

SIDHO-KANHO-BIRSHA UNIVERSITY
M.A./M.ScSYLLABUS
DEPARTMENT OF ECONOMICS
Under Choice Based Credit System (CBCS)



SEMESTER-I
(Duration: July -- December)

Microeconomic Analysis-I
Course: MECOCCT 101

UNIT	TOPIC	Hour	Marks
Unit-I	Preference Relations and Consumer Behaviour	10	40
	Axioms of Consumer's choice, Indifference Curve, Utility function, Utility maximization, Interior and corner solution, Ordinary and compensated demand function, Indirect Utility function, Roy's identity, Expenditure function-properties Shephard's lemma, Additively separable utility function, Quasi-linear utility function. Restrictions on demand function. Linear expenditure system (LES). Separability Hypothesis		
Unit-II	Production function	14	
	Specification of technology, Input requirement set, Properties of technology – Monotonic, Convex and regular; CD, CES and Leontief technology. Returns to scale and scale elasticity, Elasticity of factor substitution, Homogenous and Homothetic production function, and case of multiple products. Cost minimization model, Derived demand for inputs, properties of cost function, Shephard's lemma. Profit Maximisation – Factor demand and Output supply function, properties of profit function, Hotelling's lemma; Duality in production		
Unit-III	Markets	14	40
	Perfect Competition; Profit maximization, Derivation of SS curves under external economies, tax and welfare implications-deadweight loss.; Monopoly, welfare and output, Quality choice, Monopsony; Oligopoly Models – Cournot, Bertrand, Stackelberg and Collusive Oligopoly		
Unit-IV	Welfare and General Equilibrium	22	40
	The Edgeworth Box, Pareto Efficient Allocations, Core of an Exchange Economy, First and Second Fundamental Theorems of Welfare Economics(statements only), Theory of the second Best-Arrow's Social Welfare function-General Possibility theorem (statements only)- Compensation Principle-Kaldor-Hicks-Scitovsky.The concept of General Equilibrium. Walrasian General Equilibrium-a Pure Exchange Model- An aggregate excess demand function- Walras Law-composite commodity theorem-existence of a general equilibrium Mechanism for attaining Walrasian general equilibrium-Tatonnment process- Uniqueness and stability of General equilibrium –Perfect and imperfect stability. Brower's fixed point theorem.		
	Internal Assessment		10

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- Layard, P.R.G. and Walters,A.W. (1988): Microeconomic Theory. McGraw Hill, New York.
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- Silberberg E and Suen, W.: The Structure of Economics-a Mathematical Analysis, 3rd edition, McGrawHill Publishing Company, International Edition.
- Johnson,S.R., Hassan, Z.A. and Green, R.D. : Demand Systems Estimations, The Iowa State University Press, Ames.
- Malinvaud, E. (1976) :Lectures on Microeconomic Theory, North Holland Publishing Company.
- Graff, J.D.E.V.(1975) : Theoretical Welfare Economics, Vikas Publishing House.(For CompensationPrinciple)
- Bator, M. F. (1957): "The Simple Analysis of Welfare Maximisation", American Economic Review,vol47. Reprinted in Townsend (ed): Readings in Price Theory, Penguin.

Macroeconomic Analysis
Course: MECOCCT 102

Unit	TOPIC	Hour	Marks
I	Revision of Basic ideas	4	40
	National Income Analysis. Simple Keynesian model (open economy version-with and without repercussion effects), IS-LM model. Aggregate demand (CM)-Aggregate supply (NN) version of the Keynesian model, definition of involuntary unemployment, unemployment equilibrium, differences of Keynes with the classical ideas		
II	Disequilibrium Interpretation of Keynesian Unemployment	12	
	Disequilibrium Models of Patinkin, Clower and Barro-Grossman		
III	New Classical Macroeconomics and Rational Expectations Theory	12	
	Basic ideas of New Classical Macroeconomics. The Rational Expectations Theory-meaning-Differences with Adaptive Expectations. The Lucas Imperfect Information Model and Rational Expectations. Implications and Limitations- The Phillips Curve and Lucas critique		
IV	Real Business Cycle Theory	12	
	A Baseline Real Business Cycle Model. Household Behaviour. A Special Case of the Model and its Solution. Productivity Shocks, Consumption and Capital Accumulation. Output and Employment Fluctuations. Unemployment, Heterogeneity, Shocks and Imperfect Information		
V	New Keynesian Macroeconomics	10	
	Menu costs and the need for real rigidity. Co-ordination failure models and real non-Walrasian theories. Efficiency wage model and the theories of unemployment. Shapiro-Stiglitz Model. Implicit contract. Insider-outsider model Hysteresis. Search and matching models		
VI	Elements of Open Economy Macroeconomics	10	

	Macroeconomic equilibrium using open economy IS-LM versions under fixed and flexible exchange rates. Small economy model and two-country model. World capital Market equilibrium.		
	Internal Assessment		10

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Mathematical Economics

MECOCCT 103

Unit	TOPIC	Hour	Marks
I	Static Optimization	18	40
	Global/Local; Unconstrained optimization (single variable case) First Derivative Test, Second Derivative Test, (Unconstrained optimization) – Multi-variable case-Hessian determinants. Homogeneous and Homothetic functions. Convexity and concavity conditions, local-global theorem. Constrained optimization. Lagrange multiplier method-Bordered Hessian determinants. The Slutsky equation and its implications. Constrained Multi-variable optimization with Equality Constraints. Constrained multivariate optimization with inequality constraint Kuhn- Tucker Conditions, Graphical Solution, Economic Interpretation of Kuhn – Tucker Conditions. Constraint Qualification-Kuhn-Tucker Sufficiency Theorem-Economic Applications. Envelope Theorem and its Applications Jacobian determinants and existence of solution		
II	Stability of Equilibrium in a 2× 2 non-differential equation system- Phase diagram techniques	6	
	Qualitative solutions of non-linear differential equations. Non-linear differential simultaneous equations. Phase diagram techniques. Stability check: Concepts of stable node, stable focus, unstable node, unstable focus, saddle point etc. Use of characteristic equations and characteristic roots in determining stability. Economic applications of phase diagram techniques in macroeconomic theory and growth theory.		
III	Dynamic Optimization Theory	26	
	Lagrangian vs Hamiltonian . Control theoretic problem. Use of Hamiltonian-		

	finite and infinite time horizon cases with discrete and continuous time points. The control, state and co-state variables. The steady-state. Current value Hamiltonian. Difference with present value Hamiltonian. Finite and infinite time horizon cases with discrete and continuous time points. Economic applications of control theory		
IV	Input-Output Analysis	10	
	Leontief Static Open Model-primary input vector-final demand vector-the output system. The Hawkins-Simon condition -algebraic and graphical proof and economic interpretation. The Solow condition. The price system with economic implications. The substitution theorem. Leontief Static Closed Model-Determination of relative output-Hawkins-Simon condition with economic interpretation. Basic ideas of Leontief Dynamic Model.Linkage Analysis: Different types, Measurement of Linkages.		
	Internal Assessment		10

References			
<ul style="list-style-type: none"> • Allen, R. G. D. (1974): Mathematical Analysis for Economists, Macmillan Press and ELBS. London • Baumol, W. J. (1984): Economic Theory and Operations Analysis, Prentice Hall, Englewood Cliffs, New Jersey. • Chiang, A. C. (1986): Fundamental Methods of Mathematical Economics, McGraw Hill, New York. • Dixit, A.K(1989): Optimization in Economic Theory, Oxford University Press. • Henderson, J.M. and Quandt, R.E. (1980) : Microeconomic Theory: A Mathematical Approach, 3rd Edition, McGraw-Hill Book Company. • Hands, D. W. (2004) : Introductory Mathematical Economics, 2nd Edition, Oxford University Press, New York. • Gravel, H. and Reese, R. (1992): Microeconomic Theory, Longman, London (2nd Edition) • Hadley, G. (1962): Linear Programming, Addison Wesley, Publishing Co. Massachusetts. • Dorfman, R., Samuelson, P.A. and Solow, R.M. (1958) : Linear Programming and Economic Analysis, McGraw-Hill Book Company. • Intriligator, M.D. (1971): Mathematical Optimization and Economic Theory, Prentice Hall, Englewood Cliffs. • Lancaster, K (1968): Mathematical Economics, Macmillan, New York. • Silberberg E and Suen, W.: The Structure of Economics-a Mathematical Analysis, 3rd edition, McGraw Hill Publishing Company, International Edition. • Leontief, W. (1966): Input-Output Economics, Oxford University Press, New York. • Pal, D.P. : Structural Interdependence and Development, Himalaya Publishing House, Bombay. • Kundu, A. (1976): Input-output Framework and Economic Analysis, K. B. Publications, New Delhi. • Sydsacter, K. and Hammond, P.J. : Mathematics for Economic Analysis, Pearson Education. • Charavarty S.R. (2010): Microeconomics Allied Publishers Pvt Ltd. • Sen, A. (1999): Microeconomics; Theory and Applications, Oxford University Press, New Delhi. • Chiang, A. C. (1992) : Elements of Dynamic Optimization, McGraw-Hill, Inc. • Conrad, J.M. and Clark, C.W (1987): Natural Resource Economics: Notes and Problems, Cambridge University Press. 			

Public Economics-I MECOCCT 104

Unit	TOPIC	Hour	Marks
I	Role of Government	16	

	Government in organized society, Government as an Agent for Economic Planning and Development; as a Tool for operationalising the Planning Process, Changing Role of Government, Normative approach to public finance- Allocation, Distribution and Stabilization branch; Private goods, Public goods and Merit goods; Market Failure –Free rider problem, Imperfection, Decreasing Costs, Externalities; Pigouvian taxation, Coase theorem; theory of Second Best		
II	Public Policy	22	
	Optimum Provision of Public goods: Efficiency and Distribution, Private provisioning Vs public provisioning of public goods, Voluntary exchange models; Impossibility of decentralized provision of public goods (contributions of Samuelson and Musgrave); Pure Theory of Public Expenditure, Demand Revealing Schemes for Public Goods- Contributions of Clarke, Groves and Ledyard. Fiscal policy: Objectives, fiscal policy for stabilization, balanced budget multiplier, automatic vs. discretionary stabilization, alternative methods of resource mobilization and their impact on growth, distribution and prices		40
III	Public Expenditure	22	
	A review of Wagner's law, Colin Clark's critical limit hypothesis, Baumol's law; Criteria for Public Investment; Social Cost-Benefit Analysis, Evaluation under risk and uncertainty, Pricing in the Public Sector- The Ramsey-Boiteux linear pricing model, Peak load pricing, marginal cost pricing, Reforms in expenditure budgeting; Program budgeting and zero base budgeting.		
	Internal Assessment		10

References	
<ul style="list-style-type: none"> • A. Atkinson and J. Stiglitz (1980), Lectures on Public Economics, McGraw-Hill • A. Bagchi (ed) (2005), Readings in Public Finance, OUP • John Cullis and Philip Jones, Public Finance and Public Choice, OUP • R. Jha (1997), Modern Public Economics, Routledge • Hindriks, Jean and Gareth D. Myles, Intermediate Public Economics, Prentice Hall of India • Auerbach, A.J. and M. Feldstern (Eds) (1985), Handbook of Public Economics, Vol. I. North Holland Amsterdam. • Musgrave, R.A and P.B. Musgrave (1976), Public Finance in Theory and Practices, McGraw Hill Kogakusha, Tokyo. 	

Development Economics MECOCCT 105

Unit	TOPIC	Hour	Marks
I	Measuring Economic Development	14	
	Measurement of development and development gap: GDP, Per capita income, Gini coefficient, Calculating the human development indices-HDI, HPI-1, HPI-2, GDI, GEM; A critical analysis of the most recent Human Development Report, Criticism of Human Development Index (HDI) as a measure of economic development		
II	Theories of Development	16	
	Classical theory of development - contributions of Adam Smith, Ricardo, Malthus; Karl Marx and development of capitalist economy - theory of social change, surplus value and profit; Crisis in capitalism - Schumpeter and capitalistic development; innovation - role of credit, profit and degeneration of capitalism;		40
III	Partial theories of growth and development	20	
	Measurement of Poverty. Vicious circle of poverty, circular causation, Economic Inequality and its Measurement. Poverty and Under nutrition.		

	Unlimited supply of labour, Rural-Urban Migration: Harris-Todaro model, Rural-Urban wage gap, Big push, Balanced growth, Unbalanced growth, Critical minimum effort thesis, Low-income equilibrium trap; Dualism - Technical, Behavioural and Social; Ranis and Fei model; dependence theory of development		
IV	Issues in Micro- Finance	10	
	Micro Finance mechanisms: Peer Selection, Peer monitoring and dynamic incentives solution to moral hazard, adverse selection, and costly state verification; Country Experiences. Strength and weaknesses of micro -finance programme		
	Internal Assessment		10

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<ul style="list-style-type: none"> • Todaro, M P. Economic Development, Perason India. • Thirwal, A.P. Growth and Development, Palgrave Macmillan. • Ghatak, S. An Introduction to Development Economics, Allen and Unwin • Kindleberger, C.P. Economic Development, McGraw Hill, • Adelman, I. Theories of Economic Growth and Development, Stanford University Press. • Barro U. K., Robert J and Xavier Sala-i-Martin, Economic Growth, PHI. • Dasgupta, P. An Enquiry into Well-being and Destitution, Clarendon Press • Higgins, B. Economics Development, W.W. Norton • Hogendorn J.S. Economic Development, Addison, Wesley, New York. • Ray, D. Development Economics, Oxford University Press • Sen, A. Poverty and Famines: An Essay on Entitlement and Deprivation Oxford University Press • Basu, K.: The Less Developed Economy, Basil Blackwell. • Basu, K.: Analytical Development Economics, MIT Press • Harris J.R. and Todaro, M.P. (1970) : “ Migration, Unemployment and Development : A Two- Sector Analysis”, American Economic Review, 60: 126-142. • Corden, W.M. and Findlay, R (1975) : “Urban Unemployment, Intersectoral Capital Mobility and Development Policy”, Economica, 29: 59- 78. • Harper, M.(ed) (2003): Microfinance: Evolution, Achievements and Challenges , I.T.D.G. Publishing Company. • Fisher, T and Sri Ram (2003): Beyond Microcredit: Putting Development Back into Microfinance, Sage Publishing Company. • Articles on Microfinance from Journal of Development Economics • Jones R.W(1979): International Trade: Essays in Theory, Amsterdam, North Holland • Chaudhuri, S. and Mukhopadhyay, U (2009): Revisiting the Informal Sector: A General Equilibrium Approach, New York, Springer. • Parikh K.S. and Sudarshan, R.(1993): Human Development and Structural Adjustment, MacMillan India Ltd., Madras. • National Human Development Report (2002), Planning Commission. Oxford University Press. • Various Human Development Reports, UNDP • Indian Human Development Reports • State Human Development Reports 	

Basic Econometrics-I

MECOCCT 106

Unit	TOPIC	Hour	Marks
I	Review of Basic Statistical Tools	27	
	Fundamentals of Probability: Random variables and their probability distributions, Mathematical Expectation and its Properties, Joint distributions,		

	conditional distributions and independence, Probability Density Function, Normal and related distributions, Central Limit Theorem Estimation: parameter and statistic, estimates and estimators, point estimators and its properties (small sample and asymptotic properties), confidence intervals for population parameters Hypothesis Testing: Defining statistical hypotheses; null vs alternative hypotheses, Type I and Type II errors; power of a test; the concept of degrees of freedom; testing hypotheses related to population parameters based on Z, t, χ^2 and F-tests.		
II	Regression Models Two-variable linear regression model, Assumptions, OLS method of estimation and properties of the estimators, Gauss-Markov theorem, Standard Errors of regression coefficients, Concepts and derivation of R^2 and adj R^2 , Prediction, Normality assumption, Statistical inference, Maximum likelihood estimation; Three variable linear regression model- OLS estimators and their properties, adj R^2 , Inferences.	26	
III	Problems in Regression Analysis Heteroscedasticity: Meaning of heteroscedasticity. Problems created by its Presence, Testing for its presence, Estimating Methods in its Presence. Tests for heteroscedasticity Autocorrelation: Meaning of Autocorrelation. Problems created by its Presence. Concept of autoregression. Testing for its presence Estimating Methods in its Presence Multicollinearity: Meaning of multicollinearity, Problems created by its presence, Testing for its Presence, Estimating Methods in its Presence	22	40
IV	Regression with Qualitative Regressors Dummy Independent Variables – When to use; Classification system; Dummy Variable Trap; Interpretation of estimated coefficients; Class-effect and Interaction-effect; Applications	15	
	Internal Assessment		10

References	
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SEMESTER-II
(Duration: January -- June)

Microeconomic Analysis-II
Course: MECOCCT 201

Unit	TOPIC	Hour	Marks
I	Theory of Uncertainty Distinction between risk and uncertainty-Individuals behaviour towards risk-Contingent Consumption- Von-Neumann –Morgenstern expected utility function- Properties- uniqueness of the expected utility function – positive affine transformation-consumer's equilibrium under uncertainty- utility function and the measures of risk –aversion-example Gambling and Insurance - Risk Aversion- Arrow-Pratt measures of risk aversion-absolute and relative measures- - Convexity of Indifference curves and the shape of Von-Neumann-Morgenstern utility function-Allocation of wealth to risky asset. Theory of firm under uncertainty	22	40
II	Economics of Information Limited Information about Quality. The market for Lemons. Adverse Selection. Moral Hazard. Solving the Problem: Cases of Equal Information. Signaling. The Principal-Agent Problem. Value of Information	16	
III	Selected topics on Industrial Organization Structure, conduct and performance paradigm. Cournot market structure in n-seller game; Cournot market structure with heterogeneous firms. Bertrand model. Price game with differentiated product. Durable goods monopoly: concepts of renting and selling, natural monopoly. Concept of price regulation; multi-product pricing, Auman – Shapley pricing, Ramsey pricing, concept of two part tariff. Concentration, merger and entry deterrence. Concept of Advertising, Dorman-Steiner condition, Advertising and Market Structure	22	
	Internal Assessment		10

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- Mookherjee, D. (1995): Indian Industry: Policies & Performances, Oxford University Press,New Delhi.
- Chakravarty, S.R. (1996): Issues in Industrial Economics, 2nd Print, Avebury, Aldershot.

Growth Economics
Course: MECOCCT 202

Unit	TOPIC	Hour	Marks
I	Revision of Basic ideas of Growth Theory	8	40
	Harrod-Domar Models		
II	The Solow-Swan Model	12	
	Steady-state equilibrium-Effects of increase in savings rate-Golden Rule of capital accumulation-Impact of technological progress-absolute versus conditional convergence applicability of the model. Neutrality of Technical Progress and Returns to scale-different types of technological progress-technical progress function		
III	Two-Sector Growth Model	4	
	Uzawa's model		
IV	The Kaldor Model	4	
	Equilibrium and stability-Impact of technological progress		
V	Ideas of Pasinetti, Meade and Joan Robinson in the theory of economic growth	4	
VI	Foundations to Endogenous Growth Theory: Infinite Horizon and Overlapping-Generations Model	12	
	The Ramsey-Cass-Koopmans Model. Assumptions- the behavior of households and firms-the dynamics of the economy-the balanced growth path-the effects of a fall in the discount rate, the effects of government purchases. The Diamond model. Assumptions-household behavior-the dynamics of the economy the possibility of dynamic efficiency-government in the Diamond model.		
VII	Endogenous growth model	16	
	Framework and assumptions : differences with exogenous growth. Introduction to endogenous growth theory. Models of Lucas,Romer and Barro		
	Internal Assessment		10

References

- Dasgupta D.(1998) :The Macroeconomy : A Text Book View, Oxford University Press, New Delhi.
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Game Theory

Course: MECOCCT 203

Unit	TOPIC	Hour	Marks
I	Static games of complete information	17	40
	Normal (Strategic) form representation of non-zero sum games: Iterated elimination of strictly dominated strategies- concept of Nash equilibrium- Examples of pure Strategy equilibria: Non existence of pure strategy equilibria; Prisoners’ Dilemma-Multiple Nash Equilibria; Cournot model of duopoly – final offer arbitration, the problem of the commons- mixed strategies.		
II	Dynamic game with complete information	20	
	Extensive Form Games; multistage Games; Extensive Form, Multistage Games with observed actions - Commitments; Strategies and Equilibria in Extensive Form games concept of backward induction - Stackelberg game - wages and employment in a unionised firm. Two stage game of complete but imperfect information – concept of sub game; concept of information set; Sub game perfect Nash equilibrium - three period bargaining game - two stage repeated games; Repeated games with observed actions Infinitely repeated games – concept of trigger strategy- folk theorem		
III	Static game of incomplete information	13	
	Cournot competition under asymmetric information.- normal form representation of static Bayesian games, concept of static Bayesian Nash equilibrium- battle of the sexes game in the framework of static game with incomplete information		
IV	Dynamic game with incomplete information	10	
	Basic ideas. Concept of sequential Rationality, concept of perfect Bayesian equilibrium		
	Internal Assessment		10

References

- Gibbons, R. (1992): Game Theory for Applied Economists, Princeton University Press, Princeton, New Jersey.
- Kreps, D. (1990): Game Theory and Economic Modelling, Oxford University Press, Oxford.
- Kreps, D. (1990): A Course in Microeconomic Theory, Princeton University Press, New Jersey.
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Public Economics-II

MECOCCT 204

Unit	TOPIC	Hour	Marks
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I	Taxation	20	40
	Properties of a good tax structure, Benefit and Ability-to-pay approaches; Impact of taxation on price, output, work effort, saving, investment and risk taking, Theory of incidence, Alternative concepts of incidence; Allocative and equity aspects of income tax and commodity tax; Theory of optimal taxation-The Inverse Elasticity Rule and the Ramsey Rule; Efficiency of Taxation-Excess burden and deadweight loss; Tradeoff between equity and efficiency; The problem of double taxation, Tax evasion and the black economy; Tax reforms in India.		
II	Public Debt	20	
	Classical View of Public Debt; Ricardian equivalence, Keynesian and post-Keynesian theories, Compensatory aspect of debt policy, Debt Through Created Money; burden of public debt, Intergeneration equity, debt sustainability, Public Borrowings and Price Level; Crowding Out of Private Investment and Activity; principles of debt management, Methods of debt redemption, debt retirement and economic stabilization, Trends and Structure of Indian Public Debt; Issues in Debt Management in India.		
III	Fiscal Federalism	20	
	Principles of multi-unit finance; Fiscal federalism in India; Assignment of function and sources of revenue; Constitutional provisions; Finance 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, The recent most report of the Finance commission of India		
	Internal Assessment		10

References	
<ul style="list-style-type: none"> • A . Bagchi(ed) (2005), Readings in Public Finance, OUP • Ambar Ghosh and Chandana Ghosh, Economics of the Public Sector, PHI • Raghbendra Jha, Modern Theory of Public Finance, New Age International (P) Ltd. • A. Atkinson and J. Stiglitz (1980), Lectures on Public Economics, McGraw-Hill • Auerbach, A.J. and M. Feldstern (Eds) (1985), Handbook of Public Economics, Vol. I. North Holland • Musgrave, R.A and P.B. Musgrave (1976), Public Finance in Theory and Practices, McGraw Hill • R. Jha (1997), Modern Public Economics, Routledge • Report of recent most Finance Commission of India 	

Economics of Finance MECOCCT 205

Unit	TOPIC	Hour	Marks
I	Decision –Making under Uncertainty	9	
	Decision Making under Uncertainty :an Alternative Representation. Decision Making and Expected Utility. Stochastic Dominance and Attitude towards Risk. Mean- Variance Analysis: A Special Case of the Expected Utility Approach		
II	Symmetric Information: Markets	7	
	Portfolio Choice. The Mean- Variance Approach and Capital Asset-Pricing		
III	Systems of Financial Markets	8	
	Some Preliminary Considerations and Definitions. Spot Markets. Contingent Claims Markets. Arrow Securities. Ordinary Securities Markets. Incomplete Markets		

IV	Arbitrage and Option Pricing	6	40
	Arbitrage. Option Pricing		
V	Firms and Financial Markets	8	
	Firms and Stock Market Equilibrium. Separation of Ownership and Control. The Financial Structure of the Firm		
VI	Asymmetric Information: Contracts	8	
	Debt Contract and Credit Rationing. Adverse Selection in Insurance Markets. A Standard Debt Contract. Credit Rationing		
VII	Deposit Contracts and Banking	7	
	Banks as Deposit –Taking Institutions. The Optimal Contract. Problems of Deposit Contracts: Bank Runs. Adverse Information, Bank Failures and Bank Runs		
VIII	Regulation of Banks	4	
	Bank Regulation: The Rationale. Reserve Requirements. Suspension of Convertibility. Deposit Insurance. Capital Adequacy Requirement		
IX	Towards Application	3	
	Financial Markets and Financial Intermediaries in Theoretical Context. Financial Markets and Financial Intermediaries in Evolutionary Context		
	Internal Assessment		10

References	
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Basic Econometrics-II

MECOCCT 206

Unit	TOPIC	Hour	Marks
I	Regression with Dummy Variables	20	40
	Dummy independent variables-dummy variable trap, Testing structural stability of regression models comparing two regressions, interaction effects, estimating seasonal effects, ANOVA vs ANCOVA, piecewise linear regressions; Panel data regression models-estimation methods- fixed effects vs random effects approaches		
II	Dynamic Econometric Models	20	
	Distributed lag models- Koyck’s geometric lag, Almon’s polynomial lag, Partial adjustment and adaptive expectation models; Autoregressive models- estimation by using instrumental variables, Detecting autocorrelation in autoregressive models- Durbin h-test; error correction mechanism, Causality in economics- Granger and Sim’s tests.		
III	Simultaneous Equation Models	20	
	Simultaneous equation bias and inconsistency of OLS estimators, Identification- rank and order conditions, Estimation- Recursive system, ILS, 2SLS, LIML, 3SLS methods		
	Internal Assessment		10

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SEMESTER-III
(Duration: July -- December)

Indian Economic Policy
Course: MECOCCT 301

Unit	TOPIC	Hour	Marks
I	Indian Economy Issues and Planning in India	15	40
	Broad demographic features of Indian population; Population Policy and its development, migration and urbanization issues; Poverty and Inequality - major issues and critical appraisal of government measures; Food security, food procurement and PDS. Planning in India: Objectives and strategy of planning; Types and structure of planning, Achievements and failures of planning in India; Recent Plan – objectives, allocation and targets.		
II	Economic Reforms and External Sector of India	20	
	Rationale for reforms and LPG policy; W.T.O. and its impact on Indian Economy; Need for and issues in good governance. Structure and direction of foreign trade; Balance of payments crisis; Balance of payments in post reform period; export-import policy and trade liberalization; progress of trade reforms in India; Latest foreign trade policy; foreign exchange management - FERA AND FEMA; currency convertibility; foreign capital and MNCs in India.		
III	Issues in Agriculture Sector of India	16	
	Critical evaluation of Land reforms in India and recent initiative; need for second Green revolution; policies for sustainable agriculture; modern farm inputs and subsidies; agricultural marketing and price policy commercialization and diversification of agriculture; New Agricultural Policy.		
IV	Issues in Industrial Sector of India	19	
	Scenario since Industrial policy of 1991; Public Sector enterprises and their performance; Privatization and disinvestment debate; Problem of sick units in India and government policy; revival of Small scale sector; Land acquisition, SEZ and Industrialisation., Exit policy – issues in labour market reforms		
V	Growth and Development of West Bengal Economy	20	
	A macro glance of West Bengal's economy; West Bengal Economy in relation to India and major states in recent decades: in terms of indicators on - per capita SDP, per capita consumption (rural and urban), income growth, human development.; policies relating to social sector; state of infrastructure in West Bengal and project initiated to improve; Agriculture and allied sector in West Bengal and policies initiated by government, issues in agricultural sector; industrial development- Problems and Prospects; Tertiary Sector Growth.; public finance of West Bengal.		
	Internal Assessment		10

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Economics of Resource Course: MECOCCT 302

Unit	TOPIC	Hour	Marks
I	Economics of Exhaustible Resources	10	40
	Optimal extraction of an exhaustible resource. Dynamic framework with optimal control-competitive and monopolistic mining. Towards a backstop-exploration and technical progress		
II	Economics of Renewable Resources: Fishery	18	
	Static model of fishery-logistic specification-the concept of maximum sustainable yield (MSY)-concepts of fish catch, fishing effort and fish stock-Gordon-Schaefer production function. Static optimization under alternative fishery management regimes-open access solutions. Dynamic model of fishery-application of control theory-steady-state levels of fish catch, fishing effort and fish stock. Graphical illustration of dynamic model-derivation of the catch locus-open access vs private property solutions. Fishery and fish biodiversity. Ecological and economic biodiversity. Biodiversity incorporated in the fishery model. Mangrove-fishery linkages. Illustrations from simulation models. Mangrove-fishery linkages in the Indian context. Basic ideas of the theory of aquaculture shrimp farming		
III	Economics of Renewable Resources : Forestry	10	
	The volume function and mean annual increment. The optimal single rotation. The Faustmann rotation. Timber supply. The optimal stock of old growth forest		
IV	Irreversibility, Uncertainty and Economic Development	10	
	Wilderness development. Individual decision making in the face of risk. Option price and option value. Risk and irreversibility. Environmental cost-benefit analysis revisited. Choices under uncertainty. A safe minimum		

	standard of conservation. Learning , Bayesian updating and search. A model of irreversible development		
V	Sustainable Development	12	
	Concept of sustainable development-alternative definitions-sustainable development rules indicators of sustainable development-measures of sustainable development. Sustainable accounting-economics of green accounting and sustainable resource management net national product and environmentally adjusted net national product. Issues related to environmentally adjusted net national product and sustainable resource management-control theoretic applications-illustrations with various types of non-renewable and renewable resources. Poverty and environment-the concept of sustainable livelihood. Poverty, environmental degradation and the economics of common property resources		
	Internal Assessment		10

References	
<p>Books</p> <ul style="list-style-type: none"> • Conrad, J.M. and Clark, C.W (1987): Natural Resource Economics: Notes and Problems, CambridgeUniversity Press. • Conrad, J.M.(1999) : Resource Economics, Cambridge University Press. • Fisher, A.(1981) : Resource and Environmental Economics, Cambridge University Press. • Bhattacharyya, R.N. (2001) :Environmental Economics : Indian Perspective, Oxford University Press. • Hanley,N., Shrogen J.F. and White B. (1997) : Environmental Economics in Theory and Practice, Macmillan. • Perman R., Ma Y., McGilvary, J and Common, M (1999) :Natural Resources and Environmental Economics, 2nd Edition , Prentice Hall. • Bromley, D.W. (1995): Handbook of Environmental Economics, Blackwell. • Pearce, D.W. and Turner,R.K. (1991) : Economics of Natural Resources and the Environment, HemelHempstead, Harvester-Wheatsheaf. • Dasgupta, P. S. and Heal, G.M. (1980) :Economic Theory and Exhaustible Resources, Cambridge University Press. • Dasgupta, P. S.(1982) : The Control of Resources, Harvard University Press. • Chattopadhyay Gupta, A. (2010) :BioeconomicModelling for Fish Biodiversity and Profitability : AnEcological economic Analysis in Search of a Tradeoff, LAP LAMBERT Academic Publishing, Berlin. <p>Articles</p> <ul style="list-style-type: none"> • Kasulo V. and Perrings, C. (2001): “Fishing down the Value Chain: Modeling the Impact ofBiodiversity Loss in Fresh Water Fisheries-the Case of Malwai”-Mimeographed, Environment Department, University of York, UK. • Kasulo V. and Perrings, C. (2006): “Fishing down the Value Chain: Biodiversity and Access Regimesin Freshwater Fisheries-the Case of Malwai”, Ecological Economics,59: 106-114 • Barbier,E.B. and Strand, I (1998) : “Valuing Mangrove-Fishery Linkages: A Case Study ofCampeche,Mexico”, Environmental and Resource Economics, 12: 151-166. • Gupta,K.(2005) : “Mangrove-Fishery Linkages under Alternative Policy Regimes” in Sengupta, N.and Bandyopadhyay, J. (eds) “Biodiversity and Quality of Life” :272-293, Macmillan, New Delhi. • Anderson,J.M. (1985) : “Market Interactions Between Aquaculture and Common PropertyCommercial Fishery”, Marine Resource Economics, 2(1) : 1-24. • Montgomery, C. A. and Adams,D.M. (1995): “Optimal Timber Management Policies” in Bromley, D.W. (ed.) Handbook of Environmental Economics, Blackwell. • Baland, J.M. and Platteau J.P.(2003) : “Economics of Common Property Management Regimes” inMäler,K.G. and Vincent,J.R.(eds) Handbook of Environmental Economics, vol1, chapter4, 	

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International Economics

Course: MECOCCT 303

Unit	TOPIC	Hour	Marks
I	Pure Theories of International Trade	13	40
	Introduction to the International Economics, Trade Based on Absolute Advantage, Comparative Advantage and Opportunity Costs, The Standard Trade Model, Demand and Supply, Offer curves, and the Terms of Trade, Factor Endowments and the Heckscher-Ohlin Model (HOT, FPET, SST and RT), The Specific factors model.		
II	Jones (1965) Heckscher-Ohlin-Samuelson type model	11	
	Jones (1965) general equilibrium trade model for a small open economy. The role of the decomposability property. Equivalence of Factor-intensity conditions in physical and value terms. The Rybczynski Theorem. The Stolper-Samuelson Theorem-the price magnification effects. Effects on welfare. Policy implications of Jones (1965) model.		
III	Jones (1971) Specific-factor model	11	
	The basic structure-indecomposable nature of the model-implications of the indecomposable structure. Invalidity of Jones (1971) model in the presence of fixed coefficient technology. Impact of terms of trade on income earnings (factor earnings)-idea about inequality in earnings-modifications of the price magnification effects-role of elasticity of marginal productivity of labour elasticity of substitution. Policy implications of the model		
IV	Trade with labour market distortions	12	
	Distortions in Jones (1965) and (1971) models in terms of rigidity of manufacturing wage rate. The Harris –Todaro(1970) model and the Corden-Findlay (1975) model with migration-equilibrium condition. Modification of the capital-intensity condition in physical terms and validity of the Rybczynski and Stolper-Samuelson Theorems in Harris-Todaro (1970)/ Corden-Findlay (1975) model.		
V	Trade and welfare	16	
	Gains from trade : Gains from exchange and gains from specialization. Free trade is better than no trade. No trade is better than restricted trade. Foreign capital and welfare-the Brecher-Alejandro(1977) proposition. The Brecher-Alejandro(1977) proposition examined in terms of Jones (1971), Corden-Findlay (1975) and three-sector hybrid model like Beladi-Marjit(1992). Foreign capital, Gini coefficient and welfare. Foreign capital and informal sector		
VI	Theory of Tariffs and Quotas	12	
	Tariff and quota-partial equilibrium effects, general equilibrium effects, optimum tariff, Metzler’s paradox. Monopoly effects of tariffs and quotas. Tariff vs quota. Tariff and welfare.		
VII	North-South Trade Models	15	
	General introduction to North-South Model. Selected North-South Models: Models by Findlay (1980), Sarkar(1989), Chichilinski(1994) etc.		
	Internal Assessment		10

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Environmental Economics Course: MECOCCT 304

Unit	TOPIC	Hour	Marks
I	Economy and Environment	12	
	The historical development of environmental economics– Early economic paradigms and the Environment, Post war economics and the rise of environmentalism, Interaction Between Ecological and Economic Systems;		

	Environment-Development-Poverty Nexus; Sustainable Development-Concept and Operationalisation, Institutional economics Paradigm, The market model of environmental values, Sustainable economic growth and development, Environment economy interaction, The circular economy. Laws of Thermodynamics.Environmental Kuznets Curve (EKC): Concepts and Genesis. Explanations of inverted-U shaped EKC-empirical evidence- N-shaped EKC.		40
II	Environmental Pollution	8	
	Environmental Pollution as a Negative Externality (Pigou). The issue of Property Rights (Coase). Optimal Pollution		
III	Pollution Control	8	
	Pure Policies –emission fees, standard setting, tradable pollution permits. Hybrid Instruments- two-part tariff, double dividend hypothesis, illicit dumping, Pollution charges and abatement costs, Pollution reduction subsidies, Marketable pollution permits, The theory of marketable permits, The advantages of marketable permits, Types of permit system, Permit trading in practice.		
IV	Environmental Valuation	10	
	Meaning of environmental valuation, the uses of economic value, Total economic value, Option value, Existence value, Empirical measures of option and existence value, Total economic value and decision making; Direct and Indirect Valuation of Environmental Goods: The hedonic price approach, Contingent valuation, Travel cost approach, Household health production function, Willingness to pay vs. Willingness to accept		
V	Issues of Climate Change	6	
	Climate Change: Scale of the Environment Challenge, Economics, Ethics and Climate Change, Impact of Climate Change on Growth and Development		
VI	Global Issues and the Environment	8	
	Trade, Development and Environment-migration of dirty industries, the industrial flight and the pollution haven hypotheses, north-south trade and environment models. International/ Interregional cooperation-the issue of trans-boundary pollution- International meetings and summits		
VII	Environmental and Natural Resource Problems in India	8	
	Mechanism for environment regulation in India; Environmental laws and their implementation; Policy instruments for controlling water and air pollution and forestry policy; People's participation in the management of common and forest lands; The institutions of joint forest management and the joint protected area management; Social forestry - rationale and benefits.		
	Internal Assessment		10

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Open Elective Paper(For Other Stream)

Intellectual Property Rights Course: MECOOET 305 (4 Credit Hours Weekly)

Unit	TOPIC	Hour	Marks
I	General Regime of Intellectual Property Rights		10
	<ul style="list-style-type: none"> • Introduction and Need of Intellectual Property Rights • Concept of property and Theories – overview • Intellectual property as an instrument of development • International and National Perspective of IPR Policy 		
II	Types of Intellectual Property Rights		10
	<ul style="list-style-type: none"> • Patents: type ad kinds of inventions, granting and right, searching and filing • Copyrights and related rights: coverage, duration, ownership transfer and distinction between copyrights and related rights • Trademarks: need and rights, types, function and trademarks registration and extended protected. • Geographical Indicators: concept, how the geographical indicator is protected and need of protecting geographical indicator. • Industrial Design: concept, coverage and duration of protection of 		

	Industrial design.		
III	IPR and International Institutions		10
	<ul style="list-style-type: none"> World intellectual property organisation (WIPO): introduction, function and membership. GATT and WTO: Differences in concept and function, TRIPS, TRIMS and GATS. Agreement between WIPO and WTO New Treaties and Dispute settlement mechanism. 		
IV	Indian Law and IPRs		10
	<ul style="list-style-type: none"> The Patent act 1970, and further Amendments, Patentability criteria. The copyright Act, 1957 and its Amendments. The Design Act, 2000 Trade and Merchandise marks Act, 1958 and Trademark Act, 1999 		
	Internal assessment		10

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ii.	B.L. Wadhera, Law relating to Patent, Trademarks, Copyrights, Designs, and Geographical Indicators; Universal Law Publishing Pvt. Ltd. , India, 2000.
iii.	V.K. Ahuja, Law Relating to IPR, Lexis nexis, 2 nd Edition, USA, 1 June, 2013.
iv.	Intellectual Property Laws (Acts Only), Universal Law Publishing, 2015
v.	M.D. Janodia, Basic Concepts of Intellectual Property Rights, Manipal University Press, India, 2015.
vi.	Intellectual Property Rights- A Manual, Entrepreneurship Development and IPR Unit, Birla Institute of Technology and Science, Pilani, India (2007)

Outreach Course Paper(For Other Stream)

Outreach Programme **Course: MECOOPP 306** **(4 Credit Hours Weekly)**

Unit	TOPIC	Marks
I	Meaning of Research	5
	Basic principles of research, Theory building, facts, concepts, constructs and definitions, Variable and its attributes, Ethics in research, Types of Research (descriptive vs. analytical, fundamental vs. applied, qualitative vs. quantitative, conceptual vs. empirical, empirical vs. simulation based, conclusion oriented vs. decision oriented, etc.). The Time Consideration: Historical, Experimental and <i>Ex Post Facto</i> .	
II	Research Methods and Techniques	10
	Differences among them, the logical framework of investigation, the nature of problem and appropriate methodology, macro-level vs. micro-level research, problems in aggregation, methodology leading to methods and then techniques, analysis of historical records, participant or non-participant observation, mass observation, questionnaires, personal interviews, group interviews, case studies, small group study.	
III	Formulation of Research Problem	5
	Preparation of proposal, Review of literature, formation and types of hypothesis and testing of the hypothesis, Research designs, sampling designs, methods, techniques and tools of research, Creativity, innovation, originality and advancement of knowledge and application to the society. Methods of Data Collection, Primary Data Collection (<i>Constructing Questionnaire</i>), Secondary Data Collection, Case study	

	Method, Measurement of Attitudes – Scaling Techniques, Qualitative approaches in Case study, Ethnography, Phenomenology, Grounded theory, Qualitative research tools like observation, TMT test, Focus group, interviews etc.	
IV	Communication and Evaluation of Research	30
	Report writing and the writing of research papers, Presentation of research proposals, Evaluation of research report, Presentation of research: Oral and Written (abstracts/synopsis)	

SEMESTER-IV
(Duration: January -- June)

Economics of Social Sector
Course: MECOCCT 401

Unit	TOPIC	HOURL	
I	Social Services	10	40
	Private Vs. public sector financing, Recent debate on the fixation of prices of social services in India during successive five- year Plans, Current performance of social sectors in India-Labour and employment, Education, Population, Family welfare, Health water supply and sanitation, Development of women and children, Social welfare		
II	Welfare Economics, Social Sectors and Environment	10	
	Pareto optimality and competitive equilibrium, Fundamental theorem of welfare economics, Externalities and market inefficiency externalities as missing markets, Property rights, non-convexities and externalities, Pareto optimal provision of public goods-Lindahl's equilibrium.		
III	Economics of Education	10	
	Education as an instrument for economic growth, Human Capital vs Physical Capital, Components of Human capital, Private demand and social demand for education, Determinants of demand for education Cost of education-Expenditure on education, Private costs and social costs and wastage and stagnation, Benefits of education – Direct and indirect benefits, Private and social benefits, Resource Mobilisation and Utilisation, Pricing and Subsidies, Effects of educational financing on income distribution		
IV	Health Economics	10	40
	Health dimension of development, Determinants of Health poverty, malnutrition and environmental issues, Economic dimensions of health care-demand and supply, Financing of health care and resource constraints, Distributional issues in health care delivery. Theory and empirical studies of production of health care, inequalities in health: class and gender perspectives		
V	Economics of Labour	10	
	Demand for and supply of labour, Rural urban migration and labour supply labour market policies, Social security of labour, Some specific problems of labour-child labour, Female labour, Globalization and Market for labour, Labour Market reforms-exit policy, need for safety nets. Technological change in organized private sector industries and employment. Analysis of education unemployment.		
VI	Gender and Development	10	40
	Women as a constituency in development, GDI and GEM ; Participation in productive and unproductive work, visibility of work, paid and unpaid labour,		

	agriculture, industry and informal sector labour, wage differential, skill and technology; Access to resources, land rights, credit, micro-finance and self-help groups. Women in the Peasant Household-time allocation and economic role of peasant farm women etc.		
			10

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Special Paper-A
Advanced Econometrics-I
Course: MECOMET 402A

Unit	TOPIC	Hour	Marks
I	General Linear Regression Model (GLRM) K-variable GLRM-Assumptions, Estimation, BLUE Properties, Inference Analysis, Applications. Tests of linear restrictions. Pooling of data and Chow Test. Consequences of Specification Error. Principal Component Analysis with application. Sources of Lagged variables. Consequences of applying direct OLS in Distributed Lag Models. Koyck Transformation. Geometric Lag models.. Estimation and stability of a Dynamic equation. Forecasting using dynamic models	12	40
II	Qualitative Dependent Variable Models The Linear probability Model(LPM). The Logit Model. The Probit Model. The Tobit Model. Theory and Applications	10	
III	Univariate Time series Modeling Properties of time series, Properties of AR, MA, ARMA, ARIMA processes, Stationary stochastic process- Random walk and white noise, Tests for Stationarity- ACF and Sample Correlogram, Barlett's test, Box-pierce Q-test, Ljung-Box test, Unit Root Tests, Trend Stationary and Difference Stationary process, ARIMA models- identification, estimation, diagnostic testing, forecasting- MA(1), ARMA(1,1) and ARIMA(1,1,0) processes, Seasonality	16	
IV	Modeling Volatility Linear time series model and its limitations, testing for nonlinear models; types of non-linear time series models: the ARCH model- testing for ARCH effects, estimation of ARCH model by iteration; the GARCH model, the GARCH (1,1) as an infinite ARCH(q), Maximum Likelihood Estimation of GARCH models, Introduction to EGARCH model	12	
V	Modeling with trends Deterministic and stochastic trends, removing the trend, Spurious Regression, Cointegration: a general cointegrated system, error correction model and tests for cointegration; cointegration in single equations- Engle-Granger method, CRDW test, system estimation method – Johansen procedure	14	
VI	Multi-equation Time series Models Vector Auto regressions (VARs): Advantages of VAR modeling, Choosing the optimal lag length for a VAR: Cross equation restriction and Information criteria, Contemporaneous terms and VAR, Estimation of VAR- Testing the order of the VAR, Block Significance and causality tests, Exogenous variables and VAR, the Impulse Response Function, Variance Decompositions; Vector Error Correction Models-testing for Cointegration Ranks, Estimation of Cointegration Vectors, Estimation of a Vector Error Correction model; Structural VARs, Identification conditions, Estimation of structural equations, Forecasting in VAR models,	16	

	Problems with VAR modeling		
VII	Panel data Methods	10	
	Sources and types of panel data, why should one use panel data: their benefits and limitations, Simple panel data methods-Policy analysis with Pooled Cross Sections, Two period panel data analysis, policy analysis with two period panel data analysis, Differencing with more than two time periods; advanced panel data methods- Fixed effects estimation, Random effects model, Wu-Hausman test, Dynamic Heterogeneous Panels: Bias in dynamic panels, solution to the bias problem, introduction to unbalanced panels.		
	Internal Assessment		10
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Special Paper-A
Advanced Econometrics-II
Course: MECOMET 403A

Unit	TOPIC	HOURL	
	Part-A (Simultaneous Equation System)		
I	Forms of Simultaneous Equation System	8	
	Structural, Reduced and Final Forms of Simultaneous Equation system with examples		
II	Identification Problem	8	
	The concept of identification with economic examples. Observationally equivalent structure. Order and Rank Conditions		
III	Estimation Problem	14	
	Consequences of estimating simultaneous equation system by OLS method. Unbiasedness and consistency of estimator-use of the concept of plim. Recursive system. ILS estimator with properties, IV estimator with properties, 2SLS estimator with properties, LVR estimator with properties, 3SLS estimator with properties		
	Part-B (Applied Econometrics)		
I	Demand Analysis	8	
	Difference between econometric and economic demand analysis. Econometric problem in estimating demand function. Difference between time series and cross section data. Problems related to pooling of time series and cross section data. Use of cross section data-Engel curve. Estimation of demand function of durable consumer goods, non-durable goods and perishable products		
II	Production Function Estimation	8	
	Problems in estimating Cobb-Douglas production function. Technical progress and production function-Solow and Wolfson's model. Difference between CES and VES production function. Estimation of CES production function		
III	Inequality and Poverty	8	
	Parametric and non-parametric measures of inequality. Lorenz curve and Gini		

	coefficient. Pareto and Log-normal distribution. Measurement of Poverty and Sen's poverty index		
IV	Macro-econometric applications	6	
	Features and goals of macroeconomic models. Problem of estimation of saving ratio, capital-output ratio-Kuznets study. Stages of Development of Macro Model- Indian Macro Models		
	Internal Assessment		10

References			
<ul style="list-style-type: none"> • Johnston, J. (1977 and 1984): Econometric Methods, 2nd and 3rd Editions, McGraw Hill. • Johnston, J. and Dinardo, J. (1997) : Econometric Methods, 4th Edition, McGraw Hill International Edition • Gujarati, D.N. (1995): Basic Econometrics 4th Edition, McGraw Hill, New Delhi • Maddala, G.S. (1997): Econometrics, McGraw Hill, New York. • Desai, M. (1976): Applied Econometrics, P. Allen. • Sen, A. On Economic Inequality • Nachane, D.M. (2006): Econometrics: Theoretical Foundations and Empirical Perspectives, Oxford University Press. • Intriligator, M.D. (1978): Econometric Methods, Techniques and Applications, Prentice Hall, New Jersey. • Krishna, K.L. (ed) (1999): Econometric Applications in India, Oxford University Press, New Delhi. 			

Special Paper-A
Advanced Econometrics-III
Course: MECOMET 404A

Unit	TOPIC	Hour	Marks
I	Probability Theory	10	40
	Definitions of probability: classical, frequency and axiomatic definitions with limitations. Theorems of total probability. Generalized theorem of total probability (Poincare's Theorem). Boole's inequality and Bonferroni's inequality: related corollaries. Conditional probability and statistical independence of two or more events. Pairwise and mutual independence of events.. Theorems on compound probability and independence of events : probability of occurrence of <i>exactly</i> m and <i>at least</i> m of n events. Matching problem. Exercises for calculating the probabilities of events when the sample space is finite, exercises based on theorems of total probability and compound/conditional probability. Baye's Theorem: statement , proof and applications		
II	Random Variable, Probability Functions and Expectations	4	
	Definition of random variables-discrete and continuous. Probability mass function and probability density function. Distribution function. Mathematical expectation-expectation of random variables and moments-theorems on mathematical expectation. Moment generating function, cumulants, characteristic functions		
III	Convergence in probability : Law of Large Numbers	3	
	Chebycheff's Lemma and Chebycheff's inequality. Weak Law of Large Numbers. Bernoulli's Law of Large Numbers. Central Limit Theorem		
IV	Discrete Theoretical Distributions	10	
	Binomial, Poisson, Hypergeometric and Negative Binomial Distributions. Mean, variance, skewness, kurtosis of these distributions with the help of moment		

	generating functions and other methods. Simple problems and applications of these distributions in different fields.		
V	Continuous Theoretical Distribution Rectangular, Normal, Lognormal and Pareto distributions.. Mean, variance, skewness, kurtosis of these distributions with the help of moment generating functions and other methods. Simple problems and applications of these distributions in different fields.	9	
VI	Bivariate Probability Distribution Jointly distributed random variables-marginal distribution. Bivariate discrete distribution. Joint density function. Bivariate normal distribution :properties and uses	4	
VII	Sampling Theory Revision of Simple random sampling with and without replacement-mean and standard error. Mean and standard error of sample proportion. Stratified random sampling. Other types of sampling: systematic sampling, multistage sampling, purposive and quota sampling, probability proportional to size (pps) sampling.	6	
VIII	Sampling Distribution Revision of earlier ideas on four basic distributions: standard normal deviate, chi-square, t and F. Some major results in the context of these distributions. Uses of above-mentioned distributions in statistical inference	4	
IX	Statistical Inference Revision of earlier ideas on estimation theory like point estimation, maximum likelihood estimation and interval estimation (already taught in semester I).. Revision of earlier ideas on testing of hypothesis like Neyman-Pearson Theory of Testing of Hypothesis – Type I & Type II Errors and Power of Test. Simple Parametric Tests based on z, t, X^2 and F Distributions – Small Sample Tests, Large Sample Tests. Additional things to be taught under testing of hypothesis: (a) Test for observed correlation coefficient (b) Use of paired t and z-transformation. (c) Pearsonian chi-square and test for goodness of fit. Test for independence of attributes-Yate's correction for continuity.	10	
	Internal Assessment		10

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Special Paper-A
Advanced Econometrics-IV
(Dissertation Paper)
Course: MECOMET 405A

Students will have to prepare a project report using computer softwares related to econometric and statistical packages and primary/secondary data. **The project report will be evaluated by the departmental teachers and 30 marks will be allotted for that. For viva-voce and/or presentation of the project report 20 marks will be allotted. During the viva-voce and/or presentation one external will be present along with the departmental teachers for evaluation.** No supervisor will be allotted for each student. Students will be given a list of topics and the concerned teachers will give some general guidelines. Students will have to prepare the project reports on their own. There should be some demonstration about the use of computer softwares in the computer laboratory.

UNIT	TOPIC	Hour/Week	Marks
I	Submission of Schematic Proposal (Format will be supplied by the Department)	2 Weeks	30
II	Preparation & Submission of Questionnaire/Background/Objectives of the study	2 Weeks	
III	Data Collection, Processing & Analysis	6 Weeks	
IV	Submission of Final Report	4 Weeks	
V	Viva-Voce		20

Special Paper-B
International Economics-I
Course: MECOMET 402B

Unit	TOPIC	Hour	Marks
I	Ricardian Trade Theory	8	40
	Revision of Ricardian Theory of Comparative Advantage. Generalization of Ricardian Theory. Ricardian Trade Theory in case of continuum of goods		
II	Neo-Classical Orthodox Trade Theory	24	
	Revision of general equilibrium trade models (a) Jones (1965) model along with its implications.(b) Specific factor model of Jones (1971). (c) Hybrid models of Jones (1965) and Jones (1971) along with its applications for developing countries. (d) General equilibrium trade models with labour market distortions· Some Refinements of the Orthodox Theory (a) Natural Resources, “Dutch Disease” and Deindustrialization (b) International Factor Mobility and Trade in Factors (c) Directly Unproductive(DUP) Activities and International Trade		
III	Trade Policy	24	
	Tariff-partial and general equilibrium effects-optimum tariff-tariffs and reciprocal demand curves-the Metzler and Lerner cases. Quotas and other non-tariff barriers: quotas, export duties, international cartels, other impediments to free trade. Intermediate goods and effective rate of protection. Distortions in domestic goods markets. Distortions in domestic factor markets. Preferential Trading Cooperation: the various degrees of cooperation, the effects of a Customs Union. The “New” Protectionism. Voluntary export restraints and import expansion. Subsidies. Administered and Contingent Protection and Fair Trade: dumping and antidumping, countervailing duty, safeguard actions		
IV	The Precursors to New Trade Theories	10	
	Technology Gaps. The Product Cycle. Income Effects: Linder’s Theory , Baker’s Variety Hypothesis. Intra-Industry Trade: Perfectly Homogeneous Goods and Differentiated Products		
V	The New Trade Theories and Strategic Trade Policy	24	
	The Neo-Heckscher-Ohlin Trade Theories and Trade Policy. Monopolistic Competition and International Trade: (a) Introduction, (b) A Model of Monopolistic Competition: Love for variety and demand, the production side, international trade, tariffs. Oligopoly and International Trade (a) Homogeneous Goods, Oligopoly and		

	Trade: A Cournot-type model, the equilibrium solution, stability, strategic trade policy-tariffs and subsidies. (b) Vertically Differentiated Goods, Oligopoly and International Trade: Consumers, firms and market equilibrium, international trade. (c) Horizontal Differentiation, Oligopoly and Trade: Demand for characteristics, the production side, international trade and strategic trade policy.		
	Internal Assessment		10

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Books			
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Articles			
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Special Paper-B
International Economics-II
Course: MECOMET 403B

Unit	TOPIC	Hour	Marks
I	The International Financial System	5	40
	The Foreign Exchange Market. International Money Markets. Eurocurrencies and Euromarkets: External Financial Markets		
II	Introduction to International Macroeconomics	2	
	A Broad Picture of the Open Economy. National Income Accounting for an Open Economy. The Balance of Payments accounts		
III	Income, Trade and Capital Flows : Fixed and Flexible Exchange Rates	10	
	Determination of Output, Employment, and the Trade Balance. Fixed Exchange Rates and Foreign Exchange Intervention. Macroeconomic Policy under Floating Exchange Rates. Expectations, Exchange Rate Dynamics and Economic Policy. Inflation, Unemployment and Economic Policy in the Open Economy		
IV	The Monetary Approach to the Balance of Payments	6	
	Money, Interest Rates, Price Level and Exchange Rates. Inflation and Exchange Rate Dynamics		
V	Portfolio and Macroeconomic Equilibrium in an Open Economy	8	
	Asset Stock Adjustment in a Partial Equilibrium Framework. Portfolio and Macroeconomic Equilibrium under Fixed Exchange Rates. Portfolio and Macroeconomic Equilibrium under Flexible Exchange Rates. Rational Expectation and Overshooting		
VI	The Intertemporal Approach	8	
	The Intertemporal Approach to the Balance of Payments. The Intertemporal Approach to the Real Exchange Rate. An Intertemporal Model with Endogenous Growth in an Open Economy		
VII	Interdependence in the World Economy	10	
	The International Monetary System ; History and Controversies. International Organisations : The IMF, The World Bank. International Monetary Integration : Optimum Currency Areas and Monetary Unions		
VIII	Problems of the International Monetary System	11	
	Policy Optimisation, Game Theory and International Coordination. The Problem of the Reference Model and the Obstacles to Coordination. The Debt Problem. Capital Movements, Speculation and Currency Crisis. Proposals for the International Management of Exchange rates.		
	Internal Assessment		10

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Special Paper-B
International Economics-III
Course: MECOMET 404B

Unit	TOPIC	Hour	Marks
I	Trade Policies and Development	12	40
	Foreign Capital and Development Issues. Outsourcing. Issues of North-South Terms of Trade		
II	Trade and inequality	7	
	Issues in Regional Inequality. Trade and Wage Inequality in Developing Countries		
III	Trade and Labour	10	
	Trade, Wages and Labour Mobility. Trade Policy Reforms and Informal Sector		
IV	Trade, Growth and Welfare	15	
	Theory of Immiserizing Growth and its applications. Welfare Implications of Directly Unproductive Profit-Seeking Activities		
V	Regional Trade Blocs	16	
	Theories of Customs Unions and Free Trade Areas. Recent Developments of the Institutional Frameworks of the RTBs. Welfare implications		
	Internal Assessment		10

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For Trade Policies and Development

- Marjit, S. and Beladi H. (1996), 'Protection and the Gainful Effects of Foreign Capital', Economics Letters, 53, 3, 311-16.
- Chao, C. and Yu, E. (1994), 'Foreign Capital Inflows and Welfare in an Economy with Imperfect Competition', Journal of Development Economics, 45, 1, 141-54
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For Trade and inequality

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For Trade and Labour

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For Trade, Growth and Welfare

- Bhagwati, J.N. (1973), 'The Theory of Immiserizing Growth: Further Applications', in Feenstra, R.C. (Ed.), Essays in International Economic Theory, Vol.1 (1983), MIT Press, Cambridge, 121-129.
- Bhagwati, J.N. (1969), 'Optimal Policies and Immiserizing Growth', in Feenstra, R.C. (Ed.), Essays in International Economic Theory, Vol.1 (1983), MIT Press, Cambridge, 130-133.
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For Regional Trade Blocs

- Lipsey, R.G. (1960), 'The Theory of Customs Unions: A General Survey', The Economic Journal, Vol.70, No. 279, pp. 496-513.
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Special Paper-B **International Economics-IV** **(Dissertation Paper)** **Course: MECOMET 405B**

Students will have to prepare a project report using computer softwares related to econometric and statistical packages and primary/secondary data. **The project report will be evaluated by the departmental teachers and 30 marks will be allotted for that. For viva-voce and/or presentation of the project report 20 marks will be allotted. During the viva-voce and/or presentation one external will be present along with the departmental teachers for evaluation.** No supervisor will be allotted for each student. Students will be given a list of topics and the concerned teachers will give some general guidelines. Students will have to prepare the project reports on their own. There should be some demonstration about the use of computer softwares in the computer laboratory. There can be some demonstration classes about the theoretical trade modeling and/or use of secondary empirical data in the context of international trade. The concerned teacher/teachers can mention in the class some of the sources of these secondary data. The empirical analysis can be done by using computer softwares and if required, the concerned teacher/teachers can demonstrate the use of computer software in the computer laboratory.

UNIT	TOPIC	Hour/Week	Marks
I	Submission of Schematic Proposal (Format will be supplied by the Department)	2 Weeks	30
II	Preparation & Submission of Questionnaire/Background/Objectives of the study	2 Weeks	

III	Model building, Data Collection, Processing & Analysis	6 Weeks	
IV	Submission of Final Report	4 Weeks	
V	Viva-Voce		20

Special Paper-C
Rural Economics-I
Course: MECOMET 402C

Unit	TOPIC	Hour	Marks
I	Rural Credit Market	20	40
	Features of rural credit market, Advantages and Limitations of Formal and Informal Credit in India, linkages between land and credit market Lender's Risk Hypothesis, Simple models of Credit rationing, Information asymmetry, Monitoring and Collusion. Alternative Credit Policies, microfinance, SHGs, Comparison between Bangladesh and Indian models		
II	Rural-Urban Migration	20	
	Harris-Todaro Model on migration, Extensions of H-T, Discussion on Alternative Policies, reasons and impact of migration; Empirical Evidence on rural migration in India: Rural-rural and rural-urban case studies from West Bengal		
III	Food Production, Starvation and Famine Debate	20	
	Food Availability, Supply and Demand, Role of Technology in Production and Theory of Exchange Entitlement. Sen's Reading of The Bengal Famine 1942-43, the cases of Bangladesh, Ethiopia, China; Slump and Boom Famines		
IV	Reforms in Agricultural Sector	20	
	Subsidy in Agriculture, measurement and definition; Domestic support and Cross-country perspective; Subsidy in Indian agriculture, Role of MNCs in Indian agriculture, Debt-trap and suicide of farmers – the case of Maharashtra, Karnataka and Andhra Pradesh.		
V	Rural Non-farm Employment	10	
	Trends and Pattern of rural non-farm employment in India; Linkages between farm and non-farm sectors; Job opportunities, accumulation and employment		
	Internal Assessment		10

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Special Paper-C
Rural Economics-II
Course: MECOMET 403C

Unit	TOPIC	Hour	Marks
I	Concept of Poverty	6	40
	Mainstream Neo-Classical versus Radical Marxist approach.. Multidimensional nature of Rural Poverty – Clusters of disadvantages and the ‘Deprivation Trap’. Sen’s concept of poverty and deprivation		
II	Agrarian Structure and Rural Poverty	4	
	Mechanisms through which regressive features of the agrarian economy keep the mass of the rural population in perpetual poverty		
III	Integrated Rural Development(IRD)	6	
	Conceptual framework. Typology of IRD. Alternative models of IRD		
IV	Decentralisation and Rural Poverty Alleviation	4	
	Liberal Interventionist approach. Radical approach		
V	Panchayati Raj in India(PRI)	12	
	Evolution of Panchayati Raj—73rd Constitutional Amendment Act—present status of implementation—factors explaining the relatively poor performance of panchayats in most states—Accountability framework for panchayats. Panchayati Raj in West Bengal : Structure of PRI in WB—Devolution of Functions, Functionaries and Finance—Issues in Panchayat Finance—Evaluation of PRI in WB		
VI	Centrally Sponsored Schemes (CSS) for Rural Development in India	10	
	CSS for Rural Development in India (with special reference to SGSY and NREGP). Shortcomings in the execution of CSS.. Reasons for poor implementation of CSSs.		
VII	Role of NGOs in Rural Development	6	
	Conceptual issues. Accountability of NGOs		
VIII	Identification of Households below the Poverty Line	6	
	Critical evaluation of the BPL Census, 1997 and 2002. Methodology of BPL Census, 2009.		
IX	Rural Development Project Implementation, Monitoring and Evaluation	6	
	Criteria and Methodology – PRA, PLA and RRA techniques		
	Internal Assessment		10

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Special Paper-C
Rural Economics-III
Course: MECOMET 404C

Unit	TOPIC	Hour	Marks
I	Ownership Cultivation and different tenurial contracts	10	40
	Efficiency of different tenurial contracts vis-à-vis ownership cultivation. Uncertainty and share tenancy. Coexistence of Share Tenancy, Fixed Rent Tenancy and Wage Contract in Indian Agriculture – Some explanations. Factors determining the leasing decision – factor market imperfections		
II	Rural Credit Market and different types of Inter linkage	20	
	Characteristics of rural credit market. Different explanations for high interest rate in informal credit market –Underpricing of Collateral – delay in disbursement of formal credit.. Credit-Product Interlinkage – ICPC vs. NICPC – Price uncertainty. Credit-Labour Interlinkage – Potential Risk, Bardhan Model, Basu’s model – interlinkage in risk less world, M.R. Gupta model		
III	Credit Share-Cropping Interlinkage and problem of innovation	10	
	Agricultural Stagnation – Semi feudal character - Bhaduri model. Price Uncertainty, Crop failure and crop insurance Scheme		
IV	Sectoral Growth Linkage between Agriculture and the Rural Nonfarm Economy	10	
	Consumption Linkage. Factor market Linkage. Productivity Linkage. Reverse Linkage. Cross- section Evidence of Linkage. Time-series Evidence of Linkage. Linkage Debates		
V	Food Industry Consolidation and Agro-industrialization	10	
	Concentration Downstream in the ‘Agrifood’ system. Globalization and three waves of consolidation. Rural Processing and impact on the RNFE : Emerging Evidence		
	Internal Assessment		10

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Special Paper-C
Rural Economics-IV
(Dissertation Paper)
Course: MECOMET 405C

Students will have to prepare a project report using computer softwares related to econometric and statistical packages and primary/secondary data. **The project report will be evaluated by the departmental teachers and 30 marks will be allotted for that. For viva-voce and/or presentation of the project report 20 marks will be allotted. During the viva-voce and/or presentation one external will be present along with the departmental teachers for evaluation.** No supervisor will be allotted for each student. Students will be given a list of topics and the concerned teachers will give some general guidelines. Students will have to prepare the project reports on their own. There should be some demonstration about the use of computer softwares in the computer laboratory.

Unit	TOPIC	Hour/Week	Marks
I	Submission of Schematic Proposal (Format will be supplied by the Department)	2 Weeks	30
II	Preparation & Submission of Questionnaire/Background/Objectives of the study	2 Weeks	
III	Data Collection, Processing & Analysis	6 Weeks	
IV	Submission of Final Report	4 Weeks	
V	Viva-Voce		20

Special Paper-D
Health Economics-I
Course: MECOMET 402D

Unit	TOPIC	Hour	Marks
I	Subject Matter of Health Economics	12	
	What is Health Economics? Why Health Economics? How Health Economics? Basic questions in Health Care Economics, why good health? Production of good health, Determinants of health, What is special about Health care Economics? Does economics apply to health and health care? Is health care different? Medical care vs. health care.		
II	Demand for Health Care	16	
	Investment in health as a form of human capital, Grossman’s investment		

	Model of Health and its critic, The Consumption Model, Demand for Medical Care, Preferences for health and health care, Income and price effects, Non-Economic determinants of the demand for medical care, market demand for health care and Fuzzy Demand Curve, Is medical care a normal or a superior good? Role of Quality in the demand for medical care		40
III	Supply of Health Care Hospital as a supplier of medical care, Hospitals and patients-a model of equilibrium quality and price, Supply of physician services, Physicians as providers of health care-market for physicians' services, Model of Physician induced demand, Market for nurses, is physician an entrepreneur or a labour?	16	
IV	Costing and Health Economics The importance of costing in Health Economics, Alternative definitions of cost, Types of cost- monetary and non-monetary, measurement and valuation in issues in cost/production cost/ discounting, Constraints in measuring health cost.	16	
V	Gender and Health Major morbidity and mortality burden in the developing world with major focus on India- sex ratio of births, major health problems experienced by women and men, reproductive health of women and men in developing world, differentials in use of male and female methods of contraception, Health infra-structure and health care providers, Nutritional status, susceptibility to infections , Accidents and other risk factor and health seeking behavior , Health and Nutrition issues of adolescent of boys and girls , abuse and maltreatment, Puberty, Sexual Debut, Adolescent Pregnancy, Abortion, women and family planning programs, Contraceptive Technology, Major risk factors of men's health: masculinity, alcoholism, tobacco and drug consumption, accident, Gender and Sexuality: Sexual health of men and women, gender dimension of HIV /AIDS. Gender and Infertility	20	
	Internal Assessment		10

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Special Paper-D
Health Economics-II
Course: MECOMET 403D

Unit	TOPIC	Hour	Marks
I	Economic Evaluation-Part-I	10	
	What is economic evaluation, Various types of economic evaluation used in health care, measuring outcome, Cost Effectiveness Analysis (CEA), Cost Benefit Analysis (CBA), Divergence between social and private costs and benefits in health care, Limitations of economic evaluation, Consumer Impact Assessment		
II	Economic Evaluation – Part II	12	
	Importance of Measures of General health status and quality of life, Measuring Health Outcomes, Assigning monetary values to health outcomes, human life and Quality Adjusted Years of Life, Cost-Utility Analysis (CUA) – including Quality Adjusted Life Years (QALYs) and Health Year Equivalents (HYEs), Economics of Prevention and Public Health – Economic evaluate on of prevention programs (include ADL and IADL for aged)		
III	Efficiency and Equity in Health	14	
	An overview of the normative economics of the health sector, Health Care and Welfare State. Private versus public health care. Public and Private Partnership		

	in Health Care, Efficiency and effectiveness in health care, Equity in Health care Delivery Health inequalities: health inequality and its measurement, Changing scenario of Health inequalities in India, Medical Tourism in India, International Comparison, determinants of health, health seeking and access to health care service, Health care utilization.		40
IV	Health Care System with Special reference to India	10	
	Stakeholders in health care systems: Consumer, providers, and state, Human capital and health, health care and labor market, Demand for health care and for medical services – The consumer perspective, Moral Hazard and the economics of Moral Hazard, Demand and Supply of Human and physical infrastructure–physician, hospital and drugs etc. Costs as a barrier to health care utilization.		
V	Biostatistical Methods	14	
	Linear regression {Simple linear regression; Relating a continuous outcome to more than one predictor: multiple linear regression; Diagnostics in multiple linear regression.}, Logistic regression{ Logistic regression, Multiple logistic regression; conditional logistic models for matched case-control data.} Survival analysis {Concepts and definitions; concept of censoring; survival, hazard and cumulative hazard function; survival distributions; Kaplan Meir estimates; Life table method; Mantel-Haensal test; Regression for survival analysis; Multivariate survival analysis.}, Analysis of count data {Poisson model; Negative binomial model; Applications.}, Random effects models {Random effects models; Random slope model; Random intercept model; Use of random effects models in population and health related data; Hierarchical data analysis.}, Path analysis and discriminant analysis , Exploratory data analysis and handling missing data {Outlier detection, imputation techniques; Application of sample weights}		
	Internal Assessment		10

References
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Special Paper-D
Health Economics-III
Course: MECOMET 404D

Unit	TOPIC	Hour	Marks
I	Modeling in Health Care Financing	12	40
	Definitions, Scope, Focus, The context of financial modeling in health care; Health statistics- sources of statistical data, data sources for financial modeling, data problems; Health accounting health and national accounting, health and social accounting, national health accounts methodology, data sources, problems and prospects. Health insurance- intermediary agents. Private health insurance. Regulation of health insurance. Government as a health insurer in India. Equity in health care finances. Future investment strategies in health sector. Willingness to pay for health care. User charges as determinant of healthcare financing		
II	Ageing and Health	12	
	Ageing and Life Expectancy {ageing and life expectancy; changing age pattern of mortality, oldest old mortality; ageing and epidemiological transition in disease prevalence and patterns; health adjusted life expectancy}, Ageing and Burden of Disease {burden of chronic and multiple diseases, burden of non-communicable diseases, dual burden of communicable and non-communicable in developed and developing countries; Indian scenario.}, Ageing and Functional Health {Ageing and disabilities; trends and prevalence; ageing and injuries, ageing and functional health on various domains- mobility, self-care, pain, vision, interpersonal activities, sleep and energy; health expectancies }, Ageing, health care and health financing {health care utilization, public and private health services utilization; outpatient and inpatient health care utilization; availability and accessibility to geriatric care, and institutional care; sources of health spending; lack of health care options for elderly. }		
III	Health Promotion	12	
	What is health promotion? Changing priorities in health promotion, Why promote health? Who promotes health? Environmental influence on health, Interconnection between lifestyle and environment, Components of health		

	promotion, Health promotion models, Ethical issues in health promotion, Evaluation in health promotion- objectives and criteria of health promotion		
IV	<p align="center">Basic Concepts in Epidemiology</p> <p>Introduction {Definition and objectives of epidemiology; Epidemiology and clinical practice; The epidemiologic approach; Infectious disease epidemiology, occupational epidemiology, disaster epidemiology}, The dynamics of disease transmission { Modes of transmission; epidemic, endemic and pandemic; Disease outbreak; Determinants of disease outbreak; Herd immunity; incubation period; outbreak investigation; epidemiological modeling.}, Identifying the roles of genetic and environmental factors in disease causation {Association with known genetic diseases; Age at onset; Family studies; Interaction of genetic and environmental factors.}, Epidemiology and public policy {Epidemiology and prevention; Population versus high-risk approaches to prevention; epidemiology and clinical medicine; Risk assessment; Meta Analysis.}, Using epidemiology to identify the cause of disease {Cohort studies – design, types of cohort studies, potential biases in cohort studies, when cohort study warranted?; Case-control study – design, selection of cases and controls, problems in control selection, matching, problems of recall, use of multiple controls, when case control study warranted, nested case-control study; cross-sectional studies.}</p>	12	
V	<p align="center">Policies, Reforms and Regulatory Concerns in Health Sector in India</p> <p>Health care delivery systems and Role of Government in providing health care, Role of international organizations, improving access to health care with quality, Overview of health sector reforms and Policies, Regulatory concerns and regulation of health sector including pharmaceutical industry, National Health Policies and Programmes.</p>	12	
	Internal Assessment		10

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Special Paper-D
Health Economics-IV
(Dissertation Paper)
Course: MECOMET 405D

Students will have to prepare a project report using computer softwares related to econometric and statistical packages and primary/secondary data. **The project report will be evaluated by the departmental teachers and 30 marks will be allotted for that. For viva-voce and/or presentation of the project report 20 marks will be allotted. During the viva-voce and/or presentation one external will be present along with the departmental teachers for evaluation.** No supervisor will be allotted for each student. Students will be given a list of topics and the concerned teachers will give some general guidelines. Students will have to prepare the project reports on their own. There should be some demonstration about the use of computer softwares in the computer laboratory.

Unit	TOPIC	Hour/Week	Marks
I	Submission of Schematic Proposal (Format will be supplied by the Department)	2 Weeks	30
II	Preparation & Submission of Questionnaire/Background/Objectives of the study	2 Weeks	
III	Data Collection, Processing & Analysis	6 Weeks	
IV	Submission of Final Report	4 Weeks	
V	Viva-Voce		20

Add-on Course (For Other Stream)

Statistical Analysis
Course: MECOACT 406

Unit	TOPIC	Hour	Marks
I	Basic concepts of statistics, Meaning and types of data, Steps of collection of data, tabulation, frequency, cumulative frequency, Charts and diagrams	7	50
II	Measure of Central Tendency, Dispersion & Moments	10	
III	Bi-variate data, Correlation & Regression analysis	10	
IV	Basic concepts of probability, Random variable, Types of random variable,	8	
V	Sample and census, Simple random sampling, stratified sampling, Cluster sampling, Non-probability sampling	10	
VI	Basic concepts of Hypothesis	5	
VII	Use of Excel to analyse data behaviour	10	