One-way Error Component Regression Model:** Introduction, The Fixed Effects Model, The Random Effects Model, Fixed vs Random, Maximum Likelihood Estimation, Prediction
- **3.3. The Two-way Error Component Regression Model:** Introduction, The Fixed Effects Model, Testing for Fixed Effects, The Random Effects Model, Maximum Likelihood Estimation, Prediction
- **3.4 Test of Hypotheses with Panel Data:** Tests for Poolability of the Data, Tests for Individual and Time Effects: The Breusch–Pagan Test, King and Wu, Honda and the Standardized Lagrange Multiplier Tests, Gourieroux, Holly and Monfort Test, Conditional LM Tests, ANOVA F and the Likelihood Ratio Tests; Hausman’s Specification Test
- **3.5 Introduction to Dynamic Panel Data Models**

Note: *The students will be taught software packages for performing econometric applications. Computer exercises will be given to students.*

Basic Reading List

- Baltagi, B.H. (2008), **Econometric Analysis of Panel Data**, 4th Edition, Wiley
- Wooldridge, J. (2002), **Econometric analysis of Cross Section and Panel Data**
- Wooldridge, J. (2009), **Introductory Econometrics**, 4th Edition, South-Western College Pub.
- Hsiao, C. (2003), **Analysis of Panel Data**, Cambridge University Press, Cambridge.
- Walter Enders (2008), **Applied Econometrics Time series**, Wiley India
- Hamilton, JD (1994) **Time Series Analysis**. Princeton University Press, New Jersey.
- Judge, G.G., Griffiths, W.E., Hill, R.C., Lutkepohl, H. and Lee, T.C. (1985), **The Theory and Practice of Econometrics**, 2nd edition John Wiley and Sons, New York.
- Johnston, J. and Dinardo, D., **Econometric Methods**, McGraw Hill, New York.
- Lutkepohl, Helmut (2007) **New Introduction to Multiple Time Series Analysis**, Springer, New York
- Rao, P., Miller, R. L. (1971), **Applied Econometrics**, Wadsworth Publishing Company.

Course Code: AE-A-22

Course Name: Business Analytics

Course Outcomes:

- To develop a proficiency in analysing data using different techniques. (Module 1 to 8)
- To learn how to build and apply predictive models to forecast future outcomes. (Module 2 and 3)
- To gain knowledge of business outcomes. (Module 1 to 8)
- To apply optimization techniques to solve business problems. (Module 1 to 8)
- To understand the role of business analytics in strategic decision making. (Module 3 and 5)
- To learn skills and techniques for the application of R. (Module 4,6 and 7)

Module 1:

The need for Analytics and Understanding Analytics

- Decision Making – Heuristics and Biases
- The need for analytics
- Impact of analytics on business
- Being analytically competitive
- The difference between analytics and BI
- Introduction to the business Analytics model
- Types of analytics
- Models and algorithms in Analytics
- The Analytics Methodology

Module 2:

Tool and Tech Landscape

- A review of technology used in data storage, data processing, and data science
- Popular tools used in Data Science and when to use each

Module 3:

Descriptive Analytics with excel and Tableau

- An introduction to Tableau
- Using descriptive statistics in analysis and reporting
- Advanced reporting with Tableau

Module 4:

R programming

- An introduction to R
- Importing and exporting data in R
- Data Manipulation with R
- Advanced Data Manipulation with R
- Data Visualization with R

Module 5:

Data Pre-processing

- Data Exploration and Assessment for Data Science

- Identifying and dealing with noise in Data
- Preparing data for Data Science Modelling

Module 6:

Predictive Models in R

- Linear Regression Models and their applications
- Logistics Regression Models and Their applications
- Time Series Forecasting

Module 7:

ML Models in R

- Clustering Algorithms and application
- Decision Tree Algorithms and applications
- Random Forest Algorithms and applications

Module 8:

Storytelling with Data

- Communicating data science results
- Effective presentation skills
- Using Data visualizations for storytelling

References:

- Provost, F., & Fawcett, T. (2013). *Data science for business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media.
- Davenport, T. H., & Harris, J. G. (2017). *Competing on analytics: Updated, with a new introduction*. Harvard Business Press.
- Evans, J. R., & Paquette, L. (2019). *Business analytics: Methods, models, and decisions*. Pearson.
- Shmueli, G., Bruce, P. C., & Patel, N. R. (2019). *Data mining for business analytics: Concepts, techniques, and applications in R*. John Wiley & Sons.
- Witten, I. H., Frank, E., Hall, M. A., & Pal, C. J. (2016). *Data mining: Practical machine learning tools and techniques*. Morgan Kaufmann.
- Kelleher, J. D., Mac Namee, B., & D'Arcy, A. (2015). *Fundamentals of machine learning for predictive data analytics: Algorithms, worked examples, and case studies*. MIT Press.
- Few, S. (2019). *Show me the numbers: Designing tables and graphs to enlighten*. Analytics Press.
- Cairo, A. (2019). *The truthful art: Data, charts, and maps for communication*. New Riders.

Course Code: AE-A-23

Course Name: Remote Sensing and GIS

The objective of this paper is to understand the basic concepts of Remote Sensing and to impart to students the skills necessary for remote sensing analysis and interpretation. Enhance the student's understanding about role of remote sensing for agriculture and forestry applications. Map and quantify various agricultural features, yield, and identify the difference between healthy crop and affected crop using remote sensing data. The concepts of GIS, components of GIS and application areas of GIS are comprehensively understood.

Module 1:

Introduction to GIS and Remote Sensing

- **Overview of GIS**
 - Definition and components of GIS
 - History and development of GIS
 - Applications of GIS in agriculture
- **Basics of Remote Sensing**
 - Definition and principles of remote sensing
 - Electromagnetic spectrum
 - Types of sensors and platforms (satellites, UAVs, aircraft)
- **Fundamentals of Cartography**
 - Map types and scales
 - Coordinate systems, map projections, georeferencing, and Toposheet
 - Basics of map design and visualization

Module 2:

Data Acquisition and Management

- **Data Sources and Data Collection**
 - Types of spatial data: Raster and vector
 - Sources of GIS data (satellites, GPS, surveys)
 - Remote sensing data sources (Landsat, MODIS, Sentinel)
- **Data Management**
 - Data formats and storage
 - Metadata and data quality
 - Introduction to databases and SQL
- **Practical Sessions**
 - Introduction to GIS software (ArcGIS, QGIS)
 - Hands-on practice with remote sensing data (downloading, preprocessing)
 - Introduction to GPS technology and data collection

Module 3:

GIS Data Analysis and Modelling

- **Spatial Data Analysis**
 - Spatial data input and editing
 - Vector data analysis (buffering, overlay, spatial queries)
 - Raster data analysis (map algebra, reclassification)
- **Modelling in GIS**
 - Introduction to spatial modelling
 - Land use/land cover modelling

- Predictive modelling in agriculture

Module 4:

Remote Sensing Image Processing

- **Image Interpretation and Analysis**
 - Visual interpretation of remote sensing images
 - Digital image processing techniques (enhancement, classification)
 - Change detection techniques
- **Agricultural Applications of Remote Sensing**
 - Crop monitoring and yield estimation
 - Soil moisture estimation
 - Pest and disease monitoring
- **Practical Sessions**
 - Advanced GIS analysis techniques
 - Remote sensing image processing using software
 - Fieldwork using GPS for data collection

Module 5:

Advanced GIS and Remote Sensing Techniques

- **Advanced GIS Applications**
 - Precision agriculture
 - Spatial decision support systems (SDSS)
 - Geostatistics in agriculture
- **Advanced Remote Sensing Techniques**
 - Hyperspectral and multispectral imaging
 - LIDAR applications in agriculture
 - Radar remote sensing

Module 6:

Integration of GIS, Remote Sensing, and GPS

- **Integrated Approaches**
 - Combining GIS, remote sensing, and GPS for agricultural management
 - Case studies on integrated applications
 - Multi-source data integration and analysis
- **Practical Sessions**
 - Implementing precision agriculture techniques
 - Integrating GIS, remote sensing, and GPS for case study projects

Module 7:

Project Planning and Implementation

- **Project Management**
 - Research methodologies in GIS, remote sensing, and GPS
 - Planning and executing GIS, remote sensing, and GPS projects
 - Data collection, analysis, and interpretation
 - Proposal writing
 - Data analysis and interpretation
 - Writing and presenting the report
 - Working on individual or group projects

- Regular seminars and presentations on project progress

Module 8:

Emerging Trends and Technologies

- **Emerging Trends**
 - Big data and cloud computing in GIS
 - Internet of Things (IoT) in agriculture
 - Machine learning and AI in remote sensing
- **Future Prospects**
 - Innovations in sensor technology
 - Policy and ethical considerations
 - Future directions of GIS, remote sensing, and GPS in agriculture
 - Exploring new software and technologies
 - Discussions and seminars on recent research papers

Reference Books:

- Introduction to Remote Sensing and Image Interpretation; Lillesand, T. M. and R.W. Kiefer and J.W. Chipman
- Digital Image Processing: A Remote Sensing Perspective - Jensen, John R.
- An Introduction to Geographical Information Systems - Ian Heywood
- GIS - Fundamentals, Applications and Implementations - Elangovan, K.
- Introduction to Geographical Information Systems - Chang, Kang-Tsung
- Applications of Remote Sensing in Agriculture. M.D. Steven and J.A. Clark.
- Remote Sensing methods and applications, Hord, R. Michael.
- Applied Remote Sensing, C.P. Lo, Longman, Scientific and Technical Publishers
- Remote Sensing Principles and Interpretation, Floyd, F. Savins, Jr: Freeman and Co., San Francisco, 1978.
- Fundamental of Remote Sensing, Noam Levin

Web Sites

- <http://www.gespatialworld.net>
- www.earthmapping.com/
- <http://www.esri.com/>
- <http://www.innovativegis.com/basis/>

Course Code: AE-B-02

Course Name: Agricultural Cooperatives

Objective:

The objective of this course is to acquaint the students with agricultural cooperatives in India.

Module 1:

Philosophical and Theoretical Foundations of Co-operatives: Introduction, Early Stages of the Cooperative Movement, Statistical Importance of Co-operatives in Today's World, Theoretical Foundations of Co-operatives. Co-operatives in a Global Perspective

Module 2:

Genesis and Coverage of Agricultural Co-operatives in India: Progress of Co-operatives, Coverage of Agricultural Cooperatives

Module 3:

Strengths and Weaknesses of Co-operatives as an Organizational Format, Threats Arising from Generic Constraints of Agricultural Co-operatives, Continuing Relevance and Future Potential of Co-operatives in Indian Agriculture, Lessons for the Indian Farmer

Module 4:

Co-operative Legislation in India: The Co-operative Laws before and after independence, Opportunities Lost and Gained for the Indian Farmer

Module 5:

Review of Issues on Business Development Planning: Relevance of Business Development Planning to Co-operatives, A Conceptual Framework of Business Development Planning, A Review of Past Experiences, Sugar and Dairy Cooperatives, half-hearted Recent Efforts at Popularising BDP Systems

Module 6:

Co-operative Marketing in India: Review of Experience and Issues: An Overview, Problems and Performance in Marketing Co-operatives, Co-operative Marketing - Case Studies, AMUL versus MARKFED – A Comparison, Issues and Approach for the Future

Module 7:

Overview of agribusiness Credit Co-operatives, Cooperative Marketing, Dairy cooperative; Financing Agribusiness Cooperative.

Suggested Readings:

- Akmat, J. S. (1978), *New Dimensions of Cooperative Management*, Himalaya Publ. House.
- Ansari, A. A. (1990), *Cooperative Management Patterns*. Anmol Publ.
- Datta, Samar (204), *Co-operatives in Agriculture, State of the Indian Farmer A Millennium Study Volume 24*, Academic Foundation, New Delhi.
- Sah A. K. (1984), *Professional Management for the Cooperatives*. Vikas Publ. House.

Course Code: AE-B-03

Course Name: Agro-Processing Industries

Objective:

The objective of this course is to acquaint the students with structure and features of Agro processing industries in India, different food processing techniques, their management and various issues relating to food safety.

Contents

Module 1:

Case for Agro processing Industries-importance, farm -industry linkages, International perspective, Agro industries and developing countries-trends, impact of agro industrialization on markets and environment, challenges faced, various other issues.

Module 2:

Agro-Processing Industries in India: importance, growth and present status; different types of agro- industries- food grains, oilseeds, dairy, livestock, horticulture, cotton, sugarcane etc., structure of organized and unorganised sector industries, cooperative processing industries, challenges before various industries

Module 3:

India- Importance of Food Processing Industries, Women empowerment and food processing, Drivers of growth - supply, domestic demand, international demand, trade and policy support, emerging segments in food processing Problems and Opportunities

Module 4:

Organization in food industry; Introduction to operations of food industry; Deteriorative factors and hazards during processing, storage, handling and distribution.

Module 5:

Basic principles and methods of food processing and food preservation by manipulation of parameters and factors and application of energy, radiations, chemicals and biotechnological agents; Food packaging materials and methods, labelling of food products.

Module 6:

Risk management and costs in food processing industries; Laws and regulations related to food industry and food production and marketing; Safety and Quality of food products, various regulatory and private standards and quality management systems, Prevention of Food Adulteration Act, AGMARK, ISO, BIS, GMP, HACCP and food safety, licenses required, auditing and certification, Sanitary and Phytosanitary measures under Agreement on Agriculture under WTO

Suggested Readings

- Early R. (1995), Guide to Quality Management Systems for Food Industries. Blackie.
- Jelen P. (1985), Introduction to Food Processing. Reston Publishing.
- Potly, V.H. and M. J. Mulky (1993), Food Processing. Oxford & IBH.
- Journal of Indian Food Industries, various issues
- Beverages and Food World, various issues
- Journal of Food Marketing and Technology, various issues.
- Da Silva Carlos A. et al (Edt) , Agro-Industries for Development, The Food and Agriculture Organization of the United Nations and The United Nations Industrial Development Organization by arrangement with CAB International.
- Export-Import Bank of India, International Trade in Processed Foods: An Indian Perspective, Working Paper No. 61, March 2017.
- India Brand Equity Foundation- IBEF, Food Processing, January 2017, <https://www.ibef.org/download/Food-Processing-January-2017.pdf>
- GoI, Annual Reports, Ministry of Food Processing Industries, <http://www.mofpi.nic.in/>
- (2017), Annual Survey of Industries- 2016-2017, Summary Results for Factory Sector, Ministry of Statistics and Programme, Implementation.
- (2017), Economic Characteristics Non-Agricultural Unincorporated Enterprises of India, NSS 73rd ROUND, July 2015 - June 2016), Report no 582, NSSO, Ministry of Statistics and Programme Implementation.
- India Food Processing Ingredients, Report- IN8032, USDA Foreign Agricultural Service, Global Agricultural Information Network, March 2018.<http://agriexchange.apeda.gov.in/marketreport/Reports/Food Processing Ingredients New Delhi India 3-29-2018.pdf>
- Gandhi Vasant (2014), Growth and Transformation of the Agribusiness Sector: Drivers, Models and Challenges, Indian Journal. of Agricultural Economics, Vol.69, No.1, Jan.- March

Course Code: AE-B-04

Course Name: Organizational Structures in Agricultural Production

Objective:

The course introduces students to the types and systems of farming, contract and organic farming.

Module 1:

Types of Farming in India: Small and Large Scale Farming, Extensive and Intensive Farming, Specialized-Mixed-Diversified Farming, Irrigated and Dry Farming, Crop and Livestock farming, Subsistence and Commercial farming

Module 2:

Definition and concepts of farming system, Systems of Farming: Family, Cooperative, Institutional, Capitalistic, State, Personal, Collective and Corporate Farming

Module 3:

Contract Farming: Definition, Variation of Contracts, Models of Contract Farming, Advantages and Disadvantages of Contract farming, Risk/Constraints in Contract farming, Government Support

Module 4:

Global Experience, Scope and Progress of Contract Farming in India, various Farm Firm Linkages, Contract farming and Small Farmer, Features of Contracts, Asset Specificity and Contract farming

Module 5:

Farming Contract Prevalent in India, Legal Framework/Support Available, Economics of Contract farming, Effect on Income and Employment, Food Processing and Contract farming

Module 6:

Organic Agriculture Worldwide, Global Market for Organic Products, Status of Organic Farming in India, Transition to Organic Agriculture-Issues and Challenges, Major Research and Development Issues in Organic Farming, Political Economy of Contract Farming in India

Module 7:

Promotion of Organic Farming in India, Cropping pattern and Inputs in Organic Agriculture, Cropwise Organic Farming in India, Economics of Organic Farming, Quality and Certification

Module 8:

Marketing Strategies, Marketing infrastructure, Organic Agro-Processing, Problems in Marketing of Organic Produce-Dimension of Domestic Organic Market, Extension and Credit availability, Organic Agribusiness Potential in India, India Competence and Strength

Module 9:

Sustainable agriculture: Introduction, definition, goal and current concepts, factors affecting ecological balance and ameliorative measures; Land degradation and conservators of natural resources, Irrigation problems, waste lands and their development

Module 10:

Farm Income Augmentation and Stabilization

Suggested Readings

- FAO (2001), *Contract Farming: Partnership for Growth*, A Guide by Charles Eaton and Andrew W. Shepherd, FAO 145, FAO, Rome.
- GOI (2001), *Report of the Working Group on Organic and Biodynamic Farming for Tenth Five Year Plan*, Planning Commission, GOI, N. Delhi
- NAAS (2005), *Organic Farming: Approaches and Possibilities in the Context of Indian Agriculture*, NCAP, New Delhi.
- Narayan, S. (2005), *Organic Farming In India: Relevance, Problems and Constraints*, NABARD Occasional Paper 38.
- Singh, Sukhpal (2005), *Political Economy of Contract Farming in India*, CAB
- Singh, Gurdev and S.R. Asokan (2005), *Contract Farming in India- Text and Cases*, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.

Course Code: AE-B-05

Course Name: Commodities and Commodity Derivatives

Objective:

To apprise students regarding various aspects of Commodities and Commodity Derivatives

Module 1:

Introduction to Commodity Derivatives, Derivatives: Definitions, Functions, Participants, Exchange Traded and OTC Commodity derivatives, Commodities and Instruments available for trading, Difference between financial and commodity derivatives, Evolution of Global and Domestic commodity derivatives trading

Module 2:

Fundamentals of Commodity Spot and Derivatives Markets, Importance of commodity spot trading, Forwards and futures contracts and use of derivatives for hedging for forward pricing, Pricing Commodity Derivatives, Equilibrium relationship between spot and futures prices, Price discovery in futures market

Module 3:

Trading, Clearing and Settlement, Commodity exchanges and their role, Trading in commodity exchanges, Clearing and settlement, Risk management, Regulatory framework

Module 4:

Agricultural Commodity Markets, Commodities and instruments available for trading, Price drivers, Technical analysis in agricultural commodity markets

Module 5:

Gold and Base Metals, The market for gold, Base metal production, Price drivers, Application of derivatives

Module 6:

Crude Oil and Natural Gas, The demand for and supply of crude oil, Crude oil price and price drivers, Trading crude oil and refined products, The demand and supply of natural gas, Measuring natural gas, Natural gas price drivers

Module 7:

Coal, Emissions and Weather, The basis of coal, The price of coal and coal derivatives, The science of global warming and its consequences, Price drives for emission markets and emission derivatives, Weather and commodity markets

Module 8:

Risk Management in Commodity Markets, Physical and financial risk, Measuring risk premium and correlation risk, Institutional and market risk management

Module 9:

Commodities within an Investment Portfolio, Commodities as a new asset class, Benefits of commodities within a portfolio, Methods of investing in commodities, Commodity indexes & commodity related funds

Suggested Readings:

- Helyette Geman (2005) *Commodities and Commodity Derivatives: Modeling and Pricing for Agriculturals, Metals and Energy*. John Wiley & Sons Ltd.
- Helyette Geman (2009), “Risk Management in Commodity Markets: From Shipping to Agriculturals and Energy”, J. Wiley & Sons Ltd.
- Neil C. Schofield (2007), “Commodity Derivatives: Markets and Applications”, John Wiley & Sons Ltd.
- R.W. Kolb and Overdahl J (2007), *Futures, Options, and Swaps*, 5th Edition, Blackwell Publishers, Malden MA

Course Code: AE-B-08

Course Name: Industrial Organization in Agribusiness

Objectives:

The course will analyze marketing and other strategic decisions by agribusiness sector actors in a market environment characterized by, product differentiation, imperfect information, and market power. The course uses microeconomic theory, including game theory, industrial organization, and agency theory to analyze the behaviour of integrated processing firms, contractual relations between processors and food retailers, behaviour of food retailers, and contractual relations between food retailers and customers.

Module 1:

Integrated food processing firm, concentration, vertical and horizontal mergers, strategic competition, oligopoly models, industry applications

Module 2:

Managing links between processors and food retailers, private labels, product line choice, new product offerings, variety, slotting fees

Module 3:

Food retailing firms, price competition, multiple products with interdependent demands (e.g., sales, countercyclical pricing, loss leaders), Non-price competition (variety, service, location)

Module 4:

Marketing retail products: Managing the link between retailers and consumers, Customer and Brand Loyalty, coupons, modelling and estimating consumer demand

Module 5:

Law and Economics of Corporate Law

Economic issues in competition policy, Sources of market power, Market Structure, Market Power and Definition, Monopoly and Regulation of Monopoly, Anticompetitive Agreements & Cartels, Abuse of Dominance, Merger Control, Case studies of US Antitrust law, EU competition Law and Indian Competition policy

Reading list

Module 1

- Bhuyna, S. “An Empirical Evaluation of Factors Determining Vertical Integration in U.S. Food Manufacturing Industries.” *Agribusiness* 21 (2005): 429-445.
- Muth, M.K., and M.K. Wohlgenant. “Measuring the Degree of Oligopsony Power in the Beef Packing Industry in the Absence of Marketing Input Quantity Data.” *Journal of Agricultural and Resource Economics* 24 (1999): 299-312.
- Sexton, R.J. “Industrialization and Consolidation in the U.S. Food Section: Implications for Competition and Welfare.” *American Journal of Agricultural Economics* 85 (2000): 1087-1104.
- Shy, Oz. “Chapter 8 – Concentration, Mergers, and Entry Barriers” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132.
- Carter, C.A., and D. MacLaren. “Price or Quantity Competition? Oligopolistic Structures in International Commodity Markets.” *Review of International Economics* 5 (1997): 373-385.
- Kadiyali, V., N.J. Vilcassim, and P.K. Chintagunta. “Empirical Analysis of Competitive Product Line Pricing Decisions: Lead, Follow, or Move Together?” *The Journal of Business* 69 (1996): 459-487.
- Putsis, W.P., and R. Dhar. “The Many Faces of Competition.” *Marketing Letters* 9 (1998): 269-284.
- Shy, Oz. “Chapter 6 – Markets for Homogeneous Products” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132.
- Reimer, J.J. “Market Conduct in the U.S. RTE Cereal Industry.” *Journal of Agricultural and Food Industrial Organization* 2 (2004): Article 9
- Vickner, S.S., and S.P. Davies. “Estimating Strategic Price Response in a Product Differentiated Oligopoly: The Case of a Domestic Canned Fruit Industry.” *Agribusiness* 16 (2000): 125-140.
- Dhar, T., J-P. Chavas, R.W. Cotterill, and B.W. Gould. “An Econometric Analysis of Brand-Level Strategic Pricing between Coca-Cola Company and PepsiCo.” *Journal of Economics and Management Strategy* 14 (2005): 905-431.

Module 2

- Putsis, W.P. “An Empirical Study on the Effect of Brand Proliferation on Private Label – National Brand Pricing Behavior.” *Review of Industrial Organization* 12 (1997): 355-371.
- Bontemps, C., V. Orozco, V. Requillart, and A. Trevisiol. “Price Effects of Private Label Development.” *Journal of Agricultural and Food Industrial Organization* 3 (2005): Article 3.
- Sayman, S., S.J. Hoch, and J.S. Raju. “Positioning of Store Brands.” *Marketing Science* 21 (2002): 378-397.
- Shy, Oz. “Chapter 5 – The Monopoly” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132. (And Chapter 8 above.)
- Draganska, M., and D.C. Jain. “Product-Line Length as a Competitive Tool.” *Journal of Economics & Management Strategy* 14 (2005): 1-28.
- Roder, C., R. Herrmann, and J.M. Connor. “Determinants of New Product Introductions in the U.S. Food Industry: A Panel-Model Approach.” *Applied Economics Letters* 7 (2000): 743-748.
- Hausman, J.A., and G.K. Leonard. “The Competitive Effects of a New Product Introduction: A Case Study.” *Journal of Industrial Economics* 50 (2002): 237-263.

- Shy, Oz. “Chapter 7 – Markets for Differentiated Products” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132.
- Sullivan, M.W. Slotting Allowances and the Market for New Products. *Journal of Law and Econ.* 40 (1997): 461-493.
- Rao, A.R., and H. Mahi. The Price of Launching a New Product: Empirical Evidence on Factors Affecting the Relative Magnitude of Slotting Fees. *Marketing Sci.* 22 (2003): 246-268.
- Desiraju, R. New Product Introductions, Slotting Allowances, and Retailer Discretion. *J. of Retailing* 77 (2001): 335-358.

Module 3

- Hosken, D. and D. Reiffen. “Multiproduct Retailers and the Sale Phenomenon.” *Agribusiness* 17 (2001):115–137
- Chevalier, J.A., A.K. Kashyap, and P.E. Rossi. “Why Don’t Prices Rise during Periods of Peak Demand? Evidence from Scanner Data.” *American Economic Review* 93 (2003): 15-37
- Richards, T.J., and P.M. Patterson. “Sales Promotion and Cooperative Retail Pricing Strategies.” *Review of Industrial Organization* (2005): 391-413
- Shy, Oz. “Chapter 13 – Pricing Tactics” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132.
- Rhee, H., and D.R. Bell. “The inter-store mobility of supermarket shoppers.” *Journal of Retailing* 78 (2002): 225–237.
- Smith, H. “Store Characteristics in Retail Oligopoly.” *Rand Journal of Economics* 37 (2006): 416-430.
- Kalnins, A. “Hamburger Prices and Spatial Econometrics.” *Journal of Economics & Management Strategy* 12 (2003): 591–616.

Module 4

- Shum, M.. “Does Advertising Overcome Brand Loyalty? Evidence from the Breakfast-Cereals Market.” *Journal of Economics & Management Strategy* 13 (2004): 241-272
- Huang, R., J.M. Perloff, and S.B. Villa-Boas. “Effects of Sales on Brand Loyalty.” *Journal of Agricultural and Food Industrial Organization* 4 (2006): Article 5
- Lal, R., and D.E. Bell. “The Impact of Frequent Shopper Programs in Grocery Retailing.” *Quantitative Marketing and Economics* 1 (2003): 179-202
- Shy, Oz. “Chapter 16 – Price Dispersion and Search Theory” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 97-132.
- Gerstner, E., J.D. Hess, and D.M. Holthausen. “Price Discrimination Through a Distribution Channel: Theory and Evidence.” *American Economic Review* 84 (1994): 1437-1445.
- Nevo, A., and C. Wofram. “Why Do Manufacturers Issue Coupons? An Empirical Analysis of Breakfast Cereals.” *Rand Journal of Economics* 33 (2002): 319-339.
- Price, G.K., and J.M. Connor. “Modeling Coupon Values for Ready-To-Eat Breakfast Cereals.” *Agribusiness* 19 (2003): 223-243.
- Shy, Oz. “Chapter 14 – Marketing Tactics” in *Industrial Organization: Theory and Applications*, MIT Press, 1995, 341-360.
- Dreze, X., P. Nisol, and N.J. Vilcassim. “Do Promotions Increase Store Expenditures? A Descriptive Study of Household Shopping Behavior.” *Quantitative Marketing and Economics* 2 (2004): 58-92.
- Wessells, C.R., and P. Wallstrom. “Modeling Demand Structure Using Scanner Data:

- Implications for Salmon Enhancement Policies.” *Agribusiness* 15 (1999): 449-461.
- Yen, S.T., B-H. Lin, J.M. Harris, and N. Ballenger. “Demand for Differentiated Vegetables.” Selected Paper presented at the Annual Meeting of the American Agricultural Economics Association, Denver, Colorado, August 2004.

Course Code: AE-B-09

Course Name: Financial Economics

Course Outcome:

The course will enable the students:

- To familiarize students with the financial system and its components (Module 1 and 2)
- To understand the risk and return structure in financial markets (Module 1)
- To comprehend the students with the functioning of capital market (Module 3)
- To help students with contemporary theories related to financial markets including money market, capital markets (bonds, stocks and hybrids) and derivative markets. (Module 4, 5, 6, 7, 8 and 9)
- To familiarize them with the policy and regulatory framework within which financial markets are required to function (Module 10)

Module 1:

The demand for securities (15 hours)

- The time dimension, Present value and duration, The calculation of yields on zero-coupon bonds
- The term structure of interest rates
- The risk dimension, Measurement of risk
- Bivariate distributions, Conditional probabilities and expected values
- Estimating the mean and variance of returns, Expected utility

Module 2:

The supply of securities (15 Hours)

- Regulations governing supply of securities,
- General characteristics of securities,
- Government bonds
- Index linked bonds
- Corporate Securities, equities, bonds, convertible securities
- Stock market operations
- Money market funds
- Claims on financial institutions.

Module 3:

Securities markets and their efficiency (5 Hours)

- Stock exchanges
- The over the counter stock market
- Operational efficiency and the Efficient Market Hypothesis(EMH) - The weak, semi-strong and the strong form of EMH.

Module 4:

The determination of equity prices (6)

- Shares as claims on future dividends and on corporate net worth
- The Capital Asset Pricing Model (CAPM)- The simplest form, Estimating betas, Implications for portfolio management, Validity of CAPM
- Arbitrage Pricing theory- An alternative approach

- Stock indices – Bombay Sensitive Index, Bombay National Index, Dow Jones Industrial Index(DJI), New York Stock exchange composite index(NYSE)

Module 5:

Security analysis and market efficiency (6 Hours)

- A modern view of security analysis
- Macroeconomic developments and securities markets
- Performance of securities markets
- Industry growth, structure and firm specific factors
- Uses and pitfalls of Price / Earnings ratios.

Module 6:

Derivatives Uses of Derivatives – Futures contracts and futures markets – Forward contracts – The origins of Futures trading – Basic elements and organization of futures contracts.

Module 7:

Futures prices Relation among spot and futures prices – financial futures – commodity futures – Closing out with futures – Hedgers, speculators, market equilibrium – The role of expectations – Futures and portfolio management.

Module 8:

Options and option pricing Institutional aspects – Exchange traded stock options – The payoffs from buying and selling options – Boundary conditions on option prices – The put-call parity theorem – The BlackScholesformula – Other option models.

Module 9:

Swaps, Currency and Interest Rate Swaps Vanilla Interest Rate Swaps – Swaptions – Other types of swaps – Currency, Equity and Commodity Swaps.

Module 10:

Regulation of financial markets (3 hours)

- The ethics of finance and the economic function of financial markets
- The purpose of regulation, levels of regulation
- Securities Contract Regulation Act – Securities and Exchange Board of India (SEBI).

Suggested Reading

Books

- Black, F., Jensen, M.C. and Scholes, M.A. (1972), “*The Capital Asset Pricing Model: Some Empirical Tests*”, in M.C. Jensen (ed.), *Studies in the Theory of Capital Markets*, (Praeger, New York)
- Chandra, Prasanna (2008), *Investment Analysis and Portfolio Management*, Tata McGraw Hills
- Fabozzi (2009), *Bond Markets*, 7th revised edition, Pearson Publications, USA, February 27
- Houthakkar H.S. and Williamson P.J. (1996), *The Economics of Financial Markets*, Oxford University Press
- John Y. Campbell, Andrew W.Lo and A. Graig Mackinlay, (1997) *The Econometrics of Financial Markets*, Princeton University Press,
- Jurgen Echberger and Ian R. Harper (1997), *Financial Economics*, Oxford University Press
- Krishan, Bal and Narta, S. S. (1998), *Security Markets in India*, Kanishka Publishers, New Delhi.
- Ross Stephan A. and Rudolph W. Westerfield (1998), *Fundamentals of Corporate Finance*, McGraw Hill International edition
- Shapiro, Alan C. (1999), 4 th edition, *Multinational Financial Management*, International McGraw Hills, Prentice-Hall of India
- Mishikin, F.S., Eakins, S. G., Jayakumar, T and Pattanaik, R.K (2005), *Financial Markets and Institutions*, 8th Edition, Pearson.

Papers

- Barsky, R. and Long, J. De (1993), “*Why Does the Stock Market Fluctuate?*”, Quarterly Journal of Economics, 108, pp. 291-311
- Basu, S., (1977), “*The Investment Performance of Common Stocks in Relation to their Price to Earnings Ratios: A Test of the Efficient Market Hypothesis*”, Journal of Finance, 32, pp. 663- 682.
- Fama E.F. (1970), “*Efficient Capital Markets: A Review of Theory and Empirical Work*”, Journal of Finance, 25 May, pp. 383-417
- Fama E.F. and J. MacBeth, (1973), “*Risk, Return and Equilibrium Empirical Tests*”, Journal of Political Economy, 71, pp. 607-636
- Fama, E.F. (1991), “*Efficient Capital Markets II*”, Journal of Finance, 46, (December), pp. 1575-617
- Graves, Affleck, Hegde, J.S. and Miller, R. (1994), “*Trading Mechanisms and the Components of the Bid Ask Spread*”, Journal of Finance, 44, pp. 1471-1488.
- Markowitz, H. (1952), “*Portfolio Selection*,” Journal of Finance, 7: 77-91.
- Merton, R. (1980), “*On Estimating the Expected Return on the Market: An Exploratory Investigation*”, Journal of Financial Economics, 8, pp. 323-361.
- Ross, S.A. (1976), “*Arbitrage Theory of Capital Asset Pricing*”, Journal of Economic Theory, 13, pp. 341-60

Additional Reading List:

- (Basel: BIS, April 1986) “*Bank for International Settlements*”, Recent Innovations in International Banking.
- Benjamin M. Friedman H. Hahn (1990) “*A formal treatment of the requirements for targets*” is available in Benjamin M. Friedman, “*Targets and Instruments of Monetary*

- Policy*,” chapter 22 in Benjamin M. Friedman H. Hahn, handbook of Monetary Economics, (Amsterdam: North-Holland, 1990).
- Blume, Marshall, E. (June 1975) “*Betas and Their Regression Tendencies*,” Journal of Finance, 30, 785-96.
 - Cox. Ingersoll, and Ross, “*A Re-examination of Traditional Hypothesis*,” pp. 774-775.
 - Culbertson, J.M. (November 1957) “*The Term Structure of Interest Rates*,” Quarterly Journal of Economics, pp. 489-504.
 - Daniel C. Inro, Christine X. Jaing, Michael Y. Ho, Wayne Y. Lee (May/June 1999) “*Mutual Fund Performance: Does Fund Size Matter?*” Financial Analysis Journal, pp. 74-87.
 - Edward S. O’Neal (September/October 1999) “*Mutual Fund Share Classes and Broker Incentives*,” Financial Analysis Journal, pp. 76-87.
 - Eugene F. Fama (1976) “*Forward Rates as Predictors of Future Spot Rates*,” Journal of Financial Economics, 3, no.4, pp.361-377.
 - Fama (December 1991) “*Efficient Capital Markets II*,” Journal of Finance, 46, 1575-615.
 - Fama (December 1998) “*Value Growth: The International Evidence*,” Journal of Finance, 53, 1975-99.
 - Fama, Eugene, F. (May 1970) “*Efficient Capital Market: A Review of Theory and Empirical Work*,” Journal of Finance, 25, 383-417.
 - Fisher Black and Myron Scholes (May-June 1937) “*The Pricing of Corporate Liabilities*,” Journal of Political Economy, pp. 637-659.
 - George, J. Benston (March 1973) “*Required Disclosure and the Stock Market: An Evaluation of the Security Exchange Act of 1934*,” American Economic Review, pp. 132-155.
 - Harry K. Markowitz, (March 1952) “*Portfolio Selection*,” Journal of Finance, pp. 71-91 and Portfolio Selection: Efficient Diversification of Investments (New York: John Wiley & Sons, Inc., 1959).
 - Irving Fisher (1930) “*The Theory of Interest Rates*” (New York; Macmillan, 1930)
 - John C. Cox, Stephen A. Ross, and Mark Rubinstein (September 1979) “*Option Pricing: A Simplified Approach*,” Journal of Financial Economics, pp. 229-263.
 - Jonathan Ingersoll, Jr., and Stephen Ross (September 1981) “*A Re-examination of Traditional Hypothesis About the Term Structure of Interest Rates*,” Journal of Finance (September 1981), pp. 769-799.
 - Keynes, J.M. (1936) “*The General Theory of Employment, Interest and Money*” (New York: Harcourt, Brace & World, 1936)
 - Lucas Papademos and Franco Modigliani (1990) “*The Supply of Money and the Control of National Income*,” chapter 10 in Benjamin M. Friedman and Frank H. Hahn (eds.) Handbook of Monetary Economics (Amsterdam; North-Holland, Elsevier, 1990), pp. 428-430.
 - Lutz, F. (1940-41) “*The Structure of Interest Rates*,” Quarterly Journal of Economics, pp. 36- 63.
 - Marshall E. Blume (April 1970) “*Portfolio Theory: A Step Toward Its Practical Application*,” Journal of Business, pp. 152-173.
 - Marshall E. Blume and Irwin Friend (March 1973) “*A New Look at the Capital Asset Pricing Model*,” Journal of Finance (March 1973), pp. 19-33; and Eugene F. Fama and James D. MacBeth, “*Risk, Return and Equilibrium: Empirical Tests*,” Working Paper No. 7237, University of Chicago, Graduate School of Business, August 1972.
 - Merton H. Miller and Myron S. Scholes (1972) “*Rates of Returns in Relation to Risk: A Re-examination of Recent Findings*,” and Fischer Black, Michael C. Jensen, and Myron

- S. Scholes, “*The Capital Assets Pricing Model: Some Empirical Evidence*,” in Michel C. Jensen (ed.), *Studies in the Theory of Capital Markets* (New York: Praeger Books, 1971)
- Merton, H. Miller (December 1986) “*Financial Innovation: The Last Twenty Years and the Next*,” *Journal of Financial and Quantitative Analysis*, pp. 459-471.
 - Modigliani, Franco, and Miller, M.H. (June 1958) “*The Cost of Capital, Corporation Finance and the Theory of Investment*,” *American Economic Review*, 48, 261-97.
 - Richard J. Rendleman and Brit J. Bartter (December 1979) “*Two State Option Pricing*,” *Journal of Finance*, pp. 1093-1110.
 - Richard Roll (March 1997) “*A Critique of the Asset Pricing Theory: Part I. On the Past and Potential Testability of the Theory*,” *Journal of Financial Economics*, pp. 139-176.
 - Stephen A. Ross (December 1976) “*The Arbitrage Theory of Capital Assets Pricing*,” *Journal of Economic Theory*, pp. 343-362.
 - Stephen A. Ross (March 1980) “*Options and Efficiency*,” *Quarterly Journal of Economics* (February 1976), pp. 75-89; and Fred Arditti and Kose John, “*Spanning the State Space with Options*,” *Journal of Financial and Quantitative Analysis*, pp. 1-9.
 - Stephen, A. Ross (July 1989) “*Institutional Markets, Financial Marketing, and Financial Innovation*,” *Journal of Finance*, p.541.
 - William F. Sharpe (1981) *Investments*, (Englewood Cliffs, N.J.: Prentice Hall, 1981), Chapter 16
 - William F. Sharpe (September 1964) “*Capital Assets Prices: A Theory of Market Equilibrium Under Conditions of Risk*,” *Journal of Finance*, pp. 425-442.

Course Code: AE-B-10

Course Name: Economic Growth and Development

Learning Outcomes

- To familiarize students with the multidimensionality of the concept of ‘development’ (Module I)
- To discuss the major theoretical developments in areas of growth economics and policy discourse (Module II)
- To elaborate the development theories pertaining to underdevelopment problems of the least-developed or developing countries (Module III, V)
- To provide detailed accounts of secular problems faced by developing countries such as slow growth, high poverty rates, high income inequality etc. (Module IV, VI)

Module 1:

Introduction

- Economic growth, Economic development, Human Development
- Approaches to evaluate growth : trickle down effect, basic needs approach
- Approaches to evaluate development: Rights-based approach, Capability approach ; Development as Freedom
- Growth and development indicators such as GDP, GNP, Per Capita Income, Human Development Index and its extensions, Gender related Development Index (GDI), Gender Empowerment Measure (GEM), Methodology of computation and measurement issues

Module 2:

Growth Theories

- Harrod-Domar Model
- Solow growth model and its application to convergence of country growth rates
- New growth theories: Human capital, Externalities and ideas; endogenous technological progress and development

Module 3:

Development theories

- Vicious Circle of Poverty
- Low-level Equilibrium Trap
- Rostow’s Stages of Growth
- Big Push, Balanced and Unbalanced growth
- Dual-economy models by Lewis, Ranis-Fei,
- Rural-urban migration and urban unemployment (Harris-Todaro model and extensions)
- Rural-urban wage-gap (Labour turnover model and wage- efficiency model – their extensions and limitations)
- Myrdal’s model of Geographical Dualism

Module 4:

Institutions & economic development

- Institutions, role of institutions in long-run growth and development

- Which institutions matter?
- Why Poor nations remain poor?
- Institutions for well-functioning market economies, Market failures
- Government failures
- Community and Economic Development, Management of common property resource,
- Community Failures

Module 5:

Poverty and Inequality:

- Measures of poverty- absolute versus relative poverty, poverty gap ratio, poverty lines,
- Multidimensional Poverty Index (MPI), debates about poverty lines, Inclusive Growth
- Measures of Inequality - Kuznets ratio, Lorenz curve, GINI Coefficient
- Linkages with development - capital versus labour market, Kuznet's Inverted U-shaped hypothesis, Income and Wealth Inequalities, Social Inequality,
- Basic equality and social security and Health care
- India's performance in case of poverty and inequality reduction, lessons learned from RCTs

Module 6:

Development Experiences and Policy Lessons

- International comparison of India with other countries on growth and development indicators
- Inter-state or inter-district comparison on various development indicators and development policies
- Overview of SDGs - targets and achievements

References:

Basic Reading List:

- Bardhan, P. and C. Udry (1999), *Development Microeconomics*, Oxford University Press.
- Basu, K. (2003), *Analytical Development Economics: The Less Developed Economy Revisited*, The MIT Press.
- Meier, G. and J. Rauch (2004), *Leading Issues in Economic Development*, 7th edition, Oxford University Press.
- Ray, D. (1998), *Development Economics*, Princeton University Press.
- Thirlwall, A.P. (2006), *Growth and Development*, 8 th edition, Palgrave Macmillan.

Additional Reading List

Module I:

- Alkire, S. (2002), *Valuing Freedom: Sen's Capability Approach*, New Delhi: OUP.
- Bagchi, A. (1982), *The political economy of underdevelopment*, Cambridge University Press.
- Bardhan, P. and C. Udry (eds) (2000), 1st edition, *Readings in Development Economics*, The MIT Press.
- Meier, G. and J. Rauch (2005), 8 edition, *Leading Issues in Economic Development*,. Oxford University Press, USA.
- Meier, G. (2001), 'The Old Generation of Development Economics and the New', In: G. Meier and J. Stiglitz (eds), *Frontiers of Development Economics*, World Bank.
- Mozaffar, Q. (1996), 'Capabilities, Well-being and Human Development: A survey', *Journal of Development Studies*, 33:143-162.
- Mynt, Hla (1987), 'The neo-classical resurgence in development economics: its strength and limitations', in G.M. Meier (ed) (1987), *Pioneers in Development*, Second Series, World Bank.
- Nussbaum, M. (1995), 'Human Capabilities, Female Human Beings', In: Nussbaum, M. and J. Glover (eds): *Women, Culture and Development: A study of human capabilities*, Delhi: OUP.
- Rao, V.K.R.V. (1963), 'Investment, Income and Multiplier in an underdeveloped economy', In: Agarwala, A.N. and S. Singh (eds): *Economics of Underdevelopment*, Delhi: OUP.

Ray, D. (1998), *Development Economics*, Princeton University Press.

Sen, Amartya (1983), 'Development: Which way now?', *Economic Journal*, reprinted in: *Sen: Values, Resources and Development*. Vol. 93(372), pages 742-62,

Sen, Amartya (August 15, 2000), *Development as Freedom*. Anchor.

Sen, Amartya (1988), 'The concept of development', In: H. Chenery and T.N. Srinivasan (eds): *Handbook of Development Economics Vol 1: North-Holland*.

World Development Reports. World Bank 1993. World Bank 1998

China Human Development Report 1999: Transition and the State

Human Development Reports (most recent)

Module II:

Aghion. P. and Howitt. P *Endogenous Growth Theory*. The MIT Press, 1997.

Barro, Robert J. & Sala-i-Martin, Xavier (1995), *Economic Growth*, MacGrow Hill

Bardhan, P. (1995), 'The Contributions to Endogenous Growth Theory to the Analysis of Development

Problems' In: Behrman, J. and T.N. Srinivasan (ed): *Handbook of Development Economics Vol. IIB* pp. 2983–2998

(New York: Elsevier). Ray, D. (2009), *Development Economics*, Princeton University Press.

Module III:

- Baran, P. (1957), *The political economy of growth*, Monthly Review Press. Pp. 308.
- Bardhan, P. (1988), *'Alternative approaches to development economics'* Oxford University Press, New Delhi,
- Chenery and Srinivasan (eds) 1995. *Handbook of Development Economics*, Vol. 1, Elsevier
- Bardhan, P. and C. Udry (1999), *Development Microeconomics*, oxford University press.
- Basu, K. (2003), *Analytical Development Economics: The Less Developed Economy Revisited*, The MIT Press.
- Booth, D. (1995), *'Marxism and Development Sociology: Interpreting the Impasse'*, In: Corbridge, *Development Studies*, London: Edward Arnold.
- Frank, G. (1984), *'The development of underdevelopment'* in *The Political Economy of Development and Underdevelopment*, ed. Charles K. Wilber. New York: Random House. 1984. Pp. 100
- Hayami, Y. (1997), *Development Economics: From the Poverty to the Wealth of Nations*, Oxford: Clarendon Press.
- Jorgenson, D. (1978), *'Surplus Agricultural Labour and the Development of a Dual Economy'*, In: Singh, S.P (ed), *Underdevelopment to Developing Economies*, oxford University press Delhi.
- Kay, Geoffrey (1975), *Development and underdevelopment: a Marxist analysis*. London: The Macmillan Press Ltd.
- Krugman, P. (1993), *'Toward a counter-counterrevolution in Development Theory'*, *Proceedings of the World Bank Annual Conference on Development Economics 1992*, Washington DC: World Bank.
- Little, IMD (1982) *Economic Development: Theory, Policy and International Relations*, New York: Basic Books; New York: McGraw- Hill.
- Palma, G. (1978), *'Dependency: a formal theory of underdevelopment or a methodology for the analysis of concrete situations of underdevelopment'*, *World Development*, Vol. 6, pp. 881-924, Pergamon Press Ltd.,
- Ranis, G. and J.C.H. Fei (1961), *'A theory of economic development'*, *American economic review*, LI- 4 September, pp 533-565
- Ray, D. (2009), *Development Economics*, Princeton University Press.
- Thirlwall, AP (2006), 8th Edition, *Growth and Development*, Palgrave Macmillan.
- Module IV:
- Bardhan, P. (1989), *'The New Institutional Economics and Development Theory'*, *World Development*, Vol.17 (9), pp.1389-1395.
- Bardhan, P. (2001), *'The nature of institutional impediments to economic development'* In: Kahkonen, S. and M. Olson (eds): *A New Institutional Approach to Economic Development*, New Delhi: Vistaar Publications.
- Bardhan, P. (2000), *'Understanding underdevelopment: Challenges for Institutional Economics from the point of view of poor countries'*, *Journal of Institutional and Theoretical Economics*, Vol.135, pp. 216-235.
- Bowles. S. *Microeconomics: Behavior, Institutions and Evolution*, Princeton University Press, 2006.
- Dasgupta. P. *An Inquiry into Well Being and Destitution*, Clarendon Press 1993.
- Dasgupta, P. *Human wellbeing and Natural Environment*, Oxford University Press, 2002.
- Stiglitz, J. (1989), *'Markets, Market Failures, and Development'*, *American Economic Review*, Vol.79, pp.197-203.
- Hayami, Y. (1997), *Development Economics: From the Poverty to the Wealth of Nations*, Oxford: Clarendon Press.
- Module V
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Reports by various committees on poverty line

Reports of Planning Commission / NITI Aayog, India

Reports of World Bank. Reports of UNDP. HDR reports. Oxfam reports

Module VI

World Bank reports

Maddison Historical Statistics: Maddison Project Database 2020

NITI Aayog - SDG India Index and Dashboard. NITI Aayog - Reports on SDGs

Course Code: AE-B-11

Course Name: Political Economy of India's Development

Course Outcome:

The course enables students to be able to comment on the state of India's development, by introducing aspects of various development parameters, followed by a critical study of the given subject in each module:

- To be able to understand the perspectives of both sides that economic historians take – that colonialism did more good than harm to India or the other-way-around; on the role of colonialism on Indian political and economic development. (Module 1)
- This module introduces students to understand the policy environment demographic dividend in the liberalized country. (Module 2)
- This module introduces students to the various planning periods and various growth indicators in the Planning period are analyzed. (Module 3)
- Multi-dimensional nature of poverty and inequality are taught. Students are also introduced to the literature on ways to combat poverty. (Module 4)
- Growth-inducing development is analyzed for all the sectors of the economy. Students are able to comprehend the consequences of adopting the reforms in this module. (Module 5)
- Overall, across all modules, the course enables the student to form their critical view on the current

Module 1:

Effect of British Colonialism on Independent India

- Effect through industrialization and trade in pre-colonial and colonial India.
- Debates of economic historians between those who propose that Indian development owes its debt to British colonialism and their critique.

Module 2:

How did India handle the demographic dividend?

- Correlation between data on demographic dividend and Indian growth parameters.
- Factors affecting the strategy for making use of the demographic transition.
- The demographic dividend as is evident from pre-liberalization and liberalization period.

Module 3:

Indian development in the Planning period

- Purpose behind introducing the Indian Plans.
- Various Plans are discussed and the literature on the theories of economic planning are introduced.

Module 4:

Poverty and Inequality in the 21st century

- Poverty and inequality estimating measures are introduced.
- Current discussions on multidimensional poverty and inequality.
- Poverty and inequality in the pre-liberalized period.
- One of the policy measures, namely, Universal Basic Income is studied in detail.

Module 5:

Post-liberalized India and its economic development

- Factors led to reforms and its consequences are discussed.
- Reasons behind the economic boom of 2003-08 are studied.
- Aspects of industries and growth in the 21st century are analysed.

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Books:

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- Basu, K. (ed) (2004), India's Emerging Economy, New Delhi Delhi: *Oxford University Press*.
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Course Code: AE-B-15

Course Name: Farm Management Economics

Objective:

To expose the students to the concepts, significance and uses of production economics in an agricultural context.

Module 1:

Nature, scope and significance of agricultural production economics, Agricultural Production processes, character and dimensions-spatial, temporal, Centrality of production functions, assumptions of production functions, commonly used forms – Properties, limitations, specification, estimation and interpretation of commonly used production functions.

Module 2:

Factors of production, classification, interdependence, and factor substitution - Determination of optimal levels of production and factor application, Optimal factor combination and least cost combination of production – Theory of product choice; selection of optimal product combination.

Module 3:

Cost functions and cost curves, components, and cost minimization – Duality theory – cost and production functions and its applications – Derivation of firm's input demand and output supply functions – Economies and diseconomies of scale.

Module 4:

Technology in agricultural production, nature and effects and measurement - Measuring efficiency in agricultural production; technical, allocative and economic efficiencies, yield gap analysis – concepts, types, and measurement

Suggested Readings

Books

- Beattie, B.R. and C. R. Taylor (1985), *The Economics of Production*, John Wiley and Sons.
- Debertin, D. L., 2012, *Agricultural Production Economics 2nd Edn*, Macmillan Publishing Company, New Jersey, USA
- Dhondyal, S.P. "Farm Management -An Economic Analyst", Friends Publications. Meerut.
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- Heady, E.O. (1968), *Economics of Agricultural Production and Resource Use*, Prentice-Hall.
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Journals

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- Lau, L. J., 1972, Profit Functions of Technologies with Multiple Inputs and Outputs, *The Review of Economics and Statistics*, Vol. 54, No. 3, pp. 281-289
- Mankiw, N. G., Romer, D., and Weil, D. N., 1992, A Contribution to the Empirics of Economic Growth, *The Quarterly Journal of Economics*, Vol. 107, No. 2., pp. 407-437

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- Murillo-Zamorano, L. R., 2004, Economic Efficiency and Frontier Techniques, Journal of Economic Surveys, Vol. 18, No. 1, pp.33-77
- Picazo-Tadeo, A. J., Gomez-Limon, J. A., Reig-Martinez, E., 2010, Assessing farming eco-efficiency: A Data Envelopment Analysis approach, University de Valencia, Working Papers in Applied Economics WPAE-2010-04
- Rao, I. V. Y. R., 2012, Efficiency, Yield Gap and Constraints Analysis in Irrigated vis-a-vis Rainfed Sugarcane in North Coastal Zone of Andhra Pradesh, Agricultural Economics Research Review, Vol. 25, No.1, pp. 167-171
- Schreinemachers, P., 2005, The (Ir)relevance of the Crop Yield Gap Concept to Food Security in Developing Countries, with an Application of Multi Agent Modeling to Farming Systems in Uganda, Doctoral Dissertation, University of Bonn
- Thompson, H., 1997, Substitution Elasticities with Many Inputs, Applied Mathematics Letters Vol. 10, No. 3, pp. 123-127
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Course Code: AE-B-16
Course Name: Linear Economics I

Preamble

This course exposes students to modern developments in economic theory that have been inspired by the classical economists like Adam Smith and David Ricardo. The course begins by an exposition of the fallacies in the neo-classical theories of value and distribution and the limitations of standard general equilibrium theory. It then proceeds to cover input-output analysis and its empirical applications. Alternatives to the neo-classical theories including the Kaldor Pasinetti theory of income distribution and the Sraffa and Von Neumann models are covered next. Finally an alternative general equilibrium model based on classical theories is covered which determines prices, outputs, growth and income distribution and tested against data from cross-country sources.

Learning Outcomes

- To expose the fallacies in neoclassical theories of value, distribution and growth (Module 1)
- To make students aware of classical theories of value and distribution (Modules 2, 3, 4)
- To expose students to empirically verifiable classical models of general equilibrium that determine prices, outputs, growth and income distribution. (Modules 5, 6)

Module 1:

Critique of Neoclassical Economics

- Critique of Marshall's theory of supply based on the law of variable proportions.
- Critique of the marginal productivity theory.
- Critiques of neo-classical production functions.

Module 2:

Input-Output Economics

- Economy as a Circular Flow.
- Static closed and open input output models.
- Hawkins-Simon conditions.
- Construction of Input-Output tables.
- Some applications.
- Dynamic input-output analysis.

Module 3:

'Classical' General Equilibrium Models

- The Von Neumann model.
- The Sraffa system and its properties
- Standard Commodity.
- Reduction to dated labour.
- Impossibility of Measuring Capital independently of the distribution of income.

Module 4:

Alternative Theory of Income Distribution

- Alternative theories of income distribution.
- The Kaldor Pasinetti model and its developments.

Module 5:**Alternative Model of General Equilibrium**

- Closure for the Sraffa system.
- An alternative general equilibrium model and its empirical relevance.

Module 6:**Theory of Personal Distribution of Income**

- Hierarchies in firms
- Size Distribution of firms in industries.
- Human Capital.
- Resulting Frequency Distributions of Personal Income.

Reading List:

Books:

- Hadley, G(1961), Linear algebra, Addison-Wesley Massachusetts
Bellman, Richard (1970), Introduction to matrix analysis, 2nd edition, McGraw-Hill, New York, NY.
Mills, Gordon (1970) Introduction to linear Algebra, Aldine Pub. Co. (Chicago).
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- Sraffa, P. (1962) "The Laws of Returns under Competitive Conditions," Economic Journal, Vol.36.
- Sraffa, P. (1960) Production of Commodities by Means of Commodities, Cambridge University Press, Cambridge.
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- Von Neumann J. (1945-46) "A Model of General Economic Equilibrium." Review of Economic Studies. Vol.13.

Course Code: AE-B-17

Course Name: Linear Economics II

Preamble

This course is a continuation of Linear Economics – I whose purpose is to expose students to alternative theories of international trade and to monetary general equilibrium theory.

Module 1:

Critique, of the Heckscher-Ohlin-Samuelson trade model. ‘Twoness’ in trade theory. Non-viability of reduction of reality to $2 \times 2 \times 2$ models. Critique of exchange rate theories: the demand supply diagram, the purchasing power parity theory, etc.

Module 2:

Frank D. Graham’s theory of multicountry multicommodity trade. Extensions of the theory to tariffs, intercountry transfers and taxation. Trade in intermediate and final goods.

Module 3:

Money in General Equilibrium Theory: Patinkin’s Findings of Arrow, Clower, Hahn, Ostroy. Keynesian Counter revolution. Essentiality of Money of in the real world.

Module 4:

The Static Keynesian economy with money. Critique of -ISLM model. Possibility of unemployment equilibrium. Fiscal Policy. General ineffectiveness of monetary policy instruments including TARP, etc.

Module 5:

Dichotomy in the theories of the level and theories of the term structure of interest rates. Integrated model of the level and structure of spot interest rates.

Module 6:

The dynamic Keynesian economy with money and several financial assets. General disequilibrium. Role of fiscal and monetary policies.

Reading List:

Books:

Graham, F. D. (1948), *The theory of International Values*; Princeton University Press
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Article:

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Smith.M.A.M. (1982) "Capital Theory and Trade Theory" in Jones R.W. and P.B. Kenen (eds. 1984) Handbook of International Economics, North Holland, Amsterdam.
Sraffa, P. (1962) "The Laws of Returns under Competitive Conditions," Economic Journal, Vol.36.
Sraffa, P. (1932a) "Dr. Hayek on Money and Capital," Economic Journal, Vol.52.
Sraffa, P. (1932b) "Rejoinder", Economic Journal, Vol.52.

Course Code: AE-B-18

Course Name: Mathematics for Economic Analysis

Objective:

The course aims at providing students an understanding of mathematical concepts along with economic applications, and introduce them to mathematical thinking and vocabulary. The concepts and techniques discussed in this course will find applications in the various branches of Economics.

Module 1:

Linear Algebra

- Review of Matrices
- Eigenvalues and Eigenvectors, Principal Minors and Sign Definiteness
- Introduction to Vector Spaces
- Applications of Linear Algebra in Economics and Econometrics

Module 2:

Real Analysis

- Open and Closed Sets, Compact Sets, Convex Sets
- Rolle's Theorem and Mean Value Theorem
- Taylor Series
- Convex and Concave Functions,
- Brouwer and Kakutani Fixed Point Theorems

Module 3:

Static Optimization and Comparative Statics

- Introduction to Linear Programming and Game Theory
- Unconstraint and Constraint Optimization
- Euler's Theorem
- Kuhn-Tucker Conditions and Non-Linear Programming
- Maximum Value Functions and Envelope Theorem
- Comparative Statics
- Applications in Microeconomics
- An Overview of Matrix Differentiation and Applications to Econometrics

Module 4:

Dynamic Optimization

- First and Second Order Differential Equations and Difference Equations
- Simultaneous Differential and Difference Equations
- Optimal Control Theory
- Applications in Macroeconomics and Growth Theory
- Dynamic Programming
- Applications in Macroeconomics

Readings

- Chiang, A.C., Fundamentals Methods of Mathematical Economics, McGraw-Hill, 2005
- Chiang, A.C., Elements of Dynamic Optimization, McGraw-Hill, 1992

- Dorfman, R., P. A. Samuelson and R. M. Solow, Linear Programming and Economic Analysis, Dover Publications, Inc., 1958
- Hoy, M., J. Livernois, C. McKenna, R. Rees, T. Stengos, Mathematics for Economics, PHI Learning Private Ltd., 2011
- Intriligator, Michael D., Mathematical Optimization and Economic Theory, Prentice Hall, 1971
- Shone, R., An Introduction to Economic Dynamics, Cambridge University Press, 2001
- Shone, R., Economic Dynamics: Phase Diagrams and their Economic Applications, Cambridge University Press, 2002
- Simon, Carl P. and Lawrence Blume, Mathematics for Economists, W. W. Norton & Company, Inc., 1994
- Sydsaeter, K and P. J. Hammond, Mathematics for Economic Analysis, 2002

Additional Readings

- Anton H. and Chris Rorres, Elementary Linear Algebra, Wiley India, 2005
- Bartle R. G. and D. R. Sherbert, Introduction to Real Analysis, John Wiley & Sons, 2000
- Binmore, K., Foundations of Analysis, Books 1, Cambridge University Press, 1980
- Binmore, K., Foundations of Analysis, Books 2, Cambridge University Press, 1981
- Dhrymes, P. J., Mathematics for Econometrics, Springer, 2013
- Strang, G., Linear Algebra and Its Applications, Cengage Learning, 2007

Course Code: AE-B-20

Course Name: Introduction to Game Theory

Objective:

This course aims to familiarise students with the basics of both non-cooperative and cooperative game theory, alongside a plethora of real-life applications. This course is balance between abstract mathematical calculations and their application to real-life situations to cate to audiences with multiple backgrounds.

Module 1:

Introduction

Introduction and uses of game theory, the normal form, payoffs, dominant strategies

Module 2:

The Nash Equilibrium

Pure and mixed strategy Nash Equilibrium – existence, properties and applications

Module 3:

Finite Two-Player Games

Basic definitions, finite zero-sum two-player games, Nash Equilibria in finite two-person games

Module 4:

Extensive Form Games

Extensive form (trees), Strategic Form, backward Induction, subgame perfect Nash equilibrium, introduction to imperfect-information games

Module 5:

Repeated Games

Repeated prisoners' dilemma, finite and infinite repeated games, folk theorems for Nash equilibrium

Module 6:

Games of Incomplete Information

Bayes-Nash equilibrium, signaling games

Module 7:

Introduction to Cooperative Games

Introduction to TU-games, core, Shapley Value, Nucleolus

Reading List:

- Game Theory, by Fudenberg and Tirole, 1st Edition, MIT Press
- Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life (Norton Paperpack), Dixit and Nalebuff
- Games of Strategy, Dixit, Skeath et al, W.W. Norton and Co., 2020
- Games and Decisions, Luce and Raiffa, Dover Publications
- Collected Papers, Vol. 1, Robert J Aumann

Course Code: AE-B-21

Course Name: Social Exclusion and Inclusive Policy

Preamble:

Indian society is characterized by a highly entrenched system of social stratification. This created the hindrances and denied the access to economical, cultural and educational resources to the disadvantaged groups of the society particularly, the scheduled castes, scheduled tribes, women, minorities, physically challenged and old aged groups. To understand their problems, we need to study the components of social exclusion and to formulate policy paradigms for their inclusion in the economy. This course is designed to give basic understanding of the phenomenon of 'social exclusion'. It will make possible to create awareness about the social excluded people from an economic and social policy perspective as well as to analyze social inclusive policy for them.

Module 1:

Understanding Social Exclusion

Conceptualising Social Exclusion, Origin and Basis of Social Exclusion; Forms of Social Exclusion: Religion, Race, Caste, Gender, Ethnicity, Region, Culture, Language, Disability, Migrants and Refugees; Excluded Groups and Socio- Economic Disparities: Scheduled Castes, Tribals, Minorities, Women, Old Aged and the Physically Challenged; Contemporary Discussions on Social Exclusion

Module 2:

Theoretical Perspectives on discrimination

Economics of Discrimination; Marxist and Liberal Perspective; Capability Approach and Theories of Poverty; Economic Justice, Economic Freedom and Welfare; Social Choice and Human Rights Approach

Module 3:

Social Exclusion of Caste, Tribe and Minority

Indian society: Social Order in Caste, Tribe and Minority; Caste System as an Institution of Exclusion; Exclusion of Tribes: Nation-State Formation, Industrialization, Urbanization, Globalization etc.; Dimensions of Exclusion for Marginality: Development, Issues of Identity and Human Rights Violation

Module 4:

Dimensions of exclusions and inclusive policy perspectives

Scheduled Castes, Minorities and Affirmative Action; The Question of Reservation and Affirmative Action – Constitutional Provisions and Contemporary Debates with reference to the Mandal Commission Report and the Sachar Committee Report; Labour Market Discrimination, Wage Differentials, Problems of Employability, Social Security and Pension; Access to Finance, Micro Finance and Financial Inclusions of the Excluded People

Module 5:

Physically challenged and Old Aged Social Exclusion

Physically Challenged and Social Exclusion: Constitutional Provisions, National and State Policies and Social Security Policy; Community Support, Awareness and Assimilation

Activities; Aging: Social and Economic Exclusion; Gerontology Outlook in Policy Framework: Government Laws and Welfare Programmes

Module 6:

Institutions and Inclusive Policies

Inclusive Policy Agenda: United Nations Organization, Constitutional Provisions, Nodal Government Agencies and Planned State Interventions; Human Rights Framework, Affirmative Action and Reservation Policies; Designing Innovative Strategies for Inclusive Policies

Reading List

Module 1

- Sen, A. (2000), 'Social Exclusion: Concept, Application, and Scrutiny', Asian Development Bank, Manila.
- Byrne, David (2003), 'Social Exclusion: Issues in Society', Open University Press, 2005.
- Lal, A.K. (2005) (Ed.), 'Social Exclusion: Essays in Honour of Dr. Bindeshwar Pathak', New Delhi, Concept.
- Hills John, Le Grand, J. and Piachaud, D (2002) (eds.), 'Understanding Social Exclusion', Oxford University Press.
- Saith, R. (2001), 'Social Exclusion: The Concept and Application to Developing Countries', Queen Elizabeth House Working Paper Series 72, Queen Elizabeth House, Oxford.

Module 2

- Jordan, Bill (1996), 'A Theory of Poverty and Social Exclusion', Polity Press
- Breman, Jan (2002), 'The Labouring Poor in India: Patterns of Exploitation, Subordination, and Exclusion', Oxford University Press.
- Stoer, Stephen R. (2003), 'Theories of Social Exclusion (European Social Inclusion)', Lang Publishing Incorporated, Bilingual Edition.
- Becker, Gary S. (1971), 'The Economics of Discrimination', The University of Chicago Press, United States of America.
- Boulding, Kenneth (1958), 'Principles of Economic Policy', Englewood Cliffs, Prentice-Hall.
- Boulding, Kenneth (1962), 'Conflict and Defense: A General Theory', New York: Harper & Brothers.
- Arrow, Kenneth, J., Sen, Amartya and Suzamura, K. (2002), 'Handbook of Social Choice and Welfare, Vol. 1, Handbooks in Economics 19', Netherlands, Elsevier.

Module 3

- Sukhadeo Thorat and Umakant (2004) (Eds.), 'Caste, Race and Discrimination: Discourses in International Context', Rawat Publications, Jaipur and New Delhi.
- Singh, K.S (2002) (ed.), 'The Tribal Situation in India', Indian Institute for Advanced Study, Simla.
- Singh, A.K., (1996), 'States of Tribal in India: Health, Education and Employment', Council for Social Development, Har- Anand Publications, New Delhi.
- Rajendra Pandey (1997), 'Minorities in India: Protection and Welfare', APH Publishing Corporations.
- Pandey, Gyan (1993), 'The Hindu and Others: The Question of Identity in India Today', (ed.) Oxford.
- Hasan, Zoya (2008), 'Politics of Inclusion: Caste, Minority, and Representation in India', Oxford University Press, India.

Module 4

- Dreze, Jean and Amartya Sen, (ed.) (1995), 'India: Economic Development and Social Opportunities', New Delhi: Oxford University Press.
- Government of India (2006), 'Social, Economic and Educational Status of the Muslim Community in India: A Report (Sachar Committee Report)', Government of India.

Sameera Khan (2007), 'Negotiating the Mohalla: Exclusion, Identity and Muslim Women in Mumbai', *Economic and Political Weekly*, April 28-May 4.

Saraswati Raju, 'Locating Women in Social Development' in India: *Social Development Report*, Oxford University Press.

Shahid Amin (2005), 'Representing the Musalman: Then and Now, Now and Then', in Ajay Sakaria (ed.), *Subaltern Studies XII*, Permanent Black.

Shilpa Ranade (2007), 'The Way She Moves: Mapping the Everyday Production of Gender-Space', *Economic and Political Weekly*, April 28 – May 4.

Sukhadeo Thorat (2006). 'Empowering Marginalized Groups: Policies and Change' in India: *Social Development Report*, Oxford University Press.

Sukhadeo Thorat, et al (2009) 'Urban Labour Market Discrimination', Working Paper Series, Volume-111, Number 01, Indian Institute of Dalit Studies, New Delhi.

NABARD (2008), 'Report of the Committee on Financial Inclusion' (Rangarajan Committee Report), NABARD

Planning Commission, Government of India (2009), *A Hundred Small Steps: Report of the Committee on Financial Sector Reforms* (Chapter 3: Broadening Access to Finance), New Delhi, Sage Publications).

Module 5

Bacquer, A., Sharma, A., (1997), 'Disability: Challenges vs Responses', Concerned Action Now, New Delhi.

Pandey, R.S., and Advani, Lal (1995), 'Perspectives in Disability and Rehabilitation', Vikas Publishing House, New Delhi.

Kundu, C.L. (2000), 'Status of Disability in India – 2000', Rehabilitation Council of India, New Delhi.

Chakravarthy, I. (1997), 'Life in Twilight Years', Calcutta: Kwality Books Co.

Gokhale, S.D., Ramamurti, P.V., Pandit, N. & Pandal, B. (1999), 'Ageing in India', Mumbai, Somaiga Pubs Pvt Ltd

Module 6

Lund, Brian (2002), 'Understanding State Welfare: Social Injustice or Social Exclusion?', Sage Publications Ltd, 1st edition.

Sukhadeo Thorat (2006), 'Empowering Marginalized Groups: Policies and Change in India', *Social Development Report*, OUP.

A.K. Lal (2003) (Eds.), 'Social Exclusion: Essays in Honour of Dr. Bindeshwar Pathak', New Delhi, Concept.

Hills John, Le Grand, J. and Piachaud, D (2002) (eds.), 'Understanding Social Exclusion', Oxford University Press.

Sheth, D.L. (2004), 'Caste, Ethnicity and Exclusion in South Asia: The Role of Affirmative Action Policies in Building Inclusive Societies', Human Development Report Office, Occasional Paper, UNDP, New York.

Course Code: AE-B-22

Course Name: Insurance Economics

Course Outcome:

The Course will enable the students:

- To know the conceptual inputs related to Insurance Environment in India (Module I)
- To Understand implications of insurance legislation in India (Module II)
- To have insurance product knowledge – both life and non life for all classes of business so
- as to succeed in techno marketing assignment (Module III)
- To apply principles of economics and related mathematics to Insurance (Module IV & V)
- To get knowledge of underwriting acceptances and risks measurement including pricing
- (Module VI)
- To have awareness of new techniques, products and processes of Insurance which will be
- covered for remaining updated in the industry (Module VII)

Module 1:

Introductory Inputs (7 Hrs.)

- Insurance concepts like, History and Advantages of insurance, Insurance Environment, Contribution to economy, Latest Trends.
- Insurance value chain PESTLE Analysis, H'ubiverse's Theory of Human Life Value.
- Principles Of Insurance like Indemnity, Utmost good faith, Insurable interest and proximate cause.
- Basic terms like Risk, Perils, Hazard, Spread of Risk, Co insurance, Reinsurance etc.

Module 2:

Insurance Legislation (7 Hrs.)

- Like Insurance Act, Indian Contracts Act, IRDAI Act.
- Latest IRDAI Regulations, Investment Norms for insurers, Organizational Structure of insurance companies.

Module 3:

Types of Insurance Products (9 Hrs.)

- Life Insurance policies like ULIPs, Double Endowment, Term Assurance, Survival benefits, death cover, Group Insurance Policies.
- Key man Insurance, Whole life policies, types of Annuities, Life & Death Annuities, Immediate & Deferred Annuities.
- Various types of Health Insurance policies including Mediclaim & OMP, Group Health Insurance Policies for Corporates etc. critical illness, OPD covers, corona kavach etc.
- Various types of Nonlife Policies like Fire, Motor, Marine, Liability, PA, Engineering etc.

Module 4:

Principles of Economics (6 Hrs.)

- Approach of Mathematics and basic actuarial concepts like theory of probability, law of large numbers.
- Mortality , Morbidity, Risk Based underwriting, Maximum & Minimum probable loss.
- Control of expenses, aiming at profitability, claim minimization measures, contingency risks v/s investment risks, sharing & Spreading risks.

Module 5:

Mathematics Of Insurance (9 Hrs.)

- Special features of Insurance accounting , Investment function in insurance companies, present value methods, compounding effect, perpetuities.
- Discounted cash flow, sinking fund, life fund, yield, profitability, stationary population , select mortality tables, survival rates, morbidity concept, BMI, Valuation of surplus, Assets & Liability.
- Types of Financial Reserves in Insurance Companies Balance Sheets, Premium Loadings, Pricing of insurance products etc. Bonus/Malus concepts, “Fair Value” of assets/liabilities, life office valuations.
- Concepts of Estate & Trading Profits, distribution of surplus , payment of dividends/bonus, profit centers, management expenses, fresh/renewal expenses, solvency margins etc.

Module 6:

Underwriting (7 Hrs.)

- Definition, importance , profits generation , underwriting process , physical & moral hazards.
- Extras & discounts in rating structure, deductibles, underwriting factors in Life Insurance & General Insurance.
- Risk inspection , risk minimization , adverse selection , Use of riders, Loss sensitive pricing, Embedded devices, comparison between Indian & Global underwriting practices and need for contract certainty, proposal form.

Module 7:

Basic Concepts (5 Hrs.)

- This module is for creating awareness for advanced course in insurance.
- Reinsurance, claims settlement, coinsurance.
- Risk Management, Insurance Marketing and Intermediaries, Futuristic Insurance Products, “Insure Tech”.

Readings:

Text Books

- Understanding General Insurance - PC James PCJ Value Media, Bengaluru
- Insurance Institute of India Books on various aspects of general insurance IC 51 to IC 54, IC 71 to IC 74, IC 77.
- Black, Kenneth Jr, Skipper, Harold D Jr, Life & Health Insurance Latest Edition, Prentice Hall.
- Rejda George E (2010)
- Principles of Risk Management and Insurance Prentice Hall (11th Edition)
- Zartman, Lester W (2003), Yale Readings in Insurance, Life Insurance, William S Hein & Company
- Bates, Ian and Atkins, Derek (2009) Management of Insurance Operations, Global, Professional, Publications.

Research Papers:

- Underwriting Prudence – Winning Strategy, MD Garde , BIMAQUEST, Volume 17, January 2017.
- KPMG Report titled “The Connected Ecosystem a New Business Model for Insurance.
- “BIMAQUEST” & “Pravartak” Publications of National Insurance Academy, Pune.
- Asian Insurance Review, Publication from Singapore.
- The Journal, Insurance Institute of India.

Webliography References :

- <https://www.insuranceinstituteofindia.com>
- <https://www.licindia.in>
- <https://www.agriinsurance.gov.in/pmfby.aspx>

Course Code: AE-B-23

Course Name: Insurance Economics (Advanced Practices)

Course Outcome:

The Course will enable the students:

- To know the marketing principles applied to insurance (Module I)
- To deal with claim matters as after sales service (Module II)
- To get knowledge of innovative insurance products (Module III)
- To learn the importance of reinsurance and its methods (Module IV)
- To understand applications of risk management to insurance issues (Module V)
- To learn the best practices followed globally including India (Module VI)

Module 1:

Insurance Marketing (10 Hrs.)

- Fixing premium goals annually, need for marketing strategy, front desk skills, insurance intermediaries like agents, brokers etc.
- Bancassurance tie ups as a win – win mechanism, direct/tied clients servicing, Market funneling, segmentation.
- New products development, PR & Publicity, Customer Service Pre – Sale , POS & Aftersales, Lead generation thro referrals, Broker development programs.
- Customer focus at all levels, grievances resolution etc.

Module 2:

Insurance Claims (8 Hrs.)

- Use of claim form, need for Claims Investigations, Importance of claims as a service parameter, types of claims for each class of insurance business.
- Stages involved in the claims process, control over claims ratio , typical claim disputes, out sourcing of claims function, arbitration process.
- Compliance of section 64 VB, salvage disposal, reinstatement and loss of profits claims , fraudulent claims handing etc.

Module 3:

Innovative Insurance Products (8 Hrs.)

- Innovative policies in Health Insurance. The process of product innovation as a 24×7 activity, Customer Focused & Tailor Made Products.
- New Global Products Like Autonomous Car Insurance, PAYD, Genetic Defects Coverage, Aerospace Related Products, Cyber Liability, Robot Surgeons Cover , Political risk.
- Demat Policies , Drone Insurance , Sports events , Retirement Products, Managed Care , Retroactive Liability ,Gaming & Entertainment Covers.

Module 4:

Reinsurance (7 Hrs.)

- Types of risks covered in reinsurance, Definition , Importance and the process involved, various methods of reinsurance like Reciprocal , surplus Treaties etc. concept of lines, layers, avoidance of “Spiral” effect.
- Advantages of Reinsurance, reinsurance brokers , consortiums in reinsurance, Increasing retention capacities.
- Big Reinsurance Companies & Reinsurance Brokers.

Module 5:**Risk Management (9 Hrs.)**

- Definition and process, its importance, various methods, advantages , covering maximum risk at minimum premium, Risk identification, transfer, evaluation, finance & controlling,
- Risk inspection reports, Types of risks covered, Global risk report, Insurance and reinsurance as risk transfer mechanisms.
- Need for Enterprise Risk Management (ERM)

Module 6:**Global Insurance Best Practice (8 Hrs.)**

- Underwriting desk bench , formation of KPO's, LPO's BPO's, Demat policies.
- Online claims & underwriting, implementation of Insure Tech, Telematics, Telemedicine, Embedded Devices.
- CRM solutions, Artificial Intelligence tools in insurance underwriting & claims, fraud investigations.
- Better practices of Pvt. Insurance Companies in India Project Insurance.

Readings:

Text Books

- Insurance Institute of India IC 22 to IC 26 , IC 81 & 85
- Gastel, Ruth (Ed) (2004) Reinsurance : Fundamentals and New Challenges, Insurance Information Institute latest Edition.
- Fundamentals of Risk Management By Paul Hopkin (irm) (Kogan Page Publications , London).
- Cummins, J David and Doherty, Neil A (2005) The Economics of Insurance Intermediaries, Wharton School, University of Pennsylvania.

Research Papers :

- Case Study, Motor Claims Management, M D Garde and Gautam Prasad, BIMAQUEST, Volume 17, Jaunary 2017.
- Enterprise Risk Management – A Strategy to build a resilient organization & be a Busines Partner – by Delzad D Jivasha – Legal Era Magazine – October 2017 issue.

Webliography References :

- <https://www.irdai.gov.in>
- <https://www.policyholder.gov.in>
- <https://www.insurancethebox.com/telematics>
- [https://www.ibm.com/blogs/insights-onbusiness/insurance/customer engagement-services-excellencein-insurance.](https://www.ibm.com/blogs/insights-onbusiness/insurance/customer-engagement-services-excellencein-insurance)

Course Code: AE-B-24

Course Name: Urban Economics

Course Outcomes:

- To understand the fundamentals of urban economics with the help of case studies. (Module 1)
- To get familiar with the conditions of urban cities. (Module 2 and 3)
- To understand the role of urban infrastructure. (Module 4, 5, and 6)
- To synthesize the approaches and limitations associated with urban infrastructure. (Module 4, 5 and 6)
- To analyze the situation of land and rent. (Module 3)
- To critically evaluate the role of local government for urban development. (Module 6)

Module 1:

Introduction

Urban Economics, Existence and importance of cities, 5 axioms of urban economics, Case Studies and Reports related to important Indian cities.

Module 2:

The Development of Cities: Clusters & Agglomeration; City Size and Urban Growth

Development of a factory town, firm clustering, labor pooling, localization and urbanization economies, differences in city sizes

Urban employment growth and the multiplier, the effects of taxes and subsidies on location choices

Module 3:

Land Rent & Markets and Land use pattern

Land rent and urban structure, Residential Land Market, Urban Land Markets with Factor Substitution

The Spatial Distribution of Employment and Population, The Monocentric City- Rise and Demise, Urban Sprawl, Neighborhood Choice, Zoning and Growth controls

Case study of Mumbai and Pune

Module 4:

Urban Transportation

Congestion Externalities, Congestion Tax and Alternatives, Autos and Air Pollution, Automobiles and Poverty.

Commuting and transit Ridership- the Cost of Travel and Model Choice, Efficient Volume of Ridership, Designing a Transit System

Module 5:

Urban Infrastructure

Spending and Educational Achievement- Education Production Function, Spending Inequalities and Public Policy

Crime Facts, the Rational Criminals, the Equilibrium Quantity of Crime, Legal Opportunities and Education

Water supply and sanitation, Access to basic urban amenities

Module 6:

Housing

Importance of Housing- Durability, Detritions and Maintenance, the Filtering Model of Housing Market
Housing Policy- Public Housing, Housing Vouchers, Rent Control and Rent Regulation

Model 7:

Local Government

The Role of Local Government, Local Government Revenue and Expenditure, The Tiebout Model and Property tax
Financial Instruments (municipal Bonds)

*Students would be encouraged to go through the case studies on Indian Cities related to above mentioned topics.

Text Books

Arthur O'Sullivan, *Urban Economics* (7th edition), McGraw Hill Irwin, 2008.
Jan K Brueckner, *Lectures on Urban Economics*, the MIT Press, 2011

Reference Books

Edward L. Glaeser, *Cities, Agglomeration, and Spatial Equilibrium: the Lindahl Lectures*, New York, Oxford University Press, 2008 (ISBN-13: 9780199290444)
(Focus on Mathematical Modeling)

Klein, Daniel B., Moore, Adrian T., and Reja, Binyam. *Curb Rights: A Foundation for Free Enterprise in Urban Transit*. (New York: Brookings Institution, 1997 (ISBN: 978-0815749394)
William Cronon. *Nature's Metropolis: Chicago and the Great West*. W.W. Norton, 1991.
James Howard Kunstler. *The Geography of Nowhere*. Free Press, 1994

William Julius Wilson. *The Truly Disadvantaged: The Inner City, the Underclass and Public Policy*. University of Chicago Press, 1987.

Brueckner, Jan (1987) "Structure of Urban Equilibria: A Unified Treatment of the Muth-Mills Model," *Handbook of Regional and Urban Economics*, Volume II, Edwin W. Mills Ed., 821-845.

Arzaghi & Henderson (2008) "Networking off Madison Avenue" *Review of Economic Studies* (2008) 75, 1011–1038

Edward Glaeser (1998) "Are Cities Dying?" *Journal of Economic Perspectives* 12(2): 127-138.

Adam Jaffe et al. (1993) "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations." *Quarterly Journal of Economics* 108(3): 577-598

Quigley (1998) "Urban Diversity and Economic Growth" *Journal of Economic Perspectives*—Volume 12, Number 2—Spring 1998—Pages 127–138

Roger G. Noll and Andrew Zimbalist (1997) "Sports, Jobs, and Taxes: Are New Stadiums Worth the Cost?" *The Brookings Review* 15: 35-39.

Kerr & Kominers (2010) "Agglomerative Forces and Cluster Shapes", NBER working paper, 16639 18(4): 177-200.

Glaeser, Edward L., Matthew Kahn, and Jordan Rappaport (2007) "Why do the poor live in cities?" *Journal of Urban Economics*.

Book_ Newman, P. and Kenworthy, J. (1999) "Sustainability and Cities. Overcoming automobile dependence". Washington D.C.: Island Press ISBN-13: 978-1559636605, ISBN-10: 1559636602

Glenn Blomquist, Mark Berger, and John Hoehn (1988) "New estimates of the quality of life in urban areas." *The American Economic Review* 78(1): 89-107.

Glaeser, Edward L., Matthew Kahn, and Jordan Rappaport (2007) "Why do the poor live in cities?" *Journal of Urban Economics*.

Glenn Blomquist, Mark Berger, and John Hoehn (1988) "New estimates of the quality of life in urban areas." *The American Economic Review* 78(1): 89-107.

Caitlin Knowles Myers (2004) "Discrimination and neighborhood effects: Understanding racial differentials in US housing prices." *Journal of Urban Economics* 56(2): 279-302.
Michael Greenstone Enrico Moretti (2004) "Bidding for Industrial Plants: Does Winning a "Million Dollar Plant" Increase Welfare?" Working Paper Series, MIT (0-39)

Course Code: AE-B-25

Course Name: Economic Sociology

Course Outcomes:

- To discuss the various sociological approaches and its boundaries. (Module 1)
- To appreciate the various schools of sociological views of the economy and to critically appraise them. (Module 2)
- To understand the various social contexts of economic action. (Module 3)
- To enunciate the labour market outcomes based on sociological concepts. (Module 4)
- To similarly appraise the consumption aspects of sociological concepts. (Module 5)
- All the above modules culminate in understanding the socio-cultural aspects of economic development. (Module 6)

Module 1:

Emergence of economic sociology and its boundaries; sociological approaches to the study of economy.

Module 2:

Classical sociological views of the economy: Marx: critique of political economy; Durkheim: division of labour; Weber: sociology of capitalism, religious ethics and economic rationality; Polanyi: economy as instituted process.

Module 3:

Social contexts of economic action: Economic action, varieties of embeddedness, social networks in economic behaviour, social structure and competition

Module 4:

Sociology of labour markets: Sociological approaches to labour market; social determinants of inequalities in wage and earning

Module 5:

Sociology of consumption: Sociological theories of consumption (Marry Douglas and Baron Isherwood: the use of goods, Jean Baudrillard: the system of objects, Pierre Bourdieu: forms of capital, Veblen: conspicuous consumption); socio-cultural aspects of consumer spending

Module 6:

Socio-cultural aspects of economic development: Impact of religion, caste, gender, ethnicity, family on economy, social background of business groups and entrepreneurship, debate on influence of social capital and public action on economic progress; social movements and economic development

Basic Reading List

- Dobbin, Franf. 2004, "Comparative and Historical Approaches to Economic Sociology" in Neil J. Smelser, and Richard Swedberg, (eds.) *Handbook of Economic Sociology*, Princeton: Princeton University Press.
- Durkheim, Emile, 1960, *The Division of Labour in Society*, Glencoe: The Free Press. (2nd ed: Chapter one & two, 3rd ed: Chapter one)
- Gerth H. H and C. Wright Mills, 1946, *From Marx Weber*, New York: Oxford. (Part III: Chapter 12th & 13th)
- Smith-Doerr, Laurel and Walter W. Powell, 2005, "Networks and Economic Life" in Neil J. Smelser, and Richard Swedberg, (eds.) *Handbook of Economic Sociology*, Princeton: Princeton University Press.
- Streeck Wolfgang, 2004, "The Sociology of Labour Markets and Trade Unions" in Neil J. Smelser, and Richard Swedberg, (eds.) *Handbook of Economic Sociology*, Princeton: Princeton University Press.
- Weeden, Kim, 2002, "Why do some occupations pay more than others? Social Closure and Earning inequality in the United States", *American Journal of Sociology*, 108, (55-101).
- William P. Bridges and Robert L. Nelson 2001, "Economic and sociological approaches to Gender Inequality in Pay" in Mark Granovetter and R. Swedberg, (eds.) *The Sociology of Economic Life*, Boulder: Westview Press.
- Sen, Amartya, 2004, "How does Culture Matter?" in Vijayendra Rao and Michael Walton (eds.) *Culture and Public Action*, Delhi: Permanent Black.
- Wuthnow, Robert. 2004, "New Directions in the Study of Religion and Economic Life", in Neil J. Smelser, and Richard Swedberg, (eds.) *Handbook of Economic Sociology*, Princeton: Princeton University Press.

Additional Reading List:

- Kalpagam, U. 1993, *Labour and Gender: Survival in Urban India*. New Delhi: Sage.
- Kalpagam, U. *Analytics of Work and Survival*.
- Agarwal, B. 1999, *The Gender and Environment Debate: Lessons from India* in Menon, N. (Ed.), *Gender and Politics in India*. New Delhi: OUP.
- Banerjee, N. 1991, *Indian Women in a Changing Industrial Scenario*. New Delhi: OUP.
- Yadav, Sushma and A. Dutta Mishra (2003), *Gender issues in India: Some Reflections*, Radha Publications, New Delhi.

Course Code: AE-B-26
Course Name - Economics of Labour

Course Outcomes:

- To introduce students to micro-economic foundations of the economics of labour. (Module 1, 2 and 3)
- To introduce students to equilibrium concepts of labour market, both from the demand side and supply side of the economy. (Module 4 and 5)
- To appreciate the income distribution, wage adjustment process and unemployment issues pertaining to labour market. (Module 6, 7 and 8)
- To enunciate the macro-economic aspects of the labour market. (Module 9 and 10)
- Unions and labour contracts are discussed. (Module 11 and 12)
- Overall, the course gives a comprehensive view of labour economics.

Module 1:

Supply (5 Hours)

- Static Labour-Leisure Choice – Effects of Social Programs and Income Taxes – The Life-Cycle Model – Investments in Human Capital – Collective Models of Household Labour Supply – Occupational Choice

Module 2:

Demand (5 Hours)

- Static Cost, Profit and Labour Demand Functions – Elasticity of Derived demand: the Hicks-Marshall Rules; Adjustment Costs and Dynamic Labour Demand

Module 3:

Equilibrium (5 Hours)

- Compensating Differences – Adam Smith – Evidence on Premium for Risky or Nasty Jobs – Efficiency Wages – Segmented Labour markets – Migration

Module 4:

Wage Structure (5 Hours)

- Industry Wage Differentials – Productivity and Real wages – Returns to Education – Signaling – Pensions and Retirement – Training – Minimum Wage Laws

Module 5:

The Distribution of Income (5 Hours)

- Earnings by Size – The Roy Model – Functional Distribution – Intergenerational Income Mobility

Module 6:

Cyclical Fluctuations (5 Hours)

- Equilibrium Models of Employment Fluctuations – Real Wages over the Business Cycle

Module 7:

Discrimination (5 Hours)

- Economic Effects of Prejudice: Theoretical Analysis – Wage Differentials by Race and Sex

Module 8:**Unemployment (5 Hours)**

- Definition and Measurement – Variations over time and Space – Job Search – Effects of Unemployment Insurance

Module 9:**Macroeconomics of Labour Market (5 Hours)**

- Classical Analysis – Neoclassical Analysis – Keynesian Analysis – Dual and Segmented Labour Market Theory – Marxian Alternative – Human Capital theory – Flexibility and Institutions in Labour Market

Module 10:**Unions (5 Hours)**

- Objectives and Political Structure – Bargaining Theories – Relative Wage Effects – Strikes – Union Growth and Decline – Unions in the Public Sector – Union-Oligopoly Models

Module 11:**Labour Contracts (5 Hours)**

- Employment Determination – Allocation of Risk – Compensation – Bonding; Tournaments; Incentive Pay – Multi-tasking – Team Production – Relational Contracts – Career Concerns – Wages and Promotions

Module 12:**Regulations and International Labour Standards (5 Hours)**

- Regulation of Labour – Experience of India vis-à-vis Other Countries – Entry and Product Market Regulation – International Labour Standards – Comparative Analysis – International Trade and Labour Markets

Reading List

- Sundaram, K, 2001, 'Employment- Unemployment Situation in the Nineties: Some Results from the NSS 55th Round Survey', Economic and Political Weekly, P.931-40.
- Robinson, Joan, R, 1936, 'Disguised Unemployment', The Economic Journal, June
- Banerjee, P C, 1960, 'Full Employment and Low Full Employment in a Developing Economy', Indian Journal of Labour Economics, 2(4): 227-243.
- Rakshit, Mihir, 1983, The Labour Surplus Economy: A Neo-Keynesian Approach, Macmillan India Limited, New Delhi.
- Seth, V K and S C Aggarwal, The Economics of Labour Markets: Policy Regime Changes and The Process of Labour Adjustment in the Organised Industry in India. New Delhi: Ane Books, 2004
- Basu, K, 1984, The Less Developed Economy: A Critique of Contemporary Theory, New Delhi: Oxford India Paperbacks. (Chapter 5: The structure of Dual Economy; Chapter 6: Migration and Unemployment).
- Stephen, Donald Deere. 1994. "Unionization and Profitability: Evidence of Spillover Effects," Journal of Political Economy, 102(6): 1281-128
- Schmidt, C. M., A. Stilz and K. F. Zimmermann (1994): "Mass Migration, Unions, and Government Interventions," Journal of Public Economics, 55, 185- 210.
- Laffont, J. and Martimort, D. (2002), The Theory of Incentives: The Principal-Agent Model, Princeton University Press

Course Code: AE-B-27:

Course Name: Advanced Microeconomics

Learning Outcome:

- To acquaint the students with General Equilibrium Theory. (Module I)
- To familiarize the students with the concept of incomplete information game and the resulting Bayesian Nash Equilibrium
- To enumerate the concept of intertemporal choice of consumption and savings, arbitrage theory. (Module III)
- To develop an understanding of the basic principles and applications of Microeconomics. Various applications of microeconomics have taken place during the last forty years. This module will be taught based on presentation and discussions basically by students. References are attached separately as articles particularly for this module. It intends to improve students' analytical skills and ability to solve problems, which will be useful in several other areas of economics. (Module IV)

Module 1:

Theory of General Equilibriums

- Consumer Theory: Preference relation; Utility function; Indirect utility function;
- Expenditure function; Consumer welfare, Revealed preferences
- Producer Theory: Production function; Cost function; Profit function
- Introduction–Partial Equilibrium Vis-à-vis General Equilibrium Approach.
- Exposition of Basic Concepts.
- An Elementary General Equilibrium model – the Robinson Crusoe Economy.
 - Pure Exchange Economy – the Edgeworth Boxes, Pareto Optimality, Contract Curve, Core, Walras Law, Walras Equilibrium. First and Second Fundamental Theorem of Welfare Economics
- Second Level: Refreshment of Analytic and Scarcity Properties of Preference Relation. A More Elaborate exposition of the Exchange Economy: Commodities, Agents, Preferences, Utility Functions, Prices, Demand and Excess Demand Functions and their Properties.
- Formal Definition of Allocation, Pareto Optimal Allocation, Individually Rational Pareto Optimal Allocation, Coalition, and Core.
- Walras Equilibrium, its Relation with Core.
- Formal Proof of First Fundamental Theorem.
- Gross Substitutability.
- Price Adjustment Process.
- Brower's Fixed Point Theorem. Existence of Walras Equilibrium and Uzawa Equivalence Theorem.
- Social Welfare Maximization and its relation with Pareto Optimality.
- General Conditions for Uniqueness, and Discussion of Stability – Tatonnement Process.
- General Equilibrium over Time – Arrow Debreu Scarcity (introduction only). Re-switching and Reverse Capital Deepening.

Module 2:

Games of Incomplete Information

- Static and dynamic games of incomplete information; mechanism design; screening and signalling
- Introduction to Sub-Game Perfection
- Static Bayesian Games and Bayesian Equilibrium–Theory and Examples.

Module 3:

Consumption and Saving

- Revision of Uncertainty and expected utility theory
- Time Separability
- Exponential Discounting
- The Demand for Saving, Precautionary Saving with an Endogenous Risk
- Arbitrage Theory, Definition of Arbitrage, Asset Pricing through Replicating Portfolio
- Asset Pricing
- Fundamental Theorem of Asset Pricing
- Introduction to Interest Rate Risk
- Introduction to Credit Risk.

Module 4:

Applications of Microeconomic Principles

The principal-agent model and incentive contracting

- Economics of Innovation
- Bargaining, Measurement of Productivity and Efficiency
- Search Theory
- Health Economics
- Hedonics and Non-market evaluation
- Brief Exposure to Mechanism Design and Revelation Principle

Suggested Readings:

Books:

- Broadway, R.W. and Bruce, N. (1984), *Welfare Economics*, Basil Blackwell, London.
- Debreu, G. (1977), *Theory of Value, An Axiomatic Analysis of Economic Equilibrium*, Yale University Press.
- Ellickson, Bryan (1993) *Competitive Equilibrium; Theory and Applications*, Cambridge University Press.
- Kreps, D, “A Course in Microeconomic Theory”, Princeton University Press, 1990
- Kreps, David (1988), *Notes on theory of choice*, West view Press.
- Mas-Colell, Andrew Michael., Whinston, D. And Green, Jerry R. (1995), *Microeconomic Theory*, Oxford University Press.
- Osborne, MartinJ and Rubinstein, Ariel (1994), *A course in Game Theory*, MIT Press.
- Perloff.J. 2019, *Microeconomics*, 7th Edition, Pearsom Education.
- Varian, Hal R. (1992), *Microeconomic Analysis*, 3rd.Edition, International Student Edition, W. W. Norton and Company.

Articles

- Antonelli, C. (2009). The economics of innovation: from the classical legacies to the economics of complexity. *Economics of Innovation and New Technology*, Vol 18(7), pp. 611–646.
- Heshmati, A. (2003). Productivity Growth, Efficiency, and Outsourcing in Manufacturing and Service Industries. *Journal of Economic Surveys*, Vol 17(1), pp. 79–112.
- Latruffe, L. (2010). Competitiveness, Productivity, and Efficiency in the Agricultural and Agri-Food Sectors. *OECD Food, Agriculture and Fisheries Papers*.
- Lowe, J. G. (1987). The measurement of productivity in the construction industry. *Construction Management and Economics*, Vol 5(2), pp. 101–113.
- Part 1: Lippman, S. A., & McCall, J. J. (1976). The Economics of Job Search: A Survey. *Economic Inquiry*, Vol 14(2), pp. 155–189.
- Part 2: Lippman, S. A., & McCall, J. J. (1976). The Economics of Job Search: A Survey. *Economic Inquiry*, Vol 14(3), pp. 347-388.

Course Code: AE-B-28

Course Name: Strategic Finance and Investment Banking

Course Outcome:

The course will enable the students:

- The course aims at imparting a strong conceptual foundation in investment banking with focus of various modelling techniques like cash-flow, LBO modelling and mergers and acquisitions modelling (Module 1)
- To get an overview of financial restructuring (Module 2)
- To appreciate strategic perspectives and modeling of mergers and acquisitions (Module 3 & 4)
- To understand investment banking processes and best practices. (Module 5)
- To critically analyze various perspectives, valuation methods and financing structures (Module 6)
- Overall, across all modules, this course gives a comprehensive background of financial restructuring and mergers and acquisitions

Module 1:

Valuation Concepts for Mergers and Acquisitions: (8 hours)

- Valuation and Pricing of a company
- Modes of Valuation Earnings basis Asset basis Discounted Cash Flows (DCF)
- DCF valuation, and frequently encountered errors in practical implementation
- Return on Investments (ROI) – Return on Equity (ROE)
- Estimating synergy values, Relative Valuation

Module 2:

Broad Overview of Financial Restructuring: (8 hours)

- Changing shape of the corporates Forms of Business Alliances
- Strategic Choice of Type of Business Alliance, Merger and Acquisition and Takeover
- Introduction to restructuring problems
- Types of mergers, Reasons for Mergers and Acquisitions: Vertical, Horizontal, Conglomerate, Concentric Mergers
- Circumstances in which financial restructuring takes Place
- Factors Governing the M&A Process in India
- Developments in the competitive environment History of Mergers – The first to the fourth wave and causes thereof

Module 3:

Mergers & Acquisitions- Strategic Perspectives: (8 hours)

- The different motivations for business acquisition – The principles of acquisition search
- SWOT Analysis of the company Identification of the Target Company – Due Diligence Inquiry Selection of methods for merger or takeover Procedures and Processes in an M&A – Step-by-step approach Defining and Selecting Target
- Pricing of Mergers (Pricing the Competitive Bid for Take-over) – different forms of M&A activity – Negotiation/Approach for Merger
- Acquisition and Take-over Contracting, Implementation of Merger and Acquisition
- M&A statistics Managing Post-Merger Issues, Winner’s curse Ethics in M&A.

Module 4:

Merger (Acquisition) Modelling: (8 hours)

- Uses for a Merger Model – How to build a Merger Model
- Calculation of Equity Value and Purchase Price, Explanation of Consideration used in Purchase (stock, cash, assumed debt)
- Discussion of Multiples Paid – Post-Merger Control Issues
- Synergies and pre-tax Synergies required to breakeven, Revenue and EBITDA contribution – Proforma Income Statement, EPS Dilution for Acquirer
- Discussion of Goodwill, Other accounting treatment issues – Sensitivities.

Module 5:**Complete LBO Modelling: (8 hours)**

- Uses for An LBO Model on Sell-side and Buy-side
- Review of LBO Model Structure, Purchase Price Calculations and Considerations, Capital Structure Options / Reviews
- Discussion of Typical Financing Sources for LBO, Creation of a Sources and Uses Worksheet, Proforma Income Statement, Balance Sheet, Cash Flow, Goodwill Calculation
- Integration of Income Statement, Balance Sheet, Cash Flow – Debt and Interest Schedule – Revolver and mandatory / option debt prepayment and impact on returns
- Returns Analysis - IRR on debt, hybrid instruments and equity investments.

Module 6:**Investment Banking Process and Best Practices: (8 hours)**

- Conclusion of Financial Modeling –
- Investment Banking Process –
- M&A and Private Placement – Investment Bank – Industry Overview –
- Market Overview, Client, Valuation, Process, Buyer/Investor Descriptions
- Financing, Investment Bank, Industry

Reading List:

- Weston, Fred, Mitchell, Mark L. and Mulherin, Harold (2004), Takeovers, Restructuring, and Corporate Governance, 4th Ed. Pearson.
- Reed and Reed Lajorex (1999), The Art of Mergers & Acquisitions, McGraw Hill.
- S. Ramanujam (2000), Mergers et al., Tata MacGraw Hill.
- Sridharan and Pandian (2002), Guides to Takeover and Mergers, Wadhava Publications.
- Weston, Sen and Johnson (2003), Takeovers, Restructure and Corporate Governance, Prentice Hall.
- Gaughan, Peirick A. (2003), Mergers, Acquisitions and Corporate Restructuring, John Wiley & Sons.
- Liaw, K. Thomas (1999), The Business of Investment Banking, J. Wiley & Sons.
- Fleuriet, Michel (2008), Investment Banking Explained: An Insider's Guide to the Industry, McGraw-Hill.
- Joshua, Rosenbaum, Joshua, Pearl (2009), Investment Banking: Valuation, Leveraged Buyouts, and Mergers & Acquisitions, Wiley Finance.
- Stowell, David (2010), An Introduction to Investment Banks, Hedge Funds, and Private Equity: The New Paradigm, Elsevier.
