2 Agricultural Economics

TRIMESTER WISE DISTRIBUTION OF COURSES

I TRIMESTER

		L	P
AGR 014	FUNDAMENTAL OF ECONOMICS AND BUSINESS MANAGEMENT	1	1
AG ECON 501	MICROECONOMICS I	3	0
AG ECON 520	AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS I (FARM MANAGEMENT)	2	1
AG ECON 530	AGRICULTURAL MARKETING	2	1
AG ECON 541	AGRICULTURAL FINANCE II	3	0
AG ECON 560	RESEARCH METHODS	1	1
AG ECON 602	MACROECONOMICS II	3	0
AG ECON 621	AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS-IV (AGRICULTURAL PRODUCTION UNDER RISK)	1	1
AG ECON 630	AGRICULTURAL PRICE ANALYSIS	2	1
AG ECON 632	QUANTITATIVE ANALYSIS FOR MARKETING AND BUSINESS DECISIONS	2	1
AG ECON 641	INSTITUTIONAL AND LEGAL ENVIRONMENT FOR AGRIBUSINESS	2	0
AG ECON 660	AGRICULTURAL PROJECT ANALYSIS	2	1
AG ECON 691	SEMINAR	1	0

II TRIMESTER

AG ECON 502	MACROECONOMICS I	3	0
AG ECON 510	AGRICULTURAL ECONOMETRICS - I	2	1
AG ECON 521	AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS II (PRODUCTION FUNCTION ANALYSIS)	2	1
AG ECON 532	INTERNATIONAL TRADE	3	0
AG ECON 550	AGRICULTURAL DEVELOPMENT AND POLICY ANALYSIS	3	0
AG ECON 601	MICROECONOMICS II	3	0
AG ECON 640	STRATEGIC MANAGEMENT FOR AGRIBUSINESS	2	1

AG ECON 642	MANAGEMENT OF R&D AND INNOVATION	2	1
AG ECON 691	SEMINAR	1	0
	III TRIMESTER		
AG ECON 525	NATURAL RESOURCES MANAGEMENT AND ENVIRONMENTAL ECONOMICS	3	0
AG ECON 535	FUNDAMENTALS OF BUSINESS MANAGEMENT	3	1
AG ECON 540	AGRICULTURAL FINANCE I	2	1
AG ECON 650	ECONOMIC DEVELOPMENT	3	0
AG ECON 610	AGRICULTURAL ECONOMETRICS – II	3	1
AG ECON 620	AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS-III (LINEAR PROGRAMMING)	2	1
AG ECON 631	MARKETING MANAGEMENT	3	1
AG ECON 691	SEMINAR	1	0

Core Courses

M.Sc.: AG ECON 501, AG ECON 502, AG ECON 510, AG ECON 520, AG ECON 521, AG ECON 530, AG ECON 535, AG ECON 540, AG ECON 550, AG ECON 560,

Ph.D.: AG ECON 650, AG ECON 601, AG ECON 602, AG ECON 610, AG ECON 620, AG ECON 630, AG ECON 660,

AGRICULTURAL ECONOMICS

Major Fields : Farm Management and Resource Economics
Agricultural Marketing and Trade
Agricultural Finance and Project Analysis
Agricultural Development and Policy
Agri-business Management

Minor Fields : Ph.D. student shall take two minors (9 credits of course work in each) from any of the other fields outside his/her own.
M.Sc. student shall take one minor (9 credits of course work) from any of the other fields outside his/her own.
The total minimum credit requirement of course work for M.Sc./Ph.D. in Agricultural Economics is 55/45 including Minor field(s).

DESCRIPTION OF COURSES

AGR 014 FUNDAMENTALS OF ECONOMICS AND BUSINESS MANAGEMENT (1L + 1P) I

Objective

The objective of this introductory course is to familiarise students with the basic concepts of economics and management as related to agriculture. The course also attempts to inform the students about the latest global developments that have a bearing on trade, food products safety and quality and IPRs.

Theory

UNIT I
Basic concepts in economics; micro- versus macro-economics; positive and normative economics; scarcity and choice; utility concept; production possibilities frontier; opportunity cost concept. Theory of demand and supply; laws of demand and supply; concept of elasticity and its estimation.

UNIT II
Theory of production and costs; laws of returns; total average and marginal products and costs; profit maximisation.

UNIT III
National income; concept of national income; estimation of national income.

UNIT IV
Agribusiness and agribusiness management; major functions of managers – planning, organising, directing, and controlling. Major functional areas of a business and their management – production, marketing, finance, personnel.

UNIT V
Global issues in business – WTO; tariffs; non-tariff barriers; international product quality / safety standards, intellectual property issues.

UNIT VI

Application of quantitative techniques in economics and management – concept of cost-benefit analysis; break-even analysis, network techniques for managing projects, optimization and allocation techniques; decision analysis.

Practicals

Estimation of demand and supply elasticities. Total, average and marginal costs computation. Revenue concepts. National income estimation. Organisational charts. Break-even analysis. Optimization techniques – transportation methods. Project management -PERT/CPM and Decision trees/analysis

Suggested Readings

Koontz, H. and Weinhrich, H. 1990. *Essentials of Managemen*t. McGraw Hill International Edition.

Samuelson, P. A. and Nordhaus, W. D. 2005. *Economics*. 18th ed. Tata McGraw Hill.

AG ECON 501 MICROECONOMICS I **(3L + 0P) I**

Objective

The objective of this course is to give students a thorough understanding of the principles of economics that apply to the decisions of individual consumers and producers within the larger economic system.

Theory

UNIT I

Theory of Demand- Consumer Behaviour- Cardinal Utility theory – Indifference Curves theory- Applications of Indifference Curves analysis- Income and Substitution effect- Derivation of demand curve- Consumer surplus-Equilibrium of the consumer- Elasticity of demand - Market demand - Constant elasticity demand function - Distributed lag models of demand- Nerlove's stock adjustment principle- Houthakker's and Taylor's dynamic demand model.

UNIT II

Theory of production and costs- Production functions- Returns to scale – long run analysis of production – Law of variable proportions- Technological progress- Equilibrium of the firm- Choice of optimal combination of factors of production- Derivation of cost function from production function- Production function of a multiproduct firm- Iso-revenue curve of the multiproduct firm- Linear production functions- Linear programming- Feasible point sets- Optimal solutions- Duality- Production under uncertainty- Theory of costs- Cost curves- Traditional theory of costs- Modern theory of costs- Short and Long run costs- Marginal cost, Minimum Average Total Costs- Analysis of Economies of Scale- Social and Private costs.

UNIT III

Theory of Price in Perfectly Competitive markets- The supply curve of the firm and industry- Short run equilibrium of the firm and industry- Equilibrium of firm and industry in long run- Optimal Resource Allocation- Dynamic Changes- Shift in market demand- - Differential Cost conditions - Taxation applications - The stability of equilibrium - Dynamic equilibrium with lagged adjustment - Futures market- Hedging/ risk assumption.

Suggested Readings

Henderson, J.M. and Quandt, R.E. 2000. *Microeconomic Theory: A Mathematical Approach*. McGraw-Hill.

Koutsoyiannis, A. 2003. *Modern Microeconomics.* The Macmillan Press.

Varian, Hal R. 1999. *Intermediate Microeconomics*. Affiliated East-West Press

AG ECON 502 MACROECONOMICS I (3L + 0P) II

Objective

The course is designed to understand key concepts, basic macro-economic theories and role of government in the economy and policy making process.

Theory

UNIT I: BASIC CONCEPTS AND MEASUREMENT

Basic concepts and scope of Macro-economics, National Income Accounting and measurement of income, concepts and measurements of money, prices, unemployment and growth, Indian system of Macroeconomic data management.

UNIT II: CLASSICAL THEORY

Say's Law, Quantity theory of money, aggregate supply and labour market, Classical theory of determining output, employment, wages and prices, Classical theory of saving, investment and interest rate.

UNIT III: KEYNESIAN MACROECONOMICS

Consumption function, theories of aggregate consumption and empirical studies of consumption, aggregate demand and its components, Simple Keynesian model, multiplier and their impact on output, fiscal policy and Keynesian dynamics. International trade and multiplier effect

UNIT IV: KEYNESIAN-CLASSICAL SYNTHESIS

Keynes theory of interest, liquidity preference, demand and supply of money, investment theories, IS-LM Model for output and interest determination, fiscal and monetary policies under different monetary assumptions, fiscal- monetary policy mix and their effectiveness, effects of government budget deficits.

Suggested Readings

Dornbusch and Fischer. *Macroeconomics*, Tata McGraw Hill edition, New Delhi.

Gardner Ackley. 1987 *Macro-economics: Theory and policy*. Macmillan Publishing Co., Inc., New York.

Mankiw, N.G. 2004. *Macro-economics*, World Publishers, New York.

Shapiro, E. *Macroeconomic Analysis*. Galgotia Publications, Delhi.

AG ECON 510 AGRICULTURAL ECONOMETRICS -I (2L+1P) II

Objective

The purpose of the course is to provide an elementary knowledge of application of econometric techniques for analysis of economic phenomena.

Theory

UNIT I

Introduction – representation of economic phenomenon, relationship among economic variables, linear and non-linear economic models, methodology of econometrics.

UNIT II

The two variable linear regression model – assumptions, estimation and inference in the least squares model.

UNIT III

Ordinary least squares methods of estimation of multiple regression models. The BLUE properties of least squares estimators, tests of significance and confidence intervals. Summary statistics-correlation matrix, residual variance, coefficient of multiple correlation, standard errors o f estimated coefficients and their uses, partial correlation and its uses.

UNIT IV

Identification, consequences and remedies for multicollinearity and autocorrelation – data problems and remedial approaches. Specification error. Use of Dummy variables.

UNIT V

Sources of nonspherical disturbances, heteroscedasticity and the generalized leastsquares estimators. Maximum likelihood estimators and their properties.

Practicals

Two variable model - specification and estimation – hypothesis testing- transformations of functional forms and OLS application-estimation of multiple regression model - hypothesis testing - testing and managing multicollinearity - testing and managing autocorrelation - estimation of regressions with dummy variables - testing and managing heteroscedasticity - GLS estimation methods

Suggested Readings

Gujarati, D.N. 2003. *Basic Econometrics*. McGraw Hill.

Johnson, A.G. Jr., Johnson, M.B. and Buse, R.C. 1990. *Econometrics - Basic and Applied.* MacMillan.

Koutsoyianis, A. 1997. *Theory of Econometrics*. Barnes & Noble.

Pindyck, R.S. and Rubinfeld, D.L. 1990. *Econometrics Models and Econometric Forecasts*. McGraw Hill

AG ECON 520 AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS I (FARM MANAGEMENT) (2L+1P) I

Objective

This basic course in farm management discusses the various types and systems of farming and the basic economic principles as applicable to farm management. Methods of estimating costs and revenues, and farm planning and budgeting are discussed.

Theory

UNIT I

Farm management and farm business-nature, scope and objectives. Characteristics of farming and requirements of success in farming. Task of management, classification of decisions and the process of decision making in farming. Types and systems of farming and factors affecting types of farming.

UNIT II

Basic principles of farm management and farm business - principles of marginal returns, costs substitution in choice of practices, Equimarginal returns, combining enterprises and time comparison. Law of comparative advantage. Farm records and farm accounting. Concept of size of farm and business.

UNIT III

Measures of farm efficiency, Methods of evaluating farm assets, outputs and inputs, Methods of computing depreciation. Cost concepts. Elements of costs - material cost, labour cost, overhead cost. Cost statement, cost accounting, cost audit. Cost of production and pricing.

UNIT IV

Essentials of farm planning and budgeting, farm surveys, questionnaire preparation and pretesting, data collection and analysis, enterprise budgets, partial and complete budgets and whole farm planning.

UNIT V

Elements of risk and uncertainty in agriculture, measurement of risk and adjustments to risk, Review of farm management research, education and extension in relation to changing needs in India.

Practicals

Basic cost concepts; costs and returns; cost accounting. Farm efficiency measures; evaluation of farm assets, outputs and inputs. Computation of depreciation. Maintenance of farm records and accounts. Budgeting – enterprise, partial and complete budgets. Farm planning. Measurement of risk in farming.

Suggested Readings

Doll, J.P. and Frank, O. 1978. *Production Economics - Theory and Applications*. John Wiley & Sons.

Gardner, B.L. and Rausser, G.C. 2001. *Handbook of Agricultural Economics*. Vol I. *Agricultural Production*. Elsevier.

Heady, E.O. *Economics of Agricultural Production and Resource Use*. Prentice-Hall.

Sankayan, P.L. 1983. *Introduction to Farm Management*. Tata Mc Graw Hill

AG ECON 521 AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS II (PRODUCTION FUNCTION ANALYSIS) (2L+1P) II

(Pre-requisite: Ag Econ 501)

Objective

This course deals with the production concept and the various types production functions. The dualities between production, cost and profit function is discussed. The derivation of supply and factor demand functions from profit functions is also covered.

Theory

UNIT I (PRODUCTION FUNCTIONS)

Production concepts. Resource product relationship in agriculture. Important historical background and characteristics of different forms of production functions-linear, quadratic, square root,

Spillman, cubic, semi-log, Cobb-Douglas optimisation, CES, VES and Leontief. Frontier production function. Production surfaces, isoquants and isoclines, economic application.

UNIT II (MANAGEMENT OF FARM RESOURCES)

Principles of choice and resource allocation. Price and production relationship. Resource combination and cost minimisation, optimisation of inputs use under various resource conditions. Multiple product relationship. Production possibility curves. Choice between products and resource use. Spatial and temporal allocation of resources. Returns to scale and farm size. Analysis of factor shares in agriculture and their implications on income distribution.

UNIT III (COST AND PROFIT FUNCTIONS AND THEIR APPLICATIONS)

Dualities between production, cost and profit functions; Derivation of supply and factor demand functions from production and profit functions.

UNIT IV(RISK AND UNCERTAINTY)

Optimization under risk and uncertainty; optimisation over time.

Practicals

Different forms of production functions - specification, estimation and interpretation of production functions – returns to scale, factor shares, elasticity of production - physical optima-economic optima-least cost combination- optimal product choice- cost function estimation, interpretation- estimation of yield gap - incorporation of technology in production functions- measuring returns to scale, risk analysis through linear programming

Suggested Readings

Beattie, B.R. and Taylor, C.R. 1985. *The Economics of Production*. John Wiley & Sons.

Doll, J.P. and Frank, O. 1978. *Production Economics - Theory and Applications*. John Wiley & Sons.

Gardner, B.L. and Rausser, G.C. 2001. *Handbook of Agricultural Economics*. Vol. I. *Agricultural Production*. Elsevier.

Heady, E.O. *Economics of Agricultural Production and Resource Use*. Prentice- Hall.

Sankhyan, P.L. *Introduction to the Economics of Agricultural Production*, Prentice Hall of India Pvt ltd.

AG ECON 525 NATURAL RESOURCES MANAGEMENT AND ENVIRONMENTAL ECONOMICS (3L + 0P) III

Objective

The course is designed to provide an understanding of the principles of economics as they are applicable to the management of natural resources and the environment. Issues of efficient allocation of resources and need and methods for ensuring sustainability of resources, protection of environment and regulatory aspects are included.

Theory

UNIT I

Meaning, nature and scope of environmental economics. Agricultural development and environment— ecology, natural resources and human health. Environmental problems in developing

and developed nations. Population and environmental sustainability. Environmental costs of technology advances. Natural resource accounting and inter-temporal use of natural resources.

UNIT II

Need for environmental protection: An economic overview. Elements of environmental protection – sustainable agriculture and its dimensions – ecology, technology, social and political. Conservation and management of biological diversity. Problems of desertification, deforestation and salinity of land.

UNIT III

Integrated farming – crop – livestock – forestry and fisheries, organic farming. Management of watershed and water resources. Regulatory measures to protect environment. Economic instruments for environmental protection. Valuation of environmental services.

UNIT IV

Food security and environmental protection. International trade and environmental protection. Natural resource management, forest management and management of common property resources. Agricultural policy for sustainable agriculture.

Suggested Readings

Field, B.C. 1994. *Natural Resource Economics*, McGraw Hill.

John Kerr, Singh, K. and Marothia, D.K. 1997. *Natural Resource Economics: Theory and Application*, Oxford & IBH.

Tom Tietenberg, *Environmental and Natural Resource Economics*, McGraw Hill.

AG ECON 530 AGRICULTURAL MARKETING (2L +1P) I

Objective

The course will attempt to make students understand the basic functions performed by agricultural and food marketing systems and the behaviour of various participants in the marketing system. The problems associated with the marketing of agricultural products and the initiatives taken to mitigate these problems will be discussed. Emerging developments such as marketing reforms, revisions in regulatory process and futures trading which relate to emerging issues in agricultural marketing will be covered to provide a holistic view of agricultural marketing.

Theory

UNIT I

Review of agricultural marketing concepts - Characteristic of agricultural product and production; problems in agricultural marketing – demand, supply and institutions. Market intermediaries and their role; Need for regulation in the present context; Marketable and marketed surplus estimation. Marketing efficiency.

UNIT II

The competitive environment - market structure, conduct and performance analysis; Demand and supply of agricultural products. Determination of prices; administered prices.

UNIT III

Marketing co-operatives; APMC regulated markets; direct marketing; contract farming and retailing; supply chain management; state trading, warehousing; Government intervention; market infrastructure needs, performance and Government role; value chains.

UNIT IV

Role of information technology and telecommunications in marketing of agricultural commodities; Market research; Marketing information and intelligence services - electronic auctions (e-bay), e-Chaupals, Agmarknet; Market extension.

UNIT V

Theory of storage - Introduction to commodities markets and future trading; Basics of commodity futures, operation mechanism of commodity markets; price discovery; hedging; Role of Government in promoting commodity trading and regulatory measures.

Practicals

Supply and demand elasticities in relation to problems in agricultural marketing. Price spread and marketing efficiency analysis. Marketing structure analysis through concentration ratios. Performance analysis of regulated markets. Analysis of futures trading; Price forecasting.

Suggested Readings

Acharya, S.S. and Agarawal, A.N. 2005. *Agricultural Marketing*. Oxford and IBH, New Delhi.

Acharya, S.S. and Agarawal, A.N. 2000. Agricultural Price Analysis. Oxford and IBH, New Delhi.

Rhodes, V. James, Duave, J.L. and Parcell, J. 2006. *The Agricultural Marketing System*. Halcomb Hathaway.

AG ECON 532 INTERNATIONAL TRADE (3L+0P) II

Objective

The aim of the course is to appraise the students with the basic theories of international trade and to show how these may be applied in planning for international trade.

Theory

UNIT I

The pure theory of international trade; absolute and comparative advantage; international trade equilibrium. Supply side analysis: opportunity cost; trade under increasing opportunity costs; factor endowments; trade and factor prices; factor price equalisation. Demand side analysis: community indifference curves; demand and international trade. Integration of demand and supply; offer analysis; general equilibrium; equilibrium in product and factor markets.

UNIT II

Application of trade theory; terms of trade; supply and demand shifts; technological change; factor supplies and trade; factor intensities; transport costs; location. Trade with many goods and countries; Leontief paradox; human skills; technological gaps; the product cycle; scale economies.

UNIT III

Trade policy: Protection; tariff and non-tariff measures; trade and market structure; trade liberalisation; factor mobility and movements; role of multinational enterprises. National competitive advantage – Porter's diamond.

UNIT IV

International finance: institutional money and credit markets; foreign exchange markets. Balance of payments analysis: funds flow; capital and current account. International adjustment

mechanisms; fiscal and monetary adjustments. The International Monetary System; Bretton Woods to WTO. Recent developments in the international trade system. Implications for developing countries. Trade Blocks. Measures of trade competitiveness. Concepts of trade creation and diversion.

Suggested Readings

Cherunilam, F. 1998. *International Economics*. Tata McGraw Hill.

Feenstra, R.C. 2003. *Advanced International Trade: Theory and Evidence*. Princeton Univ Press.

AG ECON 535 FUNDAMENTALS OF BUSINESS MANAGEMENT (3L + 1P) III

Objective

This course attempts to explore the basic concepts of management and to familiarise the students with the application of the management concepts to agribusiness.

Theory

UNIT I

Evolution of scientific management. Agribusiness – definition; trends in India. The agribusiness environment. Principles of management. Managerial decision making process. Social responsibility of business and ethics. Functions of management and managers – conventional views, Henry Mintzberg's concept.

UNIT II

Planning: Nature and purpose of planning; setting goals and objectives; MBO (Management by Objectives); Different types of planning – short range and long range or strategic planning. Strategies policies and planning premises.

UNIT III

Organizing: Nature and purpose of organizing; organizational structure and design. Key elements in organizing – authority, responsibility and unity of command, span of control, centralization and decentralization, departmentalization, delegation. and organizational relationships. Responsibility. Actuating human resources; staffing and recruiting. Organisational structures- types of structures, formal and informal structures, matrix structure.

UNIT IV

Leading: Motivation – concept and theories of motivation; leadership behaviour and styles. Managing personnel – compensation, incentives, training, placing and personal development.

UNIT V

Controlling: Management control. Control systems. Audits. Budget controls. Techniques of control. Management information systems.

UNIT VI

Managing financial resources: Accounting and accounting cycle; key financial statements – balance sheet, profit and loss statement, cash flow statement. Financial ratios.

Practicals

Developing and evaluating organizational structures. Case studies related to planning, organizing, leading, and controlling and general business strategy. Developing financial statements; interpreting the statements. Financial ratios – computation and interpretation for financial performance of business firm.

Suggested Readings

Drucker, Peter F. 1954. *The Practice of Management*. Harper and Brothers, New York.

Koontz, H. and Weinhrich, H. 1990. *Essentials of Management.* McGraw Hill International Edition.

Tripathi, P.C. and Reddy, P.N. 2008. *Principles of Management. Tata McGraw Hill.* Fourth ed.

AG ECON 540 AGRICULTURAL FINANCE I (2L+1P) III

Objective

To inform students about the importance and scope of finance in Indian agriculture, credit structure, capital investment and optimum utilization of available financial resources.

Theory

UNIT I

Definition and scope of agricultural finance. Its relationship with farm management, land economics, principles of economics, psychology and sociology. Growing emphasis on agricultural finance in developing countries. Changing concept of agricultural finance with special reference to India. Introduction to public finance. Agricultural Finance as a part of public finance. Capital in agriculture: Classification of capital- working capital and fixed capital, divisible and indivisible capital, owned and borrowed capital. Sources of capital. Principles of capital investment: average rate of return, pay back, internal rate of return, net present value and capital budgeting.

UNIT II

Meaning and concept of agricultural credit: Capital and credit, credit as a substitute for saving, credit and saving. Classification of farm business credit, production versus consumption credit. Desirable characteristics of a loan. Credit as a tool for economic development. Different methods of charging interest, cost of credit. Financial decisions-Investment, Financing, liquidity and solvency. Financial accounting system: Balance sheet analysis, its valuation difficulties, income statement, Cash Flow Statement, Ratio analysis and Assessing the performance of farm/firm. Three R's of credit: 3 Cs of credit and their relation to 3Rs of credit. Return as a guide in use of credit; marginal analysis; budgeting. Incorporating risk in budgeting. Repayment capacity. Self liquidating loan; non-self liquidating loans. Strengthening repayment capacity. Terms of payment. Different types of risks; risk bearing ability. Increasing owner equity.; Stabilizing income; Diversification, insurance, flexibility and contracts. Internal cash/ asset rationing. Internal credit rationing; External credit rationing.

UNIT III

Legal aspects of credit: Real estate mortgage; Title theory; Chattel mortgages: Livestock, crop, commodity, equipment, miscellaneous. Promissory note; sale contract; other credit instruments. Risk in financing agriculture. Risk management strategies and coping mechanism. Crop insurance schemes-yield loss and weather based insurance and their applications. Financial instruments and methods-E-banking, Kisan Cards and Core banking. Concept of supervised credit; objectives of supervised credit; procedures, costs and sources of funds for supervised credit; supervised credit and extension agencies. Agricultural taxation; investment criteria (portfolio analysis). Brief review of institutional lending procedures in India.

Practicals

Farm Firm Growth and Financial Leverage. External credit rationing. Principals of increasing risk. Repayment capacity and risk bearing ability. Computation of interest rate by different methods. Computation of installment amount using different repayment plans. Ratio analysis for different tools of farm financial analysis.

Suggested Readings

Gittinger, J.P. 1982. *Economic Analysis of Agricultural Projects*, 2nd ed. John Hopkins Univ. Press, Baltimore.

Johl, S.S. and Moore, C.V. 1970. *Essentials of Farm Financial Management*, Today and Tomorrow's Printers and Publishers, New Delhi.

Kahlon, A.S. and Singh, K. 1984. *Managing Agricultural Finance – Theory and Practice*, Allied Publishers, New Delhi.

Lee, W.F., Boehlje, M.D., Nelson, A.C. and Murray, W.G. 1988. *Agricultural Finance*, Ist Indian Edition, Kalyani Publishers, New Delhi.

Pandey, U.K. 1990. *An Introduction to Agricultural Finance*, Kalyani Publishers, New Delhi.

Reddy, S.S. and Ram, P.R. 2004. *Agricultural Finance and Management*, Oxford & IBH Publishing Co. Pvt. Ltd.

AG ECON 541 AGRICULTURAL FINANCE II (3L+0P) I

Objective

To appraise the students about various sources of credit. The evolution, objectives, and performance of the institutional sources of credit are covered in this course.

Theory

UNIT I

Evaluation of Agricultural Credit and Polices in India-history of rural financial market, relative importance of various credit institutions. Financial intermediaries, their role and importance in Agricultural Development. Review of various Committee Reports on Rural Credit and Investment-Rural Debt and Investment Surveys. All India Rural Credit Survey Committee Report, All India Rural Credit Review Committee Report, CRAFICARD report, Khusro Committee Report, Narasimham Committee Report, Vyas Committee report.

UNIT II

Cooperative Banking Institutions-Role of cooperatives in financing agriculture-Social control of credit: Bank nationalization, Lead Bank Schemes, Preparation of District Credit Plan, Group lending, Role of commercial banks in financing agriculture, Rural credit review panel report-Multi agency approach. Small farmers development agencies. Role of State Bank of India in financing agriculture.

UNIT III

Role of Reserve Bank of India in financing agriculture. Agricultural financing and infrastructure programmes for weaker sections. Credit guarantee scheme-Crop insurance. Agricultural Finance Corporation, Agricultural Refinance Corporation, NABARD-Agricultural taxation, Agricultural subsidies and Indian agriculture. Micro-Financing and Role of MFIs-NGO's and SHG's. Role of functioning of International Financial Institutions-World Bank, IMF and Asian Development Bank.

Suggested Readings

Choubey, Institutional Finance for Agricultural Development.

Gurdev Singh and Ashoka, S.R., *Institutional Finance in Rural India*.

Kahlon, A.S. and Singh, K. 1984. *Managing Agricultural Finance – Theory and Practice*, Allied Publishers, New Delhi.

Pandey, U.K.1990. *An Introduction to Agricultural Finance*, Kalyani Publishers, New Delhi.

Reddy, S.S. and Ram, P.R. 2004. *Agricultural Finance and Management*, Oxford & IBH Publishing Co. Pvt. Ltd.

AG ECON 550 AGRICULTURAL DEVELOPMENT AND POLICY ANALYSIS (3L+0P) II

Objective

The course is designed to make students understand the concepts of agricultural development and planning and the factors that influence development. The lessons learnt from the development strategies of other countries, particularly USA, Japan, and China are also discussed.

Theory

UNIT I

Role of agriculture in economic and rural development. Agriculture in economic development theories - growth stage theories, structural transportation leading sectors and dual economy models. Theories of agricultural development – conservation, urban industrial impact, diffusion, high-pay-off input. Planning for agricultural development in developing countries.

UNIT II

Institutions and agricultural development; collective actions, property rights, transaction cost economics.

UNIT III

Need for separate/sound agricultural policy – resource polices, credit policies, input and product marketing policies – price policies.

UNIT IV

Models of agricultural development – induced innovation, biological and chemical processes for mitigating poverty, inequality and unemployment. Indicators of sustainability and its measurement. Measuring bias and technical change.

UNIT V

Agricultural development in the USA, Japan, China and India. Globalization and relevance of development policy analysis. The dilemma of free trade – free trade versus protectionism. WTO agreement on agriculture.

Suggested Readings

Bandyopadhyaya, Kalyani. *Agricultural Development in China and India*, John Willey & Sons, New York, London, Sydney, Toronto

Blaug, M. 1986. *Economic History and the History of Economic Thought*. Wheatsheaf Books, Brighton.

Ghatak, S. and Ingersent, K. *Agricultural Economic Development.* Select Book Service Syndicate, New Delhi.

Hayami, Y., Ruttan, V.M. *Agricultural Development: An International Perspective*. Johns Hopkins University Press, Baltimore.

Schultz, T.W. 1964. *Transforming Traditional Agriculture*. Yale University Press, New Haven

Ruttan, V.M. 2001. *Technology, Growth and Development*. Oxford University Press.

AG ECON 560 RESEARCH METHODS (1L + 1P) I

Objective

The objective of this course is to familiarise students with the basic methods of research in economics. The course explains all aspects of social research starting from hypothesis formulation to data analysis. The issue of ethics in research is also discussed in the course.

Theory

UNIT I

Importance and scope of research in agricultural economics. Types of research - fundamental *vs* applied. Concept of researchable problem, research prioritization, selection of research problem. Approach to research; Research process.

UNIT II

Hypothesis: meaning, characteristics, types of hypothesis. Review of literature. Setting of research objectives and hypotheses. Testing of hypothesis.

UNIT III

Sampling theory and sampling design, sampling error, methods of sampling, probability and non-probability sampling methods, criteria to choose. Project proposals: contents and scope, different types of projects to meet different needs, trade-off between scope and cost of the study. Research design and techniques; types of research design.

UNIT IV

Data collection: assessment of data needs, sources of data. Mailed questionnaire and interview schedule: structured, unstructured, open-ended and closed-ended questions. Scaling techniques. Preparation of schedule. Problems in measurement of variables in agriculture. Interviewing techniques and field problems. Methods of conducting surveys; reconnaissance survey and pre-testing.

UNIT V

Coding, editing, tabulation and validation of data. Tools of analysis – data processing. Interpretation of results. Preparing research report / thesis; Universal procedures for preparation of bibliography; Writing of research articles.

UNIT VI

Ethics in research. Meaning of ethics in research; principles and elements of ethical research; design, implementation and operationalisation of ethical research.

Practicals

Exercises in problem identification. Project proposals – contents and scope. Formulation of objective and hypotheses. Assessment of data needs – sources of data – methods of data collection. Methods of sampling – criteria to choose – discussion on sampling under different situations. Scaling Techniques – measurement of scales. Preparation of interview schedule - Field testing. Methods

of conducting surveys. Exercise on coding, editing, tabulation and validation of data. Preparing for data entry into computer. Hypothesis testing – parametric and non-parametric tests. Exercises on format for thesis / report writing. Presentation of the results.

Suggested Readings

Black, T.R. 1993. *Evaluating Social Science Research - An Introduction*. Sage.

Creswell, J.W. 1999. *Research Design - Qualitative and Quantitative Approaches.* Sage

Dhondyal, S.P. 1997. *Research Methodology in Social Sciences and Essentials of Thesis Writing*. Amman Publ. House, New Delhi.

Gregory, Ian. 2003. Ethics in Research. Continuum Publications, UK.

Homan, Roger. 1991. The Ethics of Social Research. Longmans, UK.

Kothari, C.R. 2004. *Research Methodology - Methods and Techniques*. Wishwa Prakashan, Chennai.

Rao, K.V. 1993. *Research Methodology in Commerce and Management*. Sterling, New Delhi.

Singh, A.K. 1993. *Tests, Measurements and Research Methods in Behavioural Sciences*. Tata McGraw-Hill.

Venkatasubramanian, V. 1999. *Introduction to Research Methodology in Agricultural and Biological Sciences*. SAGE

AG ECON 601 MICROECONOMICS II (3L+0P) II

Pre-requisite: Ag Econ 501 Microeconomics I

Objective

The objective of this course is to teach economic theories that are applicable to firm and also places primary emphasis on the nature and functions of product markets, study of factor markets and evaluation of government regulation of markets.

Theory

UNIT I

Theory of price under pure monopoly- Equilibrium of the monopolist-Predictions in dynamic changes – Shift in the market demand- Change in costs- Imposition of tax- Multiplant firm- Bilateral monopoly- Price discrimination model- Types and effects of price discrimination- Equilibrium of price discriminating monopolist- Monopolistic competition- assumptions- product differentiation and demand curve- Equilibrium of the firm.

UNIT II

Oligopoly markets- Non collusive oligopoly- Cournot's Duopoly model- Stackelberg's Duopoly model- Kinked demand model- Collusive Oligopoly- Cartels and profit maximization- Market sharing cartel- Price leadership in oligopoly- Models of low cost and dominant firm price leader- Theory of games- Two person Zero sum game- Certainty and uncertainty models.

UNIT III

Pricing of factors of production and Income distribution- Demand/supply/ pricing of single and several factors- Factor pricing in perfectly and imperfectly competitive markets- Monopolistic power

in product market- monopsonistic power in factor market- Bilateral monopoly-elasticity of factor substitution- Technological progress and income distribution- Pricing of fixed factors- The adding-up and product exhaustion theorems- Euler's and Walras theorems.

UNIT IV

General Equilibrium theory- The Walrasian system- Two commodity exchange- Production and exchange- Multimarket equilibrium- General equilibrium and allocation of resources- Factor ownership and income distribution- Welfare economics- Pareto optimality- Maximization of social welfare- Welfare maximizing state- The efficiency of perfect competition- The efficiency of imperfect competition.

Suggested Readings

Henderson, J.M. and Quandt, R.E. *Microeconomic Theory: A Mathematical Approach*. McGraw-Hill.

Koutsoyiannis, A. 2003. *Modern Microeconomics*. The Macmillan Press.

Varian, Hal R. 1992. *Microeconomic Analysis*. W. W. Norton and Co.

AG ECON 602 MACROECONOMICS II (3L+0P) I

Pre-requisite Ag Econ 502 Macroeconomics I

Objective

The aim is to provide an analytical background to macro-economic issues and policy concerns such as inflation, trade cycles, stabilization policies and international financial markets.

Theory

UNIT I: INFLATION AND GROWTH

Introduction to dynamic macro-economic models, Inflation and stagflation: measurement and effects, demand side and supply side inflation, Inflation- unemployment tradeoffs, recent developments in Inflation theory, empirical policy aspects of inflation, productivity and inflation, supply side economics.

UNIT II : TRADE CYCLES

Classical and neo-classical theories of Investment, Acceleration principle, Trade cycles : its nature and causes, theories of capital and investment, Hicks model of trade cycles, role of economic policies

UNIT III: STABILIZATION POLICIES

The instruments and impact of monetary and fiscal policies as an instrument of development, incidence of tax and fiscal policies, extension of Keynesian model: investment and economic growth, review of economic policies in India, case studies

UNIT IV: INTERNATIONAL MACRO-ECONOMIC ENVIRONMENT

Internal and external borrowings, Deficit financing, International trade theories and exchange rates, International macro-economic policies and institutions.

Suggested Readings

Gardner Ackley 1987. *Macroeconomics: Theory and Policy*. Macmillan Publishing Co., Inc., New York.

Robert J. Gordon. Macroeconomics, Addison-Wesley, New York.

Shapiro, E. *Macroeconomic Analysis*. Galgotia Publications, Delhi.

Thomas, F. Dernburg. *Macro-economics-Concepts, theories and policies*, McGraw Hill Book Company, London.

AG ECON 610 AGRICULTURAL ECONOMETRICS -II (3L + 1P) III

(Pre-requisite: AG ECON 510)

Objective

The course is designed to provide comprehensive knowledge of advanced econometric tools for better understanding of economic problems.

Theory

UNIT I

Review of classical regression model – review of hypothesis testing – estimation subject to linear restriction

UNIT II

Mixed estimation - use of instrumental variables in regression analysis, method of principal components, Errors in variables models.

UNIT III

Use of Dummy variables. Models for qualitative dependent variable - LPM, Probit and Logit and its multinomial extensions.

UNIT IV

Simultaneous equation systems: Basic rationale, identification problems, Single equation methods of estimation-indirect least squares, two stage least squares, and K-class estimators, and limited information maximum likelihood, three-stage least squares, and full information maximum likelihood; Relative merits of these methods and their small and large sample properties. SURE estimates.

UNIT V

Distributed lag models. Analysis of economic time series – stationarity and unit root test, ARIMA, ARCH group of models and co-integration. Neural Network Models. Pooling of cross-section and time series data.

Practicals

Estimation of multiple regression model - estimation of LPM, Logit and Probit models - comparing two regressions - Chow test - Indirect least squares 2SLS, SURE, 3SLS, estimation of simultaneous equation models – unit root tests for stationarity, fitting of ARIMA and ARCH group of models - cointegration

Suggested Readings

Greene, W.H. 2002. *Econometric Analysis*. Pearson Edu.

Johnston, J. and Dinardo, J. 2000. *Econometric Methods*. McGraw-Hill.

Maddala, G.S. 2002. *Econometrics.* McGraw Hill.

AG ECON 620 AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS-III (LINEAR PROGRAMMING) (2L+1P) III

Objective

This course is meant to familiarise students with the theory and application of various optimization techniques such linear programming, variable resource programming; recursive programming, game theory, goal programming, in agriculture.

Theory

UNIT I (INTRODUCTION TO LINEAR PROGRAMMING)

Problem formulation for programming; preparation of input-output matrix, objective functions and constraint equations. Assumptions of linear programming; basic and non-basic solutions; feasible and infeasible solutions. Linear Programming: Graphical method; Simplex method; Simplex method and its application for solving agricultural problems; use of artificial factors; problems of degeneracy, inconsistency, infeasible and unbounded solutions. Generalised simplex method; dual simplex method. integer programming; recursive programming. Transportation models. Application of linear programming for solving practical problems in farming with the help of following: Variable resource programming; variable price programming

UNIT II (RISK PROGRAMMING)

MOTAD and its extensions. Theory of games and application of linear programming for solving games problems in farm decision making. Sensitivity analysis. Goal programming and its application. Dynamic programming.

Practicals

Graphical and algebraic formulation of linear programming models. Solving of maximization and minimization problems by simplex method. Formulation of the simplex matrices for typical farm situations.

Suggested Readings

Dorfman, R. 1996. *Linear Programming & Economic Analysis*. McGraw Hill.

Loomba, NP.2006. *Linear Programming*. Tata McGraw Hill.

Shenoy, G. 1989. *Linear Programming-Principles & Applications*. Wiley Eastern Publication

Taha, H.A. *Operation Research : In Introduction* . Prentice Hall International Series

AG ECON 621 AGRICULTURAL PRODUCTION AND RESOURCE ECONOMICS IV (AGRICULTURAL PRODUCTION UNDER RISK) (1L+1P) I

Objective

This course deals with various types of risks in agriculture and their measurement. The concepts of probability, decision theory, Bayes' theorem, risk programming are discussed.

Theory

UNIT I (CONCEPT OF RISK AND UNCERTAINTY IN AGRICULTURE)

Various types of risks in agriculture and their measurement.

UNIT II (DECISION THEORY)

Introduction to decision analysis; Concept of probability, subjective probability and its illustration, estimation of posterior probability in the application of Bayes' Theorem. Selection of optimal action under risk with and without forecast device. Minimax and Maximin Criteria. General model of discrete decision analysis. Risk response analysis-Supply response risk, formulation of production function under risk, Optimum input decision under risk.

UNIT III (RISK PROGRAMMING MODELS)

Linear risk programming model, Portfolio selection or E-V model, Markowitz model, McInnerrey's model, Hazell model, Kataoka model. Quadratic programming, Multi-objective programming

Practicals

Decision making for optimum cropping plans based on Bayes' theorem, MOTAD, quadratic risk programming.

Suggested Readings

Anderson, J.R., Dillon, J.L. and Hardaker, B. 1977. *Agricultural Decision Analysis*. Iowa State University Press.

Sankhyan, P.L. 1986. *Introduction to the Economics of Agricultural Production,* Prentice Hall of India.

AG ECON 630 AGRICULTURAL PRICE ANALYSIS (2L + 1P) I

(Pre-requisite: AG ECON 510 Agricultural Econometrics I)

Objective

The objective of this course to develop the skills of students in modelling price behaviour and estimate demand and supply. Implications of prices, demand and supply for food security and management of food are also covered.

Theory

UNIT I

Consumer behaviour. Producer behaviour. Producer and consumer core system. Price determination. Price variability and stabilization. Price forecasting.

UNIT II

Demand for and supply of farm products. Demand for and supply of factor inputs in agriculture. Demand model for durable inputs. Demand for capital and credit. Models for predicting marketed surplus, income growth. Price policy models. Demand supply projections.

UNIT III

Market integration – concept and measurement.

UNIT IV

Food Security. Management of Food Stocks - Buffer stocks operations, PDS. Futures market and trading.

Practicals

Estimation of input and output demand and supply; estimation of price variability; forecasting demand and supply, measuring market integration.

Suggested Readings

Ferris, J.N. 1998. *Agricultural Prices and Commodity Market Analysis*. McGraw-Hill.

Goodwin, J.W. 1994. *Agricultural Price Analysis and Forecasting*. Wiley.

Purecell, W. D. and Koontz, S.R. 1999. *Agricultural Futures and Options: Principles and Strategies*. Prentice-Hall.

Sadoulet, Elisabeth and Alain deJanvry, *Quantitative Development Policy Analysis.* John Hopkins University Press, Baltimore.

Shepherd, G.S. 1982. *Marketing Farm Products*. Iowa State Univ. Press.

AG ECON 631 MARKETING MANAGEMENT (3L+1P) III

Objective

This course aims to show how the principles of marketing management can be applied to improve the efficiency and effectiveness of food and agricultural commodities marketing.

UNIT I

The core concepts of markets, marketing and marketing management. Process of marketing management. Marketing mix. Strategic marketing management; Analysing marketing opportunities - Consumer behaviour and purchase process; Marketing information system. Marketing research. Researching and selecting target markets: Measuring and forecasting market demand; identifying market segments and selecting target markets.

UNIT II

Product management: Concept of a product; managing product lines and brands ; differentiating and positioning the market offer; product life cycle; new product development. Designing product related competitive marketing strategies – branding, labeling, packaging decisions.

UNIT III

Pricing strategies, decisions and programmes. Pricing methods.

UNIT IV

Product distribution: Channel management and strategies; Managing wholesale, retail, and logistics.

UNIT V

Product promotion. Promotion methods and promotion mix – advertising, sales promotion, personal selling, publicity. Management of promotion mix. Customer relationship management.

UNITVI

Organizing for marketing. Evaluating and controlling market performance: Annual plan control. Profitability control. Efficiency control.

UNIT VII

Issues in global marketing

Practicals

Practicals will be based on real world situations and case studies and will involve a critical analysis of the marketing actions and strategies of companies.

Suggested Readings

Kotler, Philip and Armstrong, *Principles of Marketing*, Prentice-Hall Pearson Education 2007.

Kotler, Philip, Keller, K.L., Koshy, Abraham and Jha, Mithileshwar. *Marketing Management: A South Asian Perspective.* 12th ed Prentice-Hall, Pearson Education. 2007.

Stanton, W.J., Ekzel, M.J. and Walker, B.J. *Fundamentals of Marketing*. McGraw-Hill.

AG ECON 632 QUANTITATIVE ANALYSIS FOR MARKETING AND BUSINESS DECISIONS (2L+1P) I

Objectives

The main objective of this course is to familiarise students with the application of quantitative techniques to decision making in business and marketing.

Theory

UNIT I

Decision theory applications in managerial decisions: Decision making under risk, uncertainty and perfect information situations; Decision criteria: Maximax, maximin, minimax, regret, Laplace criteria; Decision Trees.

UNIT II

Optimization and allocation problems: Assignment problems; transportation problems; media selection problem; channel selection problem; product line selection problem; blending and product mix problems; machine allocation problems. Other competitive strategy related problems.

UNIT III

Waiting line models: Facility planning problems at market yards; service facility problems; customer servicing problems in retail and service industry.

UNIT IV

Network models: PERT/CPM. Problems of new product introduction; planning and management of projects related to facilities development; production; processing.

UNIT V

Competitive Strategy Models: Inventory control models for managing production and marketing functions; Markov chain models applied to problems of brand switching, market selection, market shares, etc.; Game theory applications in situations involving conflicts or cooperation

Practicals

Structuring and solving decision trees for optimal decisions. Using different criteria for arriving at optimal decions under different situations. Formulating and solving transportation type problems; handling unbalanced problems and situations of degeneracy. Assignment problems as a special type of transportation problem. Solving deterministic and probabilistic queuing models Developing network (PERT/CPM) diagrams and determining the critical path. Crashing of projects; PERT cost problems. Determining economic order quantity, reorder levels and robustness of EOQ model; EOQ models under situations of price breaks, outages and planned shortages. Markov Chains: Estimating transition probabilities, predicting future scenarios and estimating steady state probabilities. Game theory: Two person zero sum games; determining saddle points; problems where no saddle point exists.

Suggested Readings

Taha, H.A. 2005. *Operations Research - An Introduction*. Prentice Hall.

Vohra, N.D. 2006. *Quantitative Techniques in Management.* Tata McGraw Hill, NewDelhi.

Wagner, H.M. 2005. *Principles of Operation Research*. Prentice Hall.

AG ECON 640 STRATEGIC MANAGEMENT FOR AGRIBUSINESS (2L+1P) II

Objective

This course aims to explain how strategy can be formulated and implemented to gain a competitive advantage in the market

Theory

UNIT I

Strategy Formulation: Vision and mission; industrial appraisal; organizational appraisal; situational analysis and formulation of corporate and business level strategies.

UNIT II

Strategy implementation: Management and operational issues; marketing, finance, R&D, MIS issues in strategy implementation.

UNIT III

Strategy evaluation and control: Measuring performance – a framework for strategy evaluation; balanced scorecard approach; strategic audit; strategic incentive management.

UNIT IV

Total quality management as a strategic tool: Concept of total quality management; product quality management - statistical quality control; national and international quality standards (AGMARK, ISI, ISO, HACCP, CODEX) in relation to food products.

UNIT IV

Governance and strategic management issues; role of top management and board; ethics in management; corporate social responsibility.

Practicals

Environmental scanning; internal scanning; development of external and internal factory analysis summaries; strategic factor analysis summary; SWOT analysis BCG Growth share analysis; portfolio analysis; case studies relating to strategies in functional areas.

Suggested Readings

David, F.R. 2005. *Strategic Management: Concepts and Cases*. Prentice Hall of India, New Delhi.

Kazmi, Azhar. 2009. *Strategic Management and Business Policy*. 3rd ed. Tata McGraw Hill, New Delhi

AG ECON 641 INSTITUTIONAL AND LEGAL ENVIRONMENT FOR AGRIBUSINESS (2L + 0P) I

Objective

The course provides an insight into the legal and institutional aspects that impact the efficiency and performance of agribusiness organisations

Theory

UNIT I

The Indian legal system an overview. The Indian Contract Act (1872): Meaning, nature, and scope; types of contracts; essentials of a valid contract, offer and acceptance, capacity to contract, free consent, performance of contract. Issues in international business transactions: International Sale of Goods, The Sales Contract, Letters of Credit, Foreign Direct Investment, Protection of intellectual property, Dispute Resolution

UNIT II

Companies Act (1956): Incorporation, commencement of business, types of companies, management, winding up of companies; Negotiable Instruments Act. Factory Act, Labour laws, Industrial dispute Act.

UNIT III

Management systems for food quality and safety: Regulatory provisions and acts: Essential Commodities Act, APMC Act, Consumer Protection Act, RTI Act, MRTP Act. Regulations related to food safety, hygiene and quality: national (FPO (1955), PFA, Food Safety and Standards Act (2006), and other Acts related to fruits, meat, milk, grading and standardization (AGMARK) and international (sanitary and phyto-sanitary requirements, Codex, ISO, HACCP, Good Manufacturing Practices (GMP) and Good Agricultural Practices (GAP))

UNIT IV

Role of institutions in agribusiness: Ministry of Food Processing Industries, Ministry of Food and Consumer Affairs, Product Boards, Export Promotion Council, Food Safety and Standards Authority, India, etc. International institutions facilitating agribusiness. Provisions related to FDI in agriculture and food production and distribution;

UNIT V

Nature and importance of ethics and moral standards; corporations and social responsibilities, scope and purpose of business ethics; Ethics in business functional areas; industrial espionage; solving ethical problems; governance mechanism.

Suggested Readings

Bare Acts : Indian Contract Act, 1972, The sale of Goods Act 1930. Essential Commodities Act, 1955, Consumer protection Act, 1986. The companies Act, 1956.

Chow, Daniel C.K. and Schoenbaum, T.J. 2005. *International Business Transactions: Problems, Cases and Material.* Aspen Publishers

Gulshan, S.S. and Kapoor, G.K. 2003. *Business Law including Company Law*. 10th ed. New Age Publications.

Kapoor, N.D. 2005. *Business Law*. S. Chand & Sons.

Tulsain, P.C. 2006. *Business Law*. Tata McGraw Hill.

Tuteja, S.K. 2005. *Business Law for Managers*. S. Chand & Sons.

AG ECON 642 MANAGEMENT OF R&D AND INNOVATION (2L+1P) II

Objective

The aim is to help students develop conceptual foundations for management of innovations. It introduces the framework of evolution and growth of national and international agricultural R&D systems, discusses issues related to science and technology policy and assesses the approach of impact of innovations.

Theory

UNIT I

Innovation, productivity and economic growth; Nature, process and importance of technological innovation; Sources of technical change- induced technical change, evolutionary theory and path dependence; Measurement of productivity growth; Institutional innovations, case studies.

UNIT II

Institutions and investments in science and technology; Agricultural research system s -evolution and growth, selected case studies of major countries, investment trends, international comparisons, institutional details; Changing public-private roles in technology development; Measuring the effects of agricultural research: Ex-ante and ex-post methods.

UNIT III

Technology adoption, diffusion and transfer- theoretical models and case studies, technology, resources and environment; Science and technology policy – regulation, incentives; Technology and intellectual property rights- selected case studies.

Practicals

Measurement of productivity growth – total factor productivity; frontier production function, etc. Institutional structures and national and international agricultural research systems. Ex-ante and ex-post methods of estimation of R&D impacts in agriculture.

Suggested Readings

Alston, J.M., Norton, G.W. and Pardey, P.G. 1995. *Science Under Scarcity*. Cornell University Press, Ithaca.

Khurana, V.K. 2007. *Management of Technology and Innovation*. Ane Books India, Delhi.

Ruttan, V.W. 2001. *Technology, Growth and Development : An Induced Innovation Perspective*. Oxford University Press, New York.

AG ECON 650 ECONOMIC DEVELOPMENT (3L + 0P) III

Objective

The course is designed to show how economic systems work and teach various models that explain the nature of economic development and growth and the welfare implications of development.

Theory

UNIT I

Concept of economic growth, development, welfare, etc. Traditional and modern measurement of economic growth and development. Measurement of income (GNP), poverty, inequality and unemployment. Recent measurement of economic development NEW (New Economic Welfare), MRW (Measurement of Economic Welfare), PQLI (Physical Quality Living Index), HDI (Human Development Index), Green GNP Index.

UNIT II

Evolution of economic thought: Mercantilism and Physiocracy; the Classical School; Marxian economic ideas; the Neo-Classical School; the globalization era.

UNIT III

Theories of economic growth: Classical, Marxian, Neoclassical; Theories of underdevelopment – Low level equilibrium trap, critical minimum effort, big-push, growth stages, social-technological dualism. Recent development experiences of developing countries in their transition. Models of economic growth – Keynesian, Harrod–Domar, Mahalanobis, Lewis, Fei-Ranis, input-out and multi- sectoral models.

UNIT IV

Introduction to development planning: Strategy of economic development – Balanced – unbalanced growth, choice of techniques, investment criteria; Education, health and gender in development, Trade and development.

Suggested Readings

Higgins, Benjamin . *Economic Development: Problems Principles & Policies.* Universal Book, New Delhi

Kindleberger, Charles P. *Economic Development*, McGraw Hill International.

Meir, Gerald M. *Leading Issues in Economic Development*.

Todaro, Michael, P. and Smith, S.C. *Economic Development*. Pearson Education.

AG ECON 660 AGRICULTURAL PROJECT ANALYSIS (2l + 1P) I

Objective

In this course the students will be taught about the types of projects and various methods to capture cost and value of project. It also deals with various methods used to assess the feasibility of the projects.

Theory

UNIT I

Definition of a project, identification and formulation of project, need for project, ex-post and ex-ante appraisal, basic data requirement, discounted cash flow analysis and measure of probability, choice of discount rate, consideration of alternatives, divergence of private and social profits, government action to bring out equality of social and private profits, social objectives and accounting price.

UNIT II

Allocation of scarce resources; land, labour, capital, foreign exchange; present and future consumption, optimum use of taxes and subsidy.

Public ownership and planning, relationship between plans and projects selection and investment programme; private sector projects, method of evaluation of private projects, social cost-benefit and switching values, uses and abuses of sensitivity analysis.

UNIT III

Accounting prices for traded and non-traded goods, marginal social costs and marginal social benefits, financing of projects, scale and fixing of projects, impact of project outputs on production and consumption elsewhere. Shadow wage rates and accounting rate of interest, uncertainty and investment criteria, external effects related to inputs and outputs of the project, indicators of economic worthiness in project appraisal; period of recovery, capital output ratio, accounting rate of return, benefit cost ratio, internal rate of return, net present value, economic rate of return, comparisons of indicators.

Practicals

Time value of money. Computation of interest rate using different methods. Case studies on project appraisal and evaluation using both methods of project evaluation; Undiscounted measures and Discounted measures. Social cost benefit analysis. Sensitivity analysis

Suggested Readings

Benjamin, McDonald P. 1985. Investment Projects in Agriculture-Principles and Case Studies, Longman Group Limited , Essex, U.K.

Dhubashi, P.R. 1986. *Policy and Performance - Agricultural and Rural Development in Post Independent India*. Sage Publ.

Gittinger, J.P. 1982. *Economic Analysis of Agricultural Projects*. The Johns Hopkins Univ. Press.

Little, I.M.D. and Mirlees, J.A. 1978. *Project Appraisal and Planning for Developing Countries*. Oxford & IBH Publishing Co., New Delhi.

Muniraj, R. 1987. *Farm Finance for Development*. Oxford & IBH