SCHEME AND SYLLABUS

FOR THE DEGREE
OF
MASTER OF ARTS
IN ECONOMICS

DEPARTMENT OF ECONOMICS

JECRC UNIVERSITY JAIPUR
[2013-2015]
# MA (ECONOMICS) COURSE OUTLINE

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Subjects</th>
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**ELECTIVES**
A student has to choose any of the two groups for electives. Group A courses designates specialization in Econometrics while group B designates specialization in Environmental Economics

<table>
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<th>Group A</th>
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<tr>
<td>H13015-A Fundamentals of Econometrics</td>
<td>H13015-B Ecosystem Services and Ecological Economics</td>
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<td>H13016-A Advances Econometrics</td>
<td>H13016-B Environmental Economics I</td>
</tr>
<tr>
<td>H14014-A Time Series Analysis</td>
<td>H14014-B Environmental Economics II</td>
</tr>
<tr>
<td>H14015-A Game Theory and Applications</td>
<td>H14015-B Sustainable Development and Business Environment</td>
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Semester-I

Paper-I

H11013 THEORY OF CONSUMER BEHAVIOR AND FIRM {5 1 0 6}

Course Description
This paper analyses the economic behaviour of individuals, firms and markets. It is mainly concerned with the objective of equipping the students in a rigorous and comprehensive manner with the various aspects of consumer behaviour and demand analysis, production theory and behaviour of costs, the theory of traditional markets and equilibrium of firm.

Course Objectives
After completion of this course students will be able to
1. Apprehend the methods of analysis in economics.
2. Interpret the consumer’s optimizing behavior and firms profit maximizing behavior.
3. Differentiate between various costs of production and their effect on short and long run decisions of the firms.
4. Apply concept of price output determination under different market structures.

Course Detail
Introduction and Basic Concepts
Problem of Choice and Scarcity in Economics; Deductive and Inductive Methods of Analysis; Positive and Normative Economics; Economic Models; Characteristics of Equilibrium and Disequilibrium Systems.

Demand Theory
Elasticities of demand — theoretical aspects and empirical estimation; elasticity of supply; Optimizing Behavior of the consumer under alternative preference structures— utility; indifference curve (income and substitution effects, Slutsky theorem, compensated demand curve) and Revealed preference theory. Indirect utility functions (duality theory); Recent developments in demand Theory (pragmatic approach and linear expenditure systems); Consumer’s surplus; Inter-temporal consumption; Elementary theory of price formation — demand and supply equilibrium; Cobweb theorem; lagged adjustment in interrelated markets.

Theory of Production and Costs
Production function: law of variable proportions and returns to scale; Isoquants — Least cost combination of inputs; Economies of scale; Multi-product firm; Elasticity of substitution; Euler’s theorem; Technical progress and production function; Cobb-Douglas, CES, VES and Translog production functions and their properties; Traditional and modern theories of costs — Empirical evidence; Derivation of cost functions from production functions.

Price and Output Determination
Perfect competition — short run and long run equilibrium of the firm and industry, price and output determination, supply curve; Monopoly — short run and long run equilibrium, price discrimination, welfare aspects, monopoly control and regulation; Monopolistic competition — general and Chamberlin approaches to equilibrium, equilibrium of the firm and the group with
product differentiation and selling costs, excess capacity under monopolistic and imperfect competition, Oligopoly — Non-collusive (Cournot, Bertrand, Edgeworth, Chamberlin, Kinked demand curve and Stackelberg’s solution) and collusive (Cartels and mergers, price leadership and basing point price system) models.

Readings
10. Jhingan M.L. Modern Micro Economics

**Paper-II**

**H11014**

**MACROECONOMIC THEORY I**

{4 1 0 5}

**Course Description**
This course introduces students to the basic concepts in Macroeconomics. Macroeconomics deals with the aggregate economy. In this course the students are introduced to the definition, measurement of the macroeconomic variables like GDP, money supply and money demand. It also deals with macroeconomic theory like the fiscal and monetary policy.

**Course Objectives**
This course will enable the students to
1. Examine the major macroeconomic issues which economy and business functions face.
2. Evaluate the measures of money supply and the liquidity trap situation.
3. Assess the working of flow of income and measure NI aggregates.
4. Develop understanding of effectiveness of macroeconomic policies under different economic conditions.

**Course Detail**
1. **Introduction to Macroeconomics and National Income Accounting**
   Basic issues studied in macroeconomics; national income aggregates and its measurement, the circular flow of ; real versus nominal GDP; price indices; national income accounting for an open economy; balance of payments: current and capital accounts.
2. Supply of Money
Concept of money supply, A mechanistic model of bank deposit determination, A demand –
determined money supply process. RBI approach to money supply, High powered money and
money multiplier, Budget deficit and money supply, money supply and open economy, control
of money supply.

3. Demand for Money
Classical approach to demand for money – Quantity theory approach – Fisher’s equation,
Cambridge quantity theory, Keynes’ liquidity preference approach, aggregate demand for
money.

4. Keynesian and post Keynesian demand for money
Macroeconomic equilibrium: Aggregate Demand and Aggregate Supply, Keynesian views on
Interest. IS and LM model extension of IS-LM model with government sector; relative
effectiveness of monetary and fiscal policy; Post-Keynesian approaches to demand for money —
Patinkin and the Real Balance Effect, Approaches of Baumol and Tobin; Friedman and the
modern quantity theory; Crisis in Keynesian economics and the revival of monetarism.

Readings:
5. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th
8. M.L.Jhingan, Macro Economic Theories
9. M.C.Vaishya,Macro Economic Theories
10. Sunil Bhaduri,Macro Economic Analyses
    2004.

Paper-III
H11015 LINEAR ALGEBRA AND CALCULUS {4 1 0 5}

Course Description
The main objective of this paper is to train the students to use the techniques of mathematical
analysis, which are commonly applied to understand and analyze economic problems. The
emphasis of this paper is on understanding economic concepts with the help of mathematical
methods rather than learning mathematics itself. Hence in this paper a student will be initiated
into various economic concepts, which are amenable to mathematical treatment.
Course Objectives
Students will
1. Acquire the ability to use relevant mathematical techniques in manipulating the models that embody the theories studied.
2. Extend their knowledge of the subject content of mathematical economics, specifically in the area of Optimization.
3. Develop the necessary skills to be intellectually independent in reading the advanced economics literature, specifically through being able to use more advanced mathematical techniques.

Course Detail
Introduction
Concept of function and types of functions; Limit, continuity and derivative; Rules of differentiation; Interpretation of revenue, cost, demand, supply functions; Elasticities and their types.

Differentiation
Multivariable functions; Concept and types of production functions; Rules of partial differentiation and interpretation of partial derivatives; Problems of maxima and minima in single and multivariable functions; Unconstrained and constrained optimization in simple economic problems; Simple problems in market equilibrium.

Integration
Concept of integration; Simple rules of integration; Application to consumer’s surplus and producer’s surplus; Growth rates and simple properties of time path of continuous variables.

Matrix Algebra
Determinants and their basic properties; Solution of simultaneous equations through Cramer’s rule; Concept of matrix — their types, simple operations on matrices, matrix inversion and rank of a matrix; Concept of vector — its properties; Matrices and vectors; Concept of quadratic forms — Eigen roots and Eigen vectors.

Readings:

Paper-IV

H11016  PUBLIC ECONOMICS  {4 1 0 5}

Course Description
Role and functions of the Government in an economy have been changing with the passage of time. Further, the existence of externalities, concern for adjustment in the distribution of income and wealth, etc. require political processes for their solution in a manner which combines individual freedom and justice. This paper combines a thorough understanding of public choice with a careful analysis of the issues which underline issues related to public policies and resource allocation.

Course Objectives
1. To develop the conceptual framework about government’s public Economic policies and annual budgeting.
2. Analyzes the impact of public policy on the allocation of resources and the distribution of income in the economy.

Course Detail

Introduction
Role of Government in organized society; Changing perspective — government in a mixed economy: public and private sector, cooperation or competition; Government as an agent for economic planning and development; Government as a tool for operationalizing the planning process; private goods, public goods, and merit goods; Market failure — imperfections, decreasing costs, externalities, public goods; Uncertainty and non-existence of futures markets; Informational asymmetry — Theory of second best.

Public Choice
Private and public mechanism for allocating resources; Problems for allocating resources; Problems of preference revelation and aggregation of preferences; Voting systems; Arrow impossibility theorem; An economic theory of democracy; Politico-eco-bureaucracy; Rent seeking and directly unproductive profit seeking (DUP) activities.

Rationale for Public Policy
Allocation of resources — provision of public goods; Voluntary exchange models; Impossibility of decentralized provision of public goods (contributions of Samuelson and Musgrave); Demand revealing schemes for public goods — Contributions of Clarks, Groves and Leyard, Tiebout model, theory of club goods; Stabilization Policy — Keynesian case for stabilization policy; Uncertainty and expectations; Failure of inter-temporal markets; Liquidity preference; Social goals; Poverty alleviation; Provision of infrastructural facilities, removing distributional inequalities and regional imbalances.

Public Expenditure
Wagner’s law of increasing state activities; Wiesman- Peacock hypothesis; Pure theory of public
expenditure; Structure and growth of public expenditure; Criteria for public investment; Social cost-benefit analysis — Project evaluation, Estimation of costs, discount rate; Reforms in expenditure budgeting; Programme budgeting and zero base budgeting.

Readings

Semester-II

Paper-I
H12013  THEORY OF DISTRIBUTION AND WELFARE  {5 1 0 6}

Course Description
This course deals with the alternative theories of firms and gives a comparative analysis with the marginal theory of firm. It also introduces students to the different theories of welfare economics and the working of the input market. General Equilibrium analysis is also dealt in this course.

Course Objectives
Students will be able to
1. Interpret the different theories of firm and compare it with the traditional theory of marginal analysis.
2. Examine the theory of distribution in the input market.
3. Differentiate partial equilibrium analysis from the general equilibrium analysis.
4. Develop a profound understanding of economics of well-being and uncertainty.

Course Detail
**Alternative Theories of the Firm**
Critical evaluation of marginal Theory; Baumol’s sales revenue maximization model; Williamson’s model of managerial discretion; Marris model of managerial enterprise; Full cost pricing rule; Bain’s limit pricing theory and its recent developments including Sylos-Labini’s model; Public Utility Pricing: Marginal cost pricing, Peak load pricing. Behavioural model of the firm; Game theoretic models.

**Theory of Distribution**
Neo-classical approach — Marginal productivity theory; Product exhaustion theorem; Elasticity of technical substitution, technical progress and factor shares; Theory of distribution in imperfect product and factor markets.

**Welfare Economics and General Equilibrium**
Introduction to general equilibrium, pure exchange economy, contract curves, general introduction to the first and second welfare theorems. Pigovian welfare economics; Pareto optimal conditions; Value judgement; Social welfare function; Scitovsky and Hicks criterion. Samuelson and Bergson social welfare criterion. Compensation principle; Inability to obtain optimum welfare — Imperfections, market failure, decreasing costs, uncertainty and non-existent and incomplete markets; Theory of Second Best — Arrow’s impossibility theorem; Rawl’s theory of justice, equity-efficiency trade off.

**Economics of Uncertainty**
Individual behaviour towards risk, expected utility and certainty equivalence approaches, risk and risk aversion — sensitivity Theory.

**Readings**
Paper-II
H12014 MACROECONOMIC THEORY II [4 1 0 5]

Course Description
This course is the second part to Macroeconomics. In this course the students are introduced to the theories of inflation and also to consumption, savings, and investment functions. It also introduces the students to various theoretical issues related to an open economy. Different economic thinking`s on business cycle is featured in this course.

Course Objectives:
Students will be able

1. To recognize the macroeconomic issues in the globalized economy.
2. To develop skills and perspectives to locate inflation issues in the wider context of macroeconomic policy choices.
3. To assess investment opportunity, and make intelligent decision in the context of returns to a project.

Course Detail
1. Macro Economics in an open economy
Mundell-Fleming model — Asset markets, expectations and exchange rates; Monetary approach to balance of payments.

2. Consumption function

3. Investment function
Marginal efficiency of investment and level of investment, Marginal efficiency of capital and investment, short run and long run theories of investment and accelerator. Investment multiplier.

4. Theories of inflation and Business cycles
Classical, Keynesian and Monetarist approaches to inflation; Structuralist theory of inflation; Philips curve analysis — Short run and long run Philips curve; Samuelson and Solow — the natural rate of unemployment hypothesis; Tobin’s modified Philips curve; Adaptive expectations and rational expectations Schumpeter, Kaldor, Samuelson and Hicks theories of Business cycle, Goodwin’s model of Business cycle.

Readings
5. Hall, R.E. and J.B. Taylor (1986), Macroeconomics
6. M.L. Jhingan, Macro Economic Theories
7. M.C. Vaishya, Macro Economic Theories
8. Sunil Bhaduri, Macro Economic Analyses

**Paper-III**

**H12015 DYNAMIC ECONOMIC ANALYSIS AND LINEAR PROGRAMMING**

**Course Description**
This course deals with the mathematical tools required in economic analysis. It deals with difference and differential equations. Linear Programming and game theory, a highly important tool in decision science is a part of this course. Linear behavior is a mathematical method for determining a way to achieve the best outcome such as maximum profit or lowest cost given linear equality and inequality constraint.

**Course Objectives:**
Students will
1. Enhance specific methodological competencies, required for advanced economic analysis.
2. Develop strategic decision making competencies using game theory approach.
3. Describe the rules that govern the development of a system over time using the knowledge of difference and differential equations.

**Course Detail**

**Difference and Differential Equations**
Enveloppe Theorem, Introduction to input-output analysis; Leontief’s input output analysis. Difference equations and Differential Equations — Solution of first order and second order difference and differential equations; Applications in trade cycle models; Growth models and lagged market equilibrium models.

**Linear Programming**
Linear programming — Basic concept; Formulation of a linear programming problem — Its structure and variables; Nature of feasible, basic and optimal solution; Solution of linear programming through graphical and simplex method; Statement of basic theorems of linear programming; Formulation of the dual of a programme and its interpretation.

**Duality Approach:**
Properties of profit function and Hotelling’s Lemma, Properties of factor demand function under profit maximization, Slutsky equation for factor demands.

**Game Theory and its applications**

Two person zero sum game, concept of pure strategy and mixed strategy. One shot game, concept of Nash equilibrium and method of dominance. Applications: Cournot model, problem of prisoner’s dilemma and cartel instability, The Commons problem, strategic trade. Sequential game and backward induction. Application: Stackelberg equilibrium, time consistent macroeconomic policy.

**Readings:**


**Course Description**

This course is designed to provide the students with the nitty-gritties of the fiscal environment. It deals with taxation, public debt, fiscal Policy and also the distribution of revenue between the center and state. There are vast array of fiscal institutions — tax systems, expenditure programmes, budgetary procedures, stabilization instruments, debt issues, levels of government, etc., which raise a spectrum of issues arising from the operation of these institutions.

**Course Objective**

Students will be able to

1. Relate the incidence of taxation with the equity issues.
2. Analyze the implications of excessive public debt and crowding out of private investment.
3. Assess the fiscal instruments for resource mobilization and the subsequent impact on growth and stabilization of the economy.
4. Appreciate the fiscal federalism and regional imbalances.

**Course Detail**

**Taxation**
Theory of incidence; Alternative concepts of incidence — Allocative and equity aspects of individual taxes; Benefit and ability to pay approaches; Theory of optimal taxation; Excess burden of taxes; Trade-off between equity and efficiency; Theory of measurement of dead weight losses; The problem of double taxation.

Public Debt
Classical view of public debt; Compensatory aspect of debt policy; Burden of public debt; Sources of public debt; Debt through created money; Public borrowings and price level; Crowding out of private investment and activity; principles of debt management and repayment.

Fiscal Policy
Objectives of fiscal policy — full employment, anti-inflation, economic growth, redistribution of income and wealth; Interdependence of fiscal and monetary policies; Budgetary deficits and its implications; Fiscal policy for stabilization — automatic vs. discretionary stabilization; Alternative measures of resource mobilization and their impact on growth, distribution and prices; Balanced budget multiplier.

Fiscal Federalism
Principles of multi-unit finance; Fiscal federalism in India; Vertical and horizontal imbalance; Assignment of function and sources of revenue; Constitutional provisions; Finance Commission and Planning Commission; Devolution of resources and grants; Theory of grants; Resource transfer from Union to States — Criteria for transfer of resources; Centre-State financial relations in India; Problems of states’ resources and indebtedness; Transfer of resources from Union and States to local bodies.

Readings
Course Description
The course instigates a discussion of alternative conceptions of growth and development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored.

Course Objectives:
The course will enable a student to
1. Interpret the various concepts of growth and development and also the various measures of economic growth.
2. Analyze the development of economists’ view on economic growth and development.
3. Estimate the development process as regards the different development theories.

Course Detail
Economic Growth — I
Economic growth and development — Factors affecting economic growth: capital, labour and technology; Growth models — Harrod and Domar, instability of equilibrium; Neo-classical growth models — Solow and Meade, Mrs. Joan Robinson’s growth model; Cambridge criticism of Neoclassical analysis of growth; The capital controversy.

Economic Growth — II
Technological progress — embodied and disembodied technical progress; Hicks, Harrod; learning by doing, production function approach to the economic growth; Total factor productivity and growth accounting; Growth models of Kaldor and Pasinetti, optimal savings and Ramsey’s rule, golden rule of accumulation, two-sector model of Ujawa, Stability of equilibrium; money in economic growth, Tobin, and Patinkin; Endogenous growth; Intellectual capital: role of learning, education and research; AK model — Explanations of cross country differentials in economic growth.

Theories of Development
Classical theory of development — contributions of Adam Smith, Ricardo, Malthus and James Mill; Karl Marx and development of capitalistic economy — theory of social change, surplus value and profit; Immutable laws of capitalist development; Crisis in capitalism — Schumpeter and capitalistic development; innovation — role of credit, profit and degeneration of capitalism; Structural analysis of development; Imperfect market paradigm.

Approaches to Development
Partial theories of growth and development — vicious circle of poverty, circular causation, unlimited supply of labour, big push, balanced growth, unbalanced growth, critical minimum
effort thesis, low-income equilibrium trap; Dualism — technical, behavioural and social; Ranis and Fei model; Dixit and Marglin model, Kelly et. Al. Model.

Readings

Paper-II
H13014 INDIAN ECONOMIC POLICY {4 1 0 5}

Course Description
The purpose of this paper is to enable students to have an understanding of the various issues of the Indian economy so that they are able to comprehend and critically appraise current Indian economic problems. For this, it is essential to have a good deal of understanding about the major developments in the Indian economy before independence, at the time of independence and during the post-independence period.

Course Objectives:
Students taking this course will be able to
1. Develop the understanding towards planning in India and the corresponding growths in each plan period.
2. Appreciate the sectorial changes especially in agriculture and industry in India
3. Analyze the process of economic reforms and capital market.

Course Detail
Framework of Indian Economy
1. Economic Policy: An Introduction
2. Trend and Structure of National Income
3. Demographic Features and Indicators of Development
4. Poverty and Inequality: Policy Implications
5. Employment and Unemployment: Policy Implications

Development Strategies in India
1. Economic Reforms in India
2. Critique of Economic Reforms

**Sectoral Performance**
1. Agricultural Growth, Productivity Trends and Crop Patterns
2. Issues and Concerns in Indian Agriculture
3. Industrial Sector in Pre-reform Period
4. Industrial Sector in Post-reform Period with Emphasis on Small-Scale Sector
5. Infrastructure.
6. Indian Financial System: Money Market and Monetary Policy
7. Capital Market in India and Working of SEBI

**Economic Planning In India**
1. Rational features and objective . The strategy of panning
2. Resource relocation in Indian plans: Eleventh five year plan.

**Readings**

**Paper-V**

H11024 RESEARCH METHODOLOGY {3 1 0 4}

**Course Description**
This course is designed to develop research insights and discernments among the students. It deals with the steps involved in conducting a research and also the techniques that can be used in data analysis. It gives hands on experience of data handling with the use of SPSS software.

**Course Objectives:**
Students will be able to
1. Inculcate research interest with a thorough understanding of the research methodology.
2. Apply statistical techniques for data analysis.
3. Use SPSS to carry out advance statistical techniques.

**Course Detail**

**Introduction to Research**
Nature and Scope of Research Methodology; Problem Formulation and Statement of Research Objectives; Research Process; Research Designs - Exploratory, Descriptive and Experimental Research Designs; Sampling: Meaning, Types & Methods of Sampling. Determination of Sample Size.
Types of Research
Quantitative Research: Methods of Data Collection - Observational and Survey Methods; Questionnaire Design, Interview Schedule, Reliability and Validity in Quantitative Research.

Measurement in Research
Measurement scales – Tests of good measurement, construction of Likert and Semantic Differential scales-Source of errors in measurement- Scale validation.

Data Analysis

Readings:
10. V.K. Kapoor; Operational Research, Sultan Chand & Co.,Delhi.

Semester-IV

Paper-I
H14013 INTERNATIONAL TRADE {4 1 0 5}

Course Description
This course provides a thorough understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level. Besides this,
the contents prepare the students to know the impact of free trade and tariffs on the different sectors of the economy as well as at the macro level.

**Course Objective:**
Student will be able to
1. Appreciate the current economic environment in some major economies.
2. Elucidate international trade theories.
3. Analyze the implications of tariffs and quotas on free flow of goods and services.
4. Interpret the implications of trade policy of individual countries and regional trade blocks as well as regulatory environment created by WTO.

**Course Detail**

**Theories of International Trade**
Pure theory of trade – Classical theory, Comparative advantages and labour productivity differences as the basis of trade. —Trade is better than no trade. Constant costs and complete specialization in a two good, one factor model. Extension to multi country and multi commodity trade. Neo- classical trade theory – two factor, two goods and variable cost model. Opportunity cost. Role of demand even with same production function. Incomplete specialization. General equilibrium in two-country, two goods open economy model. Heckscher Ohlin factor endowment model. From equalization of commodity prices to factor price equalization. Stolper-Samuelson theorem. Specific Factor Model

**Trade Patterns and Welfare effects of Trade**

**Trade Barriers and Trade Groups**

**Readings**

**ELECTIVES**

**H13015-A**

**FUNDAMENTALS OF ECONOMETRICS**

{4 1 0 5}

**Course Description**
The aim of the course is to provide the basic knowledge and skills of econometric analysis. After successfully attending the course, students will be able to apply the knowledge to the investigation of economic relations and processes, and also to understand econometric approaches, methods, and conclusions met in most economic books and articles.

**Course Objectives**
Students will be able to
1. Use basic econometric skills to answer an economic question.
2. Use data to conduct an econometric analysis of an economic question.
3. Write a clear description of your econometric analysis.

**Course Detail**
1. Ordinary least squares model: Estimation, inference (including tests of multiple exclusion and linear restrictions; nested and non-nested hypotheses), prediction (prediction intervals) and specification problems in the bivariate and multivariate models.
2. The problem of multicollinearity:
3. Binary variables in linear regression, including an introduction to binary dependent variables and the linear probability model
4. The problem of heteroskedasticity
5. Introduction to time series regression: Autocorrelation, unit root tests, cointegration
6. Maximum likelihood estimation

**Readings**
H13016-A ADVANCED ECONOMETRICS {4 1 0 5}

Course Description
This course covers a range of techniques in econometrics that are widely used in applied microeconomics, macroeconomics, and other fields. The class aims at preparing students for carrying out empirical research in economics, and there will be an emphasis on the relationship between economic models and observable data.

Course Objectives
The objective of this course is threefold:
1. To provide a profound understanding of modern econometric methods;
2. To give a critical assessment of the presented methods;
3. To constitute an introduction and a basis for the more specific econometric courses of the Masters.

Course Detail
Pooled cross section and panel data models; Pooling time series and cross-section data; fixed effects; random effects; dynamic models
Instrumental variables: Two-stage least squares; measurement error; method of moments estimation; overidentification and overidentifying restrictions
Simultaneous equations models: The identification problem and problem of aggregation
Qualitative response models and limited dependent variable models: Logit and probit models; truncated and censored distributions; tobit models

Readings

H14014-A TIME SERIES ANALYSIS {4 1 0 5}
Course Description
This course introduces the theory and practice of time series analysis, with an emphasis on practical skills. Topics covered will include univariate stationary and non-stationary models, vector autoregressions, frequency domain methods, models for estimation and inference in persistent time series, and structural breaks.

Course Objectives
1. To develop the skills needed to do empirical research in fields operating with time series data sets.
2. To provide students with techniques and receipts for estimation and assessment of quality of economic models with time series data.
3. To model and forecast a time series as well as read papers from the literature and start to do original research in time series analysis.
4. To appreciate recent developments in time series analysis research.

Course Details
1. Stationary Univariate Models. Wold decomposition theorem, Difference equations, ARMA models and Box-Jenkins methodology, Model Selection, Forecasting methodology.

2. Nonstationary Univariate Models. Trend/Cycle decomposition, Beveridge-Nelson decomposition, Deterministic and stochastic trend models, Unit root tests, Stationarity tests


Readings
4. Spyros Makridakis, Steven C. Wheelwright and Rob J. Hyndman (1998): Forecasting, Methods and Applications. USA, John Wiley and Sons, USA, John Wiley and Sons
H14015-A  GAME THEORY AND APPLICATION  {5 1 0 6}

Course Description
This course in game theory concerns with the economic situations in which rational decision-makers interact. The course is intended to teach students the tools necessary to use game theoretic models in a wide variety of applications.

Course Objective:
At the end of the course, students should be able to
1. Understand solution concepts in games in strategic or extensive form, and
2. Develop analytical and problem solving skills regarding the analysis of games.

Course Detail
1. Strategic games : Concepts of dominance, pure and mixed strategy Nash equilibrium
2. Extensive games : Backward induction outcomes in games with perfect information, subgroup perfect equilibrium in games with imperfect information; Rubinstein bargaining solution
3. Repeated games : Nash folk theorems; finitely and infinitely repeated games
4. Static and dynamic games of incomplete information : Bayesian-Nash equilibrium, perfect Bayesian equilibrium and sequential equilibrium
5. Cooperative games: Nash bargaining solution, concepts of core, shapely value etc.

Readings

H13015-B  ECOSYSTEM SERVICES AND ECOLOGICAL ECONOMICS  {4 1 0 5}

Course Description
This course outlines the concepts that underlie the burgeoning interdisciplinary field of ecological economics. This field takes a holistic perspective, incorporating our ever-expanding knowledge of ecology into traditional economic theory. This course is interdisciplinary in nature and will include concepts from other fields, especially physics, philosophy, ecology, and public policy.

Course Objectives
Students will
1. Develop clear understanding of the principles and applications of ecological economics.
2. Be able to critically evaluate the underlying concepts and unspoken values implicit in neoclassical economic theory.
3. Identify appropriate tools from ecological economics to address environmental issues and achieve viable, sustainable economies.

4. 

Course Details
1. Introduction: Current dilemma and overview of ecological economics-definition and scope
2. Historical review and methodological considerations
3. Theory and principles of ecological economics: Theory of value- neoclassical approach and its limitation, types of values and assigning values in resource allocation; sustainable scale, equity and efficiency, and the steady-state economy; ecosystems - sustainability and ecological services; valuing ecosystem services; energy and resource flows - entropy and the laws of thermodynamics and economic process, concepts and theory of capital: human-made, natural and cultural
4. Analysis, policies and instruments: Overview of policy approaches, policy approaches for renewable resources, policy instruments and property rights
5. Industry-ecology interface: Firm objectives, modelling resource extraction under different industry structures, stakeholder management.

Readings:

H13016-B       ENVIRONMENTAL ECONOMICS I             {4 1 0 5}

Course Description
The course examines the continuing conflict between market forces and environmental integrity and explains how economic theory views the relationship between economic activity and the natural world. Examples of local, regional, national, and international issues are presented and discussed. The course will give students an opportunity to develop a critical understanding of the different ways in which economic decisions, market forces, and government policies can affect environment.

Course Objectives:
Students will be able to
1. apply economic theory to environmental sustainability
2. Understanding the conflict between market forces and environmental integrity
3. Develop critical understanding of different ways in which economic decisions, market forces and government policies can affect environment.
4. Develop critical understanding how consumer market and business initiative can lead a way into sustainable environment.

**Course Detail**

2. Market Failure: Externality and Pure Public Goods; tragedy of Commons with focus on exclusion and rivalry.
3. Intertemporal Efficiency and Intergenerational Equity
4. Environmental Damages: Socio-Environmental Cost Benefit Analysis ; Environmental Impact Assessment and Project Planning and appraisal.

**Readings**


**H14014-B ENVIRONMENTAL ECONOMICS II {4 1 0 5}**

**Course Description**

The environmental effect of increased globalization is a politically charged issue. The spectrum of views range from the position that globalization should be opposed because (among other things) it harms the environment, to the view that globalization brings many general benefits, and has a small, perhaps positive, effect on the environment. This course provides background that will help students make an informed assessment of these kinds of views.

**Course Objectives**

1. To provide knowledge and understanding of how economic policy alters environmental outcomes.
2. To develop an appreciation of the insights which economic analysis can bring to environmental issues?
3. To develop the ability to appraise investment projects using a variety of techniques such as environmental cost-benefit analysis.
4. To develop an understanding of the techniques to evaluate environmental policy programs.

**Course Detail**
2. Major Environmental Problematic Projects in developed and developing countries with special focus to India.
3. Conventional National Income Accounting Vs Green Accounting

Readings

H14015-B SUSTAINABLE DEVELOPMENT AND BUSINESS {5 1 0 6}
ENVIRONMENT

Course Description
This course highlights the importance of including sustainable development as a key component of the decision making process. It instigates to think of sustainable development principles as essential to developing future competitive advantage, rather than as an 'add on' to existing plans. It not only looks at the macro-issues, but also presents the student with micro-enterprise-level discussions for developing an effective environmental strategy.

Course Objectives:
Students taking this course will
1. Develop a strategic view of environmental issues and sustainable development.
2. Gather insights into environmental laws focusing Indian legal environment.
3. Appreciate environmental concerns along with their social, economical, and political relationships
4. Assess climate change and its effect on business

Course Details
1. Sustainable development and the firm
2. Climate change and sustainable agriculture and business
3. Environment management system and business (EMS): ISO - 14000; green reporting auditing and life cycle assessment
4. Energy, technology and its impact on environment energy economics and policy
5. Legal environment of business: Multilateral environment agreements, Indian legal environment
6. Conservation finance
7. Eco system services
8. Strategic corporate social responsibility
10. The political economy of the environment

Readings