

**MAR IVANIOS COLLEGE (AUTONOMOUS)  
THIRUVANANTHAPURAM**

*(Affiliated to the University of Kerala)*



**REGULATION, SCHEME & SYLLABUS**

**FOR**

**FIRST DEGREE PROGRAMME IN**

**B. A. ANALYTICAL ECONOMICS**

**(UNDER CBCS SYSTEM)**

**(2020 ADMISSION ONWARDS)**

## REGULATION

### ELIGIBILITY FOR ADMISSION

Eligibility for admissions and reservation of seats for BA Analytical Economics shall be according to the rules framed by the Government/University/College from time to time. No student shall be eligible for admission to a First-Degree Programme in Analytical Economics unless he/she has successfully completed the examination conducted by a Board/University at the +2 level of schooling or its equivalent, approved by the University of Kerala. Index mark for admission shall be the sum of the total marks secured for the Higher Secondary and the subject marks scored for Economics.

### DURATION

The duration of BA Analytical Economics Programme shall be three years consisting of six semesters. The duration of each semester shall be five months inclusive of the days of examinations. There shall be at least 90 working days in a semester.

### GENERAL COURSE STRUCTURE

Study Components	Semester	Number of courses	Credits/ Course	Total Credits
Language course: English	I, II, III & IV	5	3-4	19
Additional Language Course	I, II, III & IV	4	3-4	14
Foundation Course	I & IV	2	2-3	5
Core Course	All Semesters	12-14	2-4	52
Complementary Course	I, II, III & IV	2-4	2-3	22
Open Course	V	1	2	2
Elective course	VI	1	2	2
Project/Dissertation	VI	1-2	2-4	4
			Total	120

***Accumulated Total Minimum Credits required for Programmes of study  
= 120 Credits. Minimum Duration = 6 Semesters***

**SEMESTER I**

Sl. No.	Course Code	Course Name	Credits	Instructional hours
1	AUEN111.1	Language Course I: English I	4	5
2		Language Course II (Additional Language I)	3	4
3	AUEN121.1	Foundation Course I	2	4
4	AUAE141	Core Course I: Basic Mathematics for Economics	4	6
5	AUHY131.1c	Complementary I : Indian Heritage & Culture	2	3
6	AUPS131.1c	Complementary II: Introduction to Political Science	2	3
		<b>TOTAL</b>	<b>17</b>	<b>25</b>

**SEMESTER II**

Sl. No.	Course Code	Course Name	Credits	Instructional hours
1	AUEN111.1	Language Course III: English II	4	5
2		Language Course IV: English III	3	4
		Language Course V (Additional Language II)	3	4
4	AUAE241	Core Course II: Introductory Micro Economics	4	6
5	AUHY231.1c	Complementary III: History of Modern India I	3	3
6	AUPS231.1c	Complementary IV: Indian Government & Politics	3	3
		<b>TOTAL</b>	<b>20</b>	<b>25</b>

**SEMESTER III**

Sl. No.	Course Code	Course Name	Credits	Instructional hours
1	AUEN311.1	Language Course VI: English IV	4	5
		Language Course VII (Additional Language III)	4	5
4	AUAE341	Core Course II: Intermediate Micro Economics	4	5
	AUAE342	Core Course III: Statistical Tools for Economics	3	4
5	AUHY331.1c	Complementary V: History of Modern India II	3	3
6	AUPS331.1c	Complementary VI: Public Administration	3	3
		<b>TOTAL</b>	<b>21</b>	<b>25</b>

**SEMESTER IV**

Sl. No.	Course Code	Course Name	Credits	Instructional hours
1	AUEN411.1	Language Course VIII: English V	4	5
2		Language Course IX (Additional Language IV)	4	5
3	AUAE441	Core Course IV: Introductory Macro Economics	4	5
4	AUAE442	Foundation Course II: Data Science for Economics	3	4
5	AUHY431.1c	Complementary VII: History of Modern World	3	3
6	AUPS431.1c	Complementary VIII: International Politics	3	3
		<b>TOTAL</b>	<b>21</b>	<b>25</b>

**SEMESTER V**

Sl. No.	Course Code	Course Name	Credits	Instructional hours
1	AUAE541	Core Course V: Intermediate Macro Economics	4	4
2	AUAE542	Core Course VI: Indian Economy I	4	4
3	AUAE543	Core Course VII : Public Economics	4	4
4	AUAE544	Core Course VIII: Money & Modern Banking	4	4
5	AUAE545	Core Course XI: Research Methodology	2	3
6	AUAE581	Open Course I – Introduction to Indian Economy	2	3
		Open Course I – Introductory Economics		
		Open Course I- Human Resource Management		
7		Project	-	3
		<b>TOTAL</b>	<b>20</b>	<b>25</b>

**SEMESTER VI**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	<b>Instructional hours</b>
1	AUAE641	Core Course X: Indian Economy II	4	5
2	AUAE642	Core Course XI: International Economics	4	4
3	AUAE643	Core Course XII: Financial Economics	4	5
4	AUAE644	Core Course XIII: Development Economics	3	4
5	AUAE691.a	Elective Course I: Basic Econometrics	<b>2</b>	<b>4</b>
	AUAE691.b	Elective Course I : History of Economic Thought		
	AUAE691.c	Elective Course I : Mathematical Economics		
6	AUAE645	Core Course XIV: Project and Project based Viva-Voce	4	3
		<b>TOTAL</b>	<b>21</b>	<b>25</b>

## PROGRAMME SPECIFIC OUTCOMES (PSO) FOR BA ANALYTICAL ECONOMICS

PSO1	To equip students with basic knowledge of Economics & development aspects of Indian Economy in general and Kerala Economy in particular.
PSO2	To enable students to acquire the necessary skills for analyzing basic economic issues at the micro and macro levels.
PSO 3	To acquaint the students with the essential mathematical and statistical methods and tools to be applied in the analytical aspects of Economics.
PSO 4	To train the students in machine learning in R and basic data analytics using R.
PSO 5	To apprise the learners about the fiscal framework of the Government for assessing its performance.
PSO 6	To expose the students to the origin and development of money and modern banking.
PSO 7	To acquaint the students to the basic methodology of research.
PSO 8	To familiarize the students with the basic concepts and functioning of the financial markets and services.
PSO 9	To provide the students an understanding of the basic international trade and financial system.
PSO 10	To appraise the students about the important issues in economic development and the tools for measuring economic growth and development

**SEMESTER 1****CORE COURSE I****AUAE141: BASIC MATHEMATICS FOR ECONOMICS**

Credits -4

Inst. Hours-6

<b>Name of the Course: AUAE 141-Basic Mathematics for Economics</b>	
<b>Course Outcomes</b>	
CO1	To understand the basic concepts, scope, nature and methods of economics.
CO2	To learn micro and macro models of economics and tools of economic analysis.
CO3	To study the basic concepts of mathematics and their applications in economics.
CO4	To apply the techniques of differentiation and integration to various economic analyses.

<b>AUAE141: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Understanding the basic concepts, scope and nature of economics.	PSO1	Understand	Conceptual	Assignment on the methods of formulating economic theories with their applications.
CO2	Learning micro and macro models of economics and tools of economic analysis.	PSO2	Understand	Conceptual	Assignment on Constructing a micro and macro-economic model.
CO3	Studying the basic concepts of mathematics and their applications in economics.	PSO3	Understand	Conceptual	Assignment on solving various types of systems of linear equations represented in matrix form.
CO4	Application of the techniques of differentiation and	PSO3	Apply	Procedural	Identify ten cases in which differentiation and integration are applied in

	integration to various economic analyses.				economics.
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**MODULE 1 : Basic Concepts in Economics**

Scope of Economics—Nature of economic laws—Methods of formulating economic theories: Positive and Normative economics, Deductive & Inductive, merits and demerits—Economic models: Micro & Macro models—Tools of Economic Analysis: Static, Comparative Static, Dynamic—Equilibrium Analysis: Partial and General, Stable and Unstable—Graphs and Diagrams in Economics.

**MODULE 2: Basic Concepts of Mathematics**

Role of Mathematics in economic theories—Economic variables and Constants: Discrete, Continuous, Exogenous and Endogenous.

**Functions:** Linear, Non-Linear, Single, Bivariate, Multivariate, Homogenous, Non-Homogenous.

**Graph of a Function:** Demand curve, Supply curve, TC, AC, MC, Power function, Exponential function.

**Equations:** Linear, Quadratic, Simultaneous and their solutions.

Growth rate: Simple & Compound, Ratio & Proportions.

**Matrix:** Meaning—Types—Determinants—Inverse of a matrix—Cramer’s Rule—Rank of a Matrix.

**MODULE 3: Differentiation**

Limits and Continuity of function—Meaning of Differentiation—Partial and Total differentiation—Maxima, Minima and Optimization—Economic application of Differentials—Euler’s Theorem.

**MODULE 4: Integration**

Meaning—Indefinite and Definite integral, Economic application of integrals—Total concepts, Marginal concepts, Consumer’s Surplus, Producer’s Surplus.

**Reading List:**

R Jack Harvey & ErineJowsey: Modern Economics, Palgrave.

Samuelson, P (1948): Foundations of Economic Analysis, Harvard University Press.

Allen, R.J.D: Mathematical Analysis for Economics, Macmillan Press, London.

Dowling, E.T: Introduction to Mathematical Economics, Schaum’s Online Series, McGraw Hill, New Delhi.

Chiang, A.C: Fundamental Methods of Mathematical Economics, McGraw Hill.

Taro Yamane: Mathematics for Economists: An Elementary Survey, Prentice Hall.



**SEMESTER 2****CORE COURSE II****AUAE241: INTRODUCTORY MICRO ECONOMICS****Credit: 4****Inst.Hours:6**

<b>Name of the Course: AUAE 241-Introductory Micro Economics</b>	
<b>Course Outcomes</b>	
CO1	To study the theoretical framework of consumer behavior.
CO2	To understand the various aspects of demand and supply
CO3	To evaluate the elasticity of demand and supply
CO4	To analyze the basic theories of production function.
CO5	To understand the types of costs and revenue in production.

<b>AUAE 141: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Studying the Cardinal. Ordinal and Revealed Preference theories of consumer behavior.	PSO2	Understand	Conceptual	Assignment on the comparative analysis of the theories of consumer behavior.
CO2	Understanding the various aspects of demand and supply	PSO 2	Understand	Conceptual	Assignment on the mathematical treatment of demand theory.
CO3	Evaluating the types, measurement and practical uses of the concept of elasticity of demand and supply.	PSO 2	Evaluate	Conceptual	Group discussion on the practical uses of the concept of elasticity.
CO4	Analyzing the basic theories of production function both in the short run and long run and the Cobb Douglas production function.	PSO2	Analyze	Procedural	Assignment on Cobb Douglas production function.
CO5	Understanding the types of costs and revenue in production	PSO2	Understand	Conceptual	Assignment on the mathematical treatment of cost and revenue theory.

## **MODULE 1: Consumer Behavior**

Role of economic agents--- Consumer behavior—Cardinal Utility Analysis: Assumptions, Law of Equi-Marginal utility---Ordinal Utility Analysis: Construction of Indifference curve, Properties of IC, Construction of Budget Line, Consumer equilibrium condition---Revealed Preference Hypothesis—Consumer surplus: Cardinal and Ordinal measurement.

## **Module 2: Demand and Supply Analysis**

Law of Demand—Exceptions to the law of demand—Slope of the demand curve—Changes in demand— Derivation of demand curve---Elasticity of demand: Price elasticity—Types and measurement, Factors affecting price elasticity— Price effect, Income effect, Substitution effect---Income elasticity, Type of goods, Engel Curve--- Cross elasticity—Practical uses of the concept of elasticity---Mathematical treatment of Demand theory.

Law of Supply—Changes in supply—Elasticity of supply and its practical uses-- Market Equilibrium.

## **MODULE 3: Production**

Production Function: Short run & Long run Production function—Production with one variable input labour---Production with two variable inputs (Isoquant- Isocost approach)---Production when all factors are variable---Expansion path---Cobb Douglas production function---Producer Equilibrium. .

## **MODULE 4: Cost of production& Revenue**

Types of cost incurred in production: Economic & Accounting cost, Opportunity cost, Sunk cost, Money & Real cost, Explicit & Implicit cost—Different concepts of cost in the short run and long run & their interrelations(Traditional and modern theories on cost)—Different concepts of revenue and their interrelations—Cost and revenue curves under different markets---Mathematical treatment of Production and Cost theory.

### **Reading List:**

Koutsoyiannis, A: Modern Micro Economics, Macmillan.

Salvator, D: Micro Economics: Theory and Practice, Oxford University Press.

Varian,H.R: Intermediate Micro Economics: A Modern Approach. East West Press, New Delhi.

Pindyck, R.S & Rubinfeld, D.L: Micro Economics, Pearson Education.

**SEMESTER 3****CORE COURSE III****AUAE341: INTERMEDIATE MICRO ECONOMICS****Credit: 4****Inst. Hours: 5**

<b>Name of the Course: AUAE 341- Intermediate Micro Economics</b>	
<b>Course Outcomes</b>	
CO1	To understand the general idea about the perfect and imperfect markets.
CO2	To examine the price and output determination in various markets.
CO3	To learn the theories of factor pricing and distribution.
CO4	To study the theories on welfare economics and the general equilibrium concept.
CO 5	To understand the economics of Uncertainty

<b>AUAE 341: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Understanding the general idea about the perfect and imperfect markets like monopoly, monopolistic competition and oligopoly	PSO2	Understand	Conceptual	Group discussion on the practical awareness of monopolistic competitive market.
CO2	Examining the price and output determination in various markets.	PSO 2	Understand	Conceptual	Assignment on a comparative study of monopoly and monopolistic competitive market.
CO3	Learning the theories of factor pricing and distribution	PSO 2	Understand	Conceptual	Group discussion on trade unions and collective bargaining.
CO4	Studying the theories on welfare economics and the general equilibrium concept.	PSO2	Understand	Conceptual	Assignment on general equilibrium and economic efficiency.
CO5	Understanding the economics of Uncertainty	PSO2	Understand	Conceptual	Assignment on methods of reducing risk.

## **MODULE 1: Markets**

Market---Competitive& Non-competitive markets---Perfectly competitive market: Features, Price-Output determination in both short run and long run, The efficiency of a competitive market---Monopoly: Features, Price-Output determination, Monopoly power, Natural monopoly, Bilateral monopoly--- Monopolistic Competition, Inter temporal Price discrimination and Peak- load pricing, Price-Output determination in both short run and long run---Oligopoly—Equilibrium in an oligopolistic market, Cournot model---Game theory—Nash equilibrium.

## **MODULE 2: Factor Pricing and Distribution**

Theories of Factor Pricing—Marginal Productivity Theory of Distribution—Alternative Distribution Theories of Ricardo, Kaldor&Kalecki—Euler’s Theorem, Adding up Problem—Determination of Rent: Ricardian view, Economic Rent, Quasi rent—Determination of Wage rate under perfect competition and imperfect competition---Trade Unions and Collective Bargaining—Theories of Interest: Classical, Keynesian and Modern—Theories of profit: Dynamic theory, Risk and Uncertainty Bearing theory and Innovation theory.

## **MODULE 3: Welfare Economics& General Equilibrium**

Definition—Criteria of Social Welfare: Bentham’s criterion, Cardinalist criterion, Pareto Optimality criterion—Compensation criterion: Kaldor-Hicks and Scitovsky—Arrow’s Impossibility Theorem—A K Sen’s Social Welfare Function-General Equilibrium & Economic Efficiency-General Equilibrium Analysis—Efficiency in exchange—efficiency in production—Efficiency in product-mix.

## **MODULE 4: Economics of Uncertainty**

Choice under uncertainty—Expected utility theory—Risk, Probability, Expected value, Variability—Decision making under risk—Preference towards risk—Methods of reducing risk: Diversification, Insurance.

### **Reading List**

Varian, H.R (2000): Intermediate Microeconomics: A Modern Approach, east West Press, New Delhi.

Salvatore, D (2008): Microeconomics: Theory and Practice, OUP.

Pindyck, R.S and Rubin Field, D. L(2001):Microeconomics, Pearson.

**SEMESTER 3****CORE COURSE IV****AUAE342: STATISTICAL TOOLS FOR ECONOMICS****Credit: 3****Inst.Hours:4**

<b>Name of the Course: AUAE 342- Statistical Tools For Economics</b>	
<b>Course Outcomes</b>	
CO1	To understand the measures of Central Tendency in order to interpret empirical data
CO2	To apply the techniques of correlation and regression in economics.
CO3	To study the different types of index numbers.
CO4	To study the elementary theory of probability including probability distributions.

<b>AUAE 342: Tagging Course Outcomes</b>					
CO	CO Statement	PSO	Cognitive Level	Knowledge Category	Assessment
CO1	Understand the measures of Central Tendency and methods of sampling.	PSO3	Understand	Conceptual	Assignment of collection of some data for which the various measures of central tendency can be computed.
CO2	Applying the techniques of correlation and regression in economics.	PSO3	Understand	Conceptual	Assignment on application of correlation and regression in economics.
CO3	Studying the different types of index numbers like Lasper's, Paasche's and Fisher's.	PSO3	Understand	Conceptual	Assignment on illustration of ideal index numbers like CPI and WPI.
CO4	Studying the elementary theory of probability including probability distributions	PSO3	Understand	Conceptual	Assignment on various cases in economics in which different probability distributions can be applied.

## **MODULE 1: Measures of Central Tendency**

Mean, Median, Mode, Quartile Deviation, Standard Deviation---Bivariate &Multivariate---Sampling, Types of sampling.

## **MODULE 2: Correlation and Regression**

Simple, Partial and Multiple correlation analysis, Karl Pearson and Rank correlation coefficients.

Method of Least Squares—Lines of regression—Estimation of regression in a univariate distribution—Relation between regression and correlation coefficients—Application in Economics.

## **MODULE 3: Index Numbers**

Definition—Construction of index numbers: Lasper’s, Paasche’s and Fisher’s—Ideal index numbers: CPI, WPI—Purchasing power of money.

## **MODULE 4: Probability**

Concept—Rules of Probability: Additional and Multiplication theorem—Baye’s theorem—Random variables: Discrete and Continuous—Probability distribution—Discrete distribution: Binomial distribution—Continuous Distribution: Normal distribution.

## **Reading List**

Yule and Kendall: An Introduction to the Theory of Statistics, Charles Gtiffin& Co, London.

Gupta, S. P: Statistical Methods, Sultan Chand & Sons, New Delhi.

Monga, G.S: Mathematics and Statistics for Economics, Vikas Publishers, New Delhi.

Spiegel, M.R: Theory and Problem of Statistics, McGraw Hill, London.

Oakshott Less: Essential Quantitative Methods, Palgrave Macmillan, NY.

**SEMESTER 4**

**CORE COURSE V**

**AUAE 441: INTRODUCTORY MACRO ECONOMICS**

**Credit-4**

**Inst.Hours-5**

<b>Name of the Course: AUAE 441- Introductory Macro Economics</b>	
<b>Course Outcomes</b>	
CO1	To compare and contrast micro and macroeconomics and study the different types of macro-economic variables.
CO2	To understand the concept of national income and different methods of measuring it.
CO3	To summarize the contributions made by the classical economists in macroeconomics.
CO4	To understand the concept and theories of consumption function.
CO5	To examine the types and determinants of investment.

<b>AUAE 441: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Comparing and contrasting micro and macroeconomics and studying the different types of macro-economic variables	PSO2	Evaluate	Conceptual	Assignment on the various macroeconomics variables with examples.
CO2	Understanding the concept of national income and different methods of measuring it and its relevance in the Indian context.	PSO2	Understand	Conceptual	Assignment on the measurement of the national income in India and its limitations in the present system.
CO3	Summarizing the contributions made by the classical economists in macroeconomics.	PSO2	Understand	Factual	Assignment on the criticisms raised against the classical theory of income, output, and employment.
CO4	Understanding the concept and theories of consumption function.	PSO2	Understand	Conceptual	Assignment on various factors determining consumption function.



CO5	Examine the types and determinants of investment and the theories of multiplier, accelerator, and super multiplier.	PSO2	Understand	Conceptual	Assignment on the graphical explanation of the accelerator theory.
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### **MODULE 1: Fundamental Concepts**

Micro and Macroeconomics—Macro economic variables: Stock and Flow, Exogenous and Endogenous, Dependent and Independent—Equilibrium: Partial and General, Stable and Unstable, Static and Dynamic—Method of analysis: Macro statics, comparative static and dynamics.

### **MODULE 2: National Income Accounting**

Circular flow of income: Two sector, Three sector and Four sector—NI concepts—Importance of estimating NI—Difficulties in the estimation of NI—Measurement of NI— Value Added method—Role of CSO—Measurement of NI in India—Limitations in the present system--GNP deflator—Social Accounting—Green Accounting.

### **MODULE 3: Classical Theory of Income, Output and Employment**

Features of Classical school—Classical theory of Income, Output and Employment-- Say's law of Market—Wage- Price flexibility and full employment—Classical Dichotomy—Neutrality and non-neutrality of money—Quantity theory of money (Fischer's version)-- Money Illusion—Saving-investment equality—Keynes objection to Classical theory.

### **MODULE 4: Components of Aggregate Demand**

Consumption Function: Definition, Psychological Law of consumption (Absolute Income Hypothesis)—Concepts related to consumption function: APC, MPC, APS MPS—Factors determining consumption function: Subjective and Objective—Short run and Long run consumption function: Empirical evidence, Consumption puzzle—Theories of consumption function: Relative, Permanent and Life Cycle hypothesis—Saving function—Saving paradox.

Investment—Types: Gross, Net, Autonomous, Induced, Real, Financial—Determinants of investment—Keynesian Investment Function—MEC and MEI—Multiplier—Accelerator—Super Multiplier.

### **Reading List**

Dornbusch et.al (2008): Macro Economics, Tata McGraw Hill, New Delhi.

Vaish, M.C (2011): Macro Economics.

Stone and Stone (1968): NI and Expenditure, Bower and Bower Publication.

Mankiw, Gregory (2010): Macro Economics, Worth Publishers, NY.

Froyen, Richard. T (2010): Macro Economics, Dorling Kindersley, India.

Errol D'Suza: Macro Economics

C Rangarajan: Macro Economics

**SEMESTER 4****FOUNDATION COURSE II****AUAE421: DATA SCIENCE FOR ECONOMICS****Credit-3****Inst.Hours-4**

<b>Name of the Course: AUAE 421- Data Science For Economics</b>	
<b>Course Outcomes</b>	
CO1	To understand the concept and Importance of Data science and various data sources in Indian economy.
CO2	To study the various concepts of R language.
CO3	To study the basics of data visualization and basic econometric analysis using R
CO4	To understand the concept of Machine Learning in R

<b>AUAE421: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Understand the concept and Importance of Data science and various data sources in Indian economy.	PSO4	Understand	Conceptual	Assignment on the various types and their sources in Indian economy.
CO2	Studying the various concepts of R language and programming in R.	PSO4	Create	Metacognitive	Assignment on creation of programming in R in various instances.
CO3	Study the basics of data visualization using ggplot2 and basic econometric analysis using R	PSO4	Apply	Conceptual	Assignment on the use of ggplot2 for data visualization.
CO4	Understanding the concept of Machine Learning in R	PSO4	Understand	Conceptual	Assignment on the use and applications of machine learning in economics.

**MODULE 1: Concept and Importance of Data science**

Importance of empirical data analysis in economics -- Concept and Importance of data science --- Various type of data and their sources in Indian economy.

## **MODULE 2: R for data science**

Basic concepts in R language.—Vectors---Matrix- – list – data frame---Programming in R

## **MODULE 3: Data visualization and Modelling**

Basics of data visualization using ggplot2 – Basic econometric analysis using R

## **MODULE 4: Machine learning in R**

The concept of Machine Learning -- Machine Learning in R -- Uses of machine learning in Economics ---examples.

### **Reading List:**

Wickham, Hadley. And Grolemond, Garrett (2017) R for Data Science, O'Reilly Publishes, Boston

Matloff, Norman. (2011) The Art of R Programming: A Tour of Statistical Software Design, No starch press, Sans Francisco

Kleiber, C. & Zeileis, A. (2008), *Applied Econometrics with R*, Springer.

Varian, H. (2018), '*Artificial Intelligence, Economics, and Industrial Organization*', Working Paper No: 24839, National Bureau of Economic Research.

Varian, H. R. (2014), 'Big Data: New Tricks for Econometrics', *Journal of Economic Perspectives* **28**(2), 3-28.

Jon Kleinberg, Jens Ludwig, and Sendhil Mullainathan () “A guide to solving social problems with machine learning”, *Harvard Business Review*, <https://hbr.org/2016/12/a-guide-to-solving-social-problems-with-machine-learning#>

Einav, L. & Levin, J. (2014), 'Economics in the age of big data', *Science* **346**(6210), 1243089--1243089.

Mullainathan, S. & Spiess, J. (2017), 'Machine Learning: An Applied Econometric Approach', *Journal of Economic Perspectives* **31**(2), 87--106.

**SEMESTER 5**

**CORE COURSE VI:**

**AUAE541: INTERMEDIATE MACRO ECONOMICS**

**Credit: 4**

**Inst.Hours:4**

<b>Name of the Course: AUAE 541- Intermediate Macro Economics</b>	
<b>Course Outcomes</b>	
CO1	Comprehend the Keynesian theory of income output and employment.
CO2	Analyze national income determination in three and four sector economy.
CO3	Perceive the evolution of money and the concepts related to the demand for and supply of money.
CO4	Strengthen the awareness about the basic economic issues like inflation, unemployment and trade cycle.
CO5	Study the effectiveness of macroeconomic policies in tackling fundamental economic issues.

<b>AUAE 541: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Comprehending the Keynesian theory of income output and employment.	PSO2	Understand	Factual	Assignment on the practical applications of Keynesian theory.
CO2	Analyzing national income determination in three and four sector economy	PSO2	Analyze	Conceptual	Assignment on the role of government in national income determination.
CO3	Perceiving the evolution of money and the concepts related to the demand for and supply of money.	PSO2	Apply	Conceptual	Assignment on the relation between money supply and high powered money.
CO4	Strengthening the awareness about the basic economic issues like inflation, unemployment and trade cycle.	PSO2	Understand	Conceptual	Assignment on stagflation.

CO5	Studying the effectiveness of macroeconomic policies in tackling fundamental economic issues.	PSO2	Understand	Conceptual	Assignment on the concept of IS LM model.
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### **MODULE 1: Keynesian Theory of Income, Output and Employment**

Keynesian economics—Keynesian theory of Income, Output and Employment — Simple Keynesian model of income determination—Keynesian Cross—Role of taxation and Government spending in NI determination—Determination of NI in the open economy.

### **MODULE 2: Money, Prices and Interest Rates**

Money: Definition, Functions—Value of money—Quantity Theory of money: Fisher’s, Cambridge version, Friedman’s restatement—Demand for money: Liquidity Preference theory, Liquidity Trap—Supply of money: Definitions, Determinants of money supply, Money Multiplier—Pigou effect—Real Balance effect—Keynes effect—Real and Nominal interest rates—Fisher effect.

### **MODULE 3: Inflation, Unemployment and Trade Cycle**

Inflation: Definition, Types—Hardline and Core Inflation—Causes, Effects—Social cost of inflation—Inflationary and Deflationary Gap analysis—Monetary and Fiscal measures of controlling inflation—Price index.

Unemployment: Definition, Types—Natural rate of unemployment—Philips Curve: Short run and Long run--Stagflation.

Trade Cycle: Definition, Phases—Hick’s theory of trade cycle—Control of trade cycle.

### **MODULE 4: Macro Economic Policy**

Objectives of Macro Economic Policy—Monetary, and Fiscal policies: Objectives and Instruments—Income policy—IS LM schedule for a two sector model—Simultaneous equilibrium in goods and money market.

## **Reading List**

Ackley G: Macro Economics: Theory and Policy, Macmillan Publishers.

M C Vaish: Monetary Economics

S B Gupta: Monetary Economics, Chand & Co, New Delhi.

Richard T Froyen: Macro Economics, Dorling Kindersley, India.

Dornbusch et.al: Macro Economics, Tata MacGraw Hill, New Delhi.

Gregory Mankiw: Macro Economics, Worth Publishers, NY.

**SEMESTER 5****CORE COURSE VII****AUAE542: INDIAN ECONOMY I****Credit: 4****Inst.Hours:4**

<b>Name of the Course: AUAE 542- Indian Economy I</b>	
<b>Course Outcomes</b>	
CO1	To study the features of Indian economy both general and demographic.
CO2	To examine the growth pattern of Indian economy in the pre-colonial, colonial and pre-liberalization period.
CO3	To acquaint the students with the service and external sectors of India.
CO4	To understand the Indian economy in the post liberalization period.

<b>AUAE 542: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	Studying the features of Indian economy both general and demographic	PSO1	Understand	Factual	Assignment on salient features of the 2011 census and deviation from the other census.
CO2	Examining the growth pattern of Indian economy in the pre-colonial, colonial and pre-liberalization period	PSO1	Understand	Factual	Discussion on the features of pre liberalization Indian economy.
CO3	By providing an overview of the role of service sector and the different areas in the sector along with India's performance in the external sector.	PSO1	Understand	Factual	A class discussion on the role of tourism in India's economic growth.
CO4	Understanding the Indian economy in the post liberalization period	PSO1	Understand	Factual	Assignment on the flagship schemes to promote entrepreneurship in India.



## **MODULE 1: Structure of the Indian Economy**

Features of Indian economy—NI: Size, Trends, Sectoral Contribution—Demographic features: Size and Growth rate of population, State-wise Analysis of Sex Composition, Age Composition, Infant Mortality rate, Literacy rate, Caste Composition, Religion, Drinking Water & Sanitation Facilities —Demographic Dividend: issues and challenges—National Population Policy—Salient features of 2011 Census & Deviations from earlier Census—Occupational Distribution of population—Migration: Inter-regional and international.

## **MODULE 2: Growth Pattern of Indian Economy**

**Pre-Colonial period, Colonial Period:** Features of Colonial India, Economic Consequences of Colonial Rule.

### **Pre- Liberlisation Era: Indian Agriculture**

Role of agriculture in the Indian economy—Phases of agricultural development—Land Reforms: Objectives, Measures & Impact—Trends in the Production and Productivity of Indian agriculture—Land use and Cropping Pattern in India—Green Revolution: Need, Techniques & Effects—Rural Credit: NABARD, RRB's, Commercial Banks, Co-operatives, Micro Finance and Self-Help Groups—Agricultural marketing—Agricultural insurance—Social Security Measures & PDS—Information Technology in Indian agriculture.

### **Indian Industry:**

Role of Industry in the Indian Economy—Trends in the Industrial growth during pre-reform period—Industrial Policy Resolution of 1956&1991—Micro, Small and Medium Scale Enterprises (MSMEs): Problems and remedial measures—Role and Performance of Public Sector Units.

## **MODULE 3: Service and External Sectors**

Role of Service Sector in the Indian Economy—Growth of Infrastructural Facilities—Issues in the Development of Infrastructure: Physical & Environmental—Growth of Health Facilities, Educational Facilities—Growth of Tourism-e-commerce-India's trade relations-Exchange rate management-Role of international oil and gold prices in Indian economy.

## **MODULE 4: Indian Economy in the Post- Liberalization Era**

Economic Crisis of 1990—Economic reforms implemented since 1991: Features—Agriculture & WTO, Subsidies, Agricultural Prices, Impact of Public Expenditure on Agricultural Growth—Strategy of Industrialization, Privatization, Disinvestments—Role of FIIs, FDI & MNCs—Trends & Pattern of Industrial growth—Flagship Schemes to promote Entrepreneurship: Skill India, Make in India, Stand-up India etc.:

### **Reading List**

Sury, M.M (2016): Twenty Five Years of Economic Reforms in India-1991 to 2016, New Century Publications, New Delhi.

Surya Bhushan (2016): Agriculture and Environment in India, New Century Publications, New Delhi.

Romesh, Dutt (1906): The Economic History of India- Under Early British Rule, Vol. I &II.ed. Great Britain.

Bhattacharyya, Dhires (1989): A Concise History of Indian Economy, Prentice Hall of India Ltd.(PHI), New Delhi.

Uma Kapila (2013): Indian Economy since Independence, Academic Foundation, New Delhi.

Prakash, BA (2012): The Indian Economy since 1991: Economic Refrprms and Performance, Pearson Education, New Delhi.

Dutt, Ruddar and Sundaram: Indian Economy, S Chand & Company, New Delhi.

Mishra, J K & V K Puri: Indian Economy: The Development Experience, Himalaya Publishing House, Mumbai.

**SEMESTER 5**

**CORE COURSE VIII**

**AUAE543: PUBLIC ECONOMICS**

**Credit: 4**

**Inst.Hours:4**

<b>Name Of The Course: AUAE 543- Public Economics</b>	
<b>Course Outcomes</b>	
CO1	To enable the students to identify the significance of Government intervention in a market economy.
CO2	To develop an understanding about the public revenue and expenditure.
CO3	To understand the concept of public debt and budget
CO4	To promote understanding of the relevance of fiscal policy and fiscal federalism

<b>AUAE 543: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By identifying the various approaches on public economics that strengthens the need for Government intervention in a market economy.	PSO5	Understand	Factual	Assignment highlighting the significance of public economics.
CO2	By analyzing the sources of public revenue and the types and importance of public expenditure.	PSO5	Analyze	Factual	A group discussion on the merits and demerits of various taxes in India. .
CO3	By discussing the concept and effects of public debt and the significance and classification of budget.	PSO5	Understand	Factual	An Assignment on current Union budget.
CO4	By examining the functions and instruments of fiscal policy and the characteristics and the nature of Centre-State relations.	PSO5	Understand	Factual	A discussion on the recommendations of the Finance Commission (current).

## **MODULE 1: Introduction to Public Finance**

Meaning and Scope—Classical, Keynesian and Modern approach on Public economics—Public and Private Finance: Similarities and Dissimilarities—The Principle of Maximum Social Advantage—The changing role of government in modern economy—Market failures—Externalities—Type of goods: Public, Merit, Social and Club goods.

## **MODULE 2: Public Revenue and Public Expenditure**

Sources of public revenue: Tax and Non-Tax sources—Meaning and classification of taxes: Direct and Indirect tax, VAT, MODEVAT, CENVAT, GST, Progressive, Proportional and Regressive, Digressive taxes, Specific and Advalorem taxes—Merits and Demerits—Cannons of taxation—Principles of taxation—Impact, Incidence and Shifting of taxes—Effects of taxation—Laffer Curve—Taxable capacity.

Public Expenditure—Types of public expenditure—Cannons of public expenditure—Theoretical analysis of public expenditure: Wagner hypothesis, Peacock Wiseman hypothesis, Collin Clark hypothesis—Effects of public expenditure—Reasons for the growth in India's public expenditure.

## **MODULE 3: Public Debt and Budgeting**

Classification of public debt—Internal and External Burden of Public Debt—Effects of public debt on Production and Distribution—Public Debt and Deficit Financing—Economic effects of Deficit Financing—Redemption of public debt—Debt management.

Budget; Concept, Significance and Characteristics—Classification of budget—Budgetary process—Public Account—Consolidated Fund and Contingency Fund of India--Union Budget analysis.

## **MODULE 4: Fiscal Policy and Fiscal Federalism**

Fiscal policy: Functions and Instruments—Fiscal Federalism—Nature of Centre-State relationship—Gadgil formula, Mukherjee formula—Finance Commission--14<sup>th</sup> Finance Commission: Recommendations.

## **Reading List**

Singh, S K (2010): Public Finance-Theory and Practice, S Chand, New Delhi.

Hajela, T N (2010): Public Finance, Ann's Books, New Delhi.

Agarwal, R C (2015): Public Finance-Theory and Practice, Lekshmi Narayanan, Agra.

Mithani, D M (1998): Modern Public Finance, Himalaya Publishing House, New Delhi.

Tyagi, B P (1994): Public Finance, Jain Prakash Nath and Company, Meerut.

Musgrave and Musgrave (1976): Public Finance-Theory and Practice, McGraw Hill, Tokyo.

**SEMESTER 5****CORE COURSE IX****AUAE544: MONEY AND MODERN BANKING****Credit: 4****Inst.Hours:4**

<b>Name Of The Course: AUAE 544- Money and Modern Banking</b>	
<b>Course Outcomes</b>	
CO1	To understand the different aspects of money and the concepts of demand for and supply of money.
CO2	To examine the types, functions, and prominence of commercial banking and the significance of Central Bank.
CO3	To understand the progress of digitalization of payment mechanism in India.
CO4	To analyze the financial inclusive measures adopted by the Government of India.

<b>AUAE 544: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By discussing the concept, evolution, functions, and types of money and the approaches to the concept of demand for money and significance of money supply.	PSO6	Understand	Conceptual	Assignment on the Indian currency system.
CO2	By examining the types, functions, and significance of commercial banking system including the latest additions to the functions of the commercial banks and the significant role played by the Central Bank	PSO6	Understand	Factual	A debate on the role of non-banking financial institutions in the modern world.
CO3	By providing an idea of the various developments in the digital banking sector	PSO6	Understand	Conceptual	A debate on demonetization in India.

CO4	By understanding the concept of financial inclusion and the various measures taken by the Government and RBI to achieve the purpose.	PSO6	Understand	Factual	An assignment on various measures adopted by the Government and RBI to propagate the concept of financial inclusion.
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### **MODULE 1: Money**

Concept of money, Evolution of money--Crypto Currency—Functions of money—Monetary Standards: Metallic, Gold and Paper standards—Value of money—Demand for money: Classical, Keynesian and Monetarist approach—Supply of money: Definitions—Determinants of money supply—High powered money and money supply—Indian Currency system.

### **MODULE 2: Commercial Banking and Central Banking**

Type and functions of Commercial Banks—Creation of credit—Balance Sheet of a commercial bank—Management of NPAs by commercial banks—Nationalization of commercial banks—Innovative functions—Investment functions—Foreign Exchange business.

Functions of a Central Bank—Monetary policy: Objectives and credit control instruments—Role of Non- Bank Financial Institutions—Banking sector reforms in India.

### **MODULE 3: Progress of Digitalization of Payment Mechanism in India**

Mobile banking, Internet banking, Card facilities like Credit cards, Debit cards, Smart cards, Personal Identification Number (PIN), Electronic Fund Transfer, Electronic Clearing Services, NEFT, RTGS, SWIFT and IFSC—India Post Payment bank—Foreign banks—Demonetization.

### **MODULE 4: Financial Inclusive Measures**

Financial Inclusion: Definition, Advantages—Measures taken by Government and RBI: Rural Credit Co-operatives, RRBs, Urban Co-operative banks, Micro Finance, Self Help Groups, Mutual funds, Pension funds, Pradhan Mantri Jan-Dhan Yojana.

## **Reading List**

Ghosh and Ghosh: Fundamentals of Monetary economics, Himalaya Publishing House.

R R Paul: Monetary Economics, Kalyan Publishers.

S B Gupta (2007): Monetary Economic Institutions: Theory and Policy, Chand Co. M Y Khan(2011): Indian Financial System, Tata McGraw Hill.

M M Sury (2016): Twenty Five Years of Economic Reforms in India-1991 to 2016, New Century Publications, New Delhi.

Niti Bhasin (2016): Seventy Years of Banking System in India (1947-48 to 2016-17), New Century Publications, New Delhi.

Rangarajan, C (1998): Indian Economy- Essays on Money and Finance, UBS Publishers, New Delhi.

Rakesh Mohan(2014): Growth with Financial Stability, OUP Publishers, New Delhi.



**SEMESTER 5****CORE COURSE X****AUAE545: RESEARCH METHODOLOGY****Credit: 2****Inst.Hours:3**

<b>Name Of The Course: AUAE 545- Research Methodology</b>	
<b>Course Outcomes</b>	
CO1	To provide an understanding of the concept and types of research and the criteria of good research.
CO2	To understand the various steps to be followed in selecting the research problem.
CO3	To enable to the students to get an idea about the different methods of data collection and the data analysis process.
CO4	To understand the techniques of data interpretation and report writing.

<b>AUAE 545: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By understanding the motivation and objectives of research, the types of research and the criteria of good research.	PSO7	Understand	Conceptual	Assignment on the criteria of good research.
CO2	BY exposing the students to the steps to be followed in selecting the research problem.	PSO7	Remember	Procedural	Assignment on identifying a research problem by following the necessary steps.
CO3	Acquainting the students to the different methods for data collection and the different statistical packages available for data analysis.	PSO7	Understand	Conceptual	An assignment to collect data from a selected source using any available techniques and to do the analysis using a suitable statistical package.
CO4	Familiarizing the students to the techniques of data interpretation and the different steps in writing a report.	PSO7	Understand	Conceptual	An assignment to write a project report on the data collected previously.

## **MODULE 1: RESEARCH FORMULATION**

Motivation and Objectives – Research methods vs. Methodology-- Types of research: Descriptive. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical--Concept of applied and basic research process--Criteria of good research.

## **MODULE 2: SELECTING THE RESEARCH PROBLEM**

Defining and formulating the research problem--Necessity of defining the problem-- Importance of literature review in defining a problem--Literature review: Primary and Secondary sources, reviews, monograph, patents, research databases, web as a source, searching the web, critical literature review--Identifying gap areas from literature and research database--Development of working hypothesis.

## **MODULE 3: DATA COLLECTION AND ANALYSIS**

Observation and Collection of data--Methods of data collection--Sampling methods-- Data processing and analysis strategies and tools--Data analysis with statistical packages--Hypothesis testing.

## **MODULE 4: INTERPRETATION AND REPORT WRITING**

Meaning of Interpretation--Technique of Interpretation--Precaution in Interpretation— Significance of Report Writing--Different Steps in Writing Report, Layout of the Research Report--Types of reports--Oral Presentation-- Mechanics of Writing a Research Report--Precautions for Writing Research Reports,

### **Reading List**

Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.

Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.

Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, EssEss Publications. 2 volumes.

Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic DogPublishing. 270p.

Wadehra, B.L. 2000. Law relating to patents, trademarks, copyright designs and geographical indications. Universal Law Publishing.

### **Additional reading**

Anthony, M., Graziano, A.M. and Raulin, M.L., 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.

Carlos, C.M., 2000. Intellectual property rights, the WTO and developing countries: theTRIPS agreement and policy options. Zed Books, New York.

Coley, S.M. and Scheinberg, C. A., 1990, "Proposal Writing", Sage Publications.

Day, R.A., 1992.How to Write and Publish a Scientific Paper, Cambridge University Press.

Fink, A., 2009. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications

6. Leedy, P.D. and Ormrod, J.E., 2004 Practical Research: Planning and Design, Prentice Hall.

7. Satarkar, S.V., 2000. Intellectual property rights and Copy right. EssEss Publications.

**SEMESTER 5**

**OPEN COURSE**

**AUAE581.a: INTRODUCTION TO INDIAN ECONOMY**

**Credit: 2**

**Inst. Hours:3**

<b>Name Of The Course: AUAE581.a: Introduction to Indian Economy</b>	
<b>Course Outcomes</b>	
CO1	To appraise the students of the features of Indian economy in the pre-colonial, post-colonial, and globalized era.
CO2	To provide the students an understanding of Indian economy in terms on its National Income, sectorial share, government finance and expenditure, Centre-state relation, the significance of budget, and monetary policy.
CO3	To expose the students to the basic economic issues like inflation, unemployment, and poverty.

**MODULE 1: Indian Economic History**

The Pre-British Indian economy: features—British India: the economic exploitation of India, features—Independent India: features—Rationale of economic planning—Context of the new economic reform process—Features of the globalized economy.

**MODULE 2: Indian Economy**

Features of Indian economy—National Income: Meaning, Components of NI, Methods and Difficulties in NI Estimation, Role of CSO in India's NI estimation.

Sectoral Share: Contribution of different sectors to NI and employment—Major issues in Indian agriculture—Role of MSMEs in Indian context—Measures to promote MSMEs—Role of service sector.

Public Finance: Sources of public revenue: tax and non-tax—Type of taxes: direct, indirect, progressive, proportional, regressive and digressive, VAT, MODVAT, CENVAT, GST (basic concept alone).

Public Expenditure: Types of public expenditure, Flagship Schemes: MGNREGP, Digital India, Swachh Bharat, Skill India, Make in India, Stand-up India.

Fiscal Federalism—Nature of centre-state relationship—Finance Commission.

Budget: Concept, Significance—Union Budget—Monetary Policy.

### **MODULE 3: Inflation, Unemployment and Poverty**

Inflation: Concept and Measurement—Measures to fight inflation: Monetary and Fiscal measures—Unemployment: Types—Employment generation schemes—Poverty: Concept and Measurement.

#### **Reading List:**

Romesh, Dutt (1906): *The Economic History of India- Under Early British Rule*, Vol. I &II.ed. Great Britain.

Bhattacharyya, Dhires (1989): *A Concise History of Indian Economy*, Prentice Hall of India Ltd.(PHI), NewDelhi.

Uma Kapila (2013): *Indian Economy since Independence*, Academic Foundation, NewDelhi.

Prakash, BA (2012): *The Indian Economy since 1991: Economic Reforms and Performance*, Pearson Education, New Delhi.

Dutt, Ruddar and Sundaram: *Indian Economy*, S Chand & Company, New Delhi.

Mishra, J K & V K Puri: *Indian Economy: The Development Experience*, Himalaya Publishing House, Mumbai.

Mithani, D M (1998): *Modern Public Finance*, first edition, Himalaya Publishing House, NewDelhi.

Hajela, T N(2010): *Public Finance*, third edition, Ann's Books, New Delhi.

Tyagi, B P (1994): *Public Finance*, Jain Prakash Nath & Company, Meerut.

**SEMESTER 5**

**OPEN COURSE**

**AUAE581.b: INTRODUCTORY ECONOMICS**

**Credit: 2**

**Inst. Hours:3**

<b>Name Of The Course: AUAE581.b: Introductory Economics</b>	
<b>Course Outcomes</b>	
CO1	To provide an introduction to Economics and the various concepts.
CO2	To acquaint the students to one of the main branches of Economics, namely the Micro Economics.
CO3	To familiarize the students with the basics of the other main branch of Economics, namely, the Macro Economics.
CO4	To expose the students to the branches of Economic Development and International Trade.

**Module 1: Introduction to Economics (10 Hours)**

What is Economics? Definitions – Importance of Economics– Schools of thought The Economic Problem – Scarcity and Choice – Resource allocation – the question of What to produce, How to Produce and How to Distribute Output – its nature and Importance in developing countries- Economic Systems – Basics of Capitalism, Socialism, Mixed Economy, Market Economy and Third World Economies - Distinction between Micro and Macro Economics

**Module 2: Principles and Concepts of Micro Economics (10 Hours)**

Determinants of individual demand/supply, Demand/Supply schedule and demand/supply curve, Market versus individual demand/supply, Shifts in the demand/supply curve, Demand and Supply together, How Prices allocate resources - Equilibrium - Elasticity – Consumer equilibrium

– Marginal utility – Consumer surplus - Production – factors of production, production function

Laws–TR,AR,MR-Costs–TC,AC,MC,OC–Variable Vs Fixed costs –Short Run

Vs Long Run costs

### **Module 3: Basics of Macro Economics (20 Hours)**

The roots of macroeconomics - macroeconomic concerns - the role of government in the Macro economy - components of the macro economy - methodology of macroeconomics. Concepts of GNP, GDP, NNP, NDP and National Income – Personal Income and Disposable Income – Nominal and Real GDP – Limitations – Black Economy – Definition, functions and value of Money – Banking – credit creation – central bank – Concept of Inflation, Deflation, Methods of calculation

### **Module 4: Economic Development and International trade (10 Hours)**

Meaning of Development – Development Vs Growth, Measuring development - Problems of Growth – lessons and controversies, Developing Countries Vs Developed Countries, differences, characteristics – International trade and development – role of international institutions like IMF, World Bank, WTO and WIPO in international trade and development - Globalization – Global Financial Crisis

#### **Reading List:**

Stephen Dobson and Susan Palfreman, “Introduction to Economics”, Oxford University Press Samuelson, Paul A and William D Nordhaus “Economics” (18th Edition), McGraw Hill

Nilanjan Banik, “The Indian Economy: A Macroeconomic Perspective”, Sage Publications

Arvind Subramanian, 2012, “Growth Experience” in K Basu and A Maertens, The New Oxford Companion to Economics, Oxford University Press.

Chandrasekhar Rao and MahendraDev, 2010, Agricultural Price Policy, Farm Profitability and Food Security, EPW, June 26

Jean Dreze and Amartya Sen, 2013, India: An Uncertain Glory

JeemolUnni (2015) Employment and Industrial Development in India, in C P Chandrasekhar (ed) Economics Vol 1. Indian Industrialisation

PulapreBalakrishnan, 2007, “The Recovery of India: Economic Growth in the Nehru Era”, Economic and Political Weekly, November 2007.

Walter Nicholson, Christopher Snyder Microeconomic Theory: Basic Principles and Extensions 11th Edition

**SEMESTER 5**

**OPEN COURSE**

**AUAE581.c: HUMAN RESOURCE MANAGEMENT**

**Credit: 2**

**Inst. Hours: 3**

<b>Name Of The Course: AUAE581.c: Human Resource Management</b>	
<b>Course Outcomes</b>	
CO1	To expose the students to the basic concept and functions of Human Resource Management (HRM).
CO2	To acquaint the students with the significance of HR planning in efficient HRM
CO3	To appraise the students about the different techniques of recruitment, selection, and training of employees.
CO4	To provide the students an understanding of the disciplinary measures that can be taken to control Human Resource.

**MODULE 1: Introduction to Human Resource Management (10 Hours)**

Human resource management (HRM): evolution of the concept; meaning; scope- Major functional areas of HRM- Organisation of HR Departments -Role of HR managers- Emerging trends in HRM- Distinction between HRD and HRM –Concept of human capital

**MODULE II: Human Resource Planning (HRP) (14 Hours)**

Essential characteristics of human resources Human Resource Planning: meaning; nature;. significance - Levels of HRP- Determinants of HRP- Steps in HRP(Process)- Limitations of HRP

**MODULE III: Recruitment, Selection and Training of employees (20 Hours)**

Recruitment strategies: job analysis; job description; job specification- Selection: Meaning and steps- Training: Objectives and needs-Training process-Methods of training ( on- the- job & off-the job)

**MODULE IV: Controlling Human Resources (10 Hours)**

Promotion; Transfer; Demotion; Separation- Employee discipline: concept; features; types; objectives- Disciplinary Action Procedure: basic steps- Industrial



Democracy: Meaning objectives and forms – Workers' Participation in Management in India – Collective Bargaining

Framework in post-liberalised India

**Reading list**

1. Aswathappa, K. 2007. Human Resource and Personnel Management: Text and cases. Tata, McGraw- Hill. New Delhi
2. Monappa. A (1985): Industrial Relations, Tata McGraw Hill, New Delhi
3. Venkata Ratnam C.S, (2003), Negotiated Change: Collective Bargaining, Liberalization and Restructuring in India, Response Books, New Delhi
4. Bhattacharya, D.K, (2005) Human resource Planning, Excel Books, New Delhi

**SEMESTER 6****CORE COURSE XI****AUAE641: INDIAN ECONOMY II****Credit: 4****Inst. Hours: 5**

<b>Name Of The Course: AUAE641: Indian Economy II</b>	
<b>Course Outcomes</b>	
CO1	To acquaint the students to the economic planning process followed in India, its takeover by the Niti Aayog, and the major economic issues in the country.
CO2	To provide the students an understanding of the structure of Kerala economy.
CO3	To familiarize the students with an understanding of the demographic changes in Kerala.
CO4	To appraise the students about the performance of the productive sectors of Kerala.

<b>AUAE 641: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By acquainting the students to the economic planning process, details about the alternative Niti Aayog and the Government efforts to fight poverty and unemployment in the country.	PSO1	Understand	Factual	An assignment to compare and contrast the economic planning and Niti Aayog.
CO2	By appraising the students about the features of Kerala economy, its structural composition, and the Kerala model of development.	PSO1	Understand	Factual	An assignment on a critical evaluation of the Kerala model of development.
CO3	By enabling the students to understand the demographic features of Kerala and the problems associated with it	PSO1	Understand	Factual	An assignment on the contribution of the NRIs to the Kerala economy.
CO4	By acquainting the students to the performance of the productive sectors of the state.	PSO1	Understand	Factual	A class discussion on the performance on each of the productive sectors of Kerala.

## **MODULE 1: Economic Planning and Development Issues**

Meaning and Rationale of Planning—History of Planning--Basic Strategies, Objectives and Achievements of Planning in India—NITI Aayog—Decentralized Planning—Concept of Poverty and Poverty line—Measurement of Poverty—Trends and Pattern of Urban and Rural poverty—Poverty Alleviation Schemes—Structure and Growth of Employment—Trend and Pattern of Unemployment—Employment Generation Schemes—Rationalization of MNERGS---Issues of Inequality.

## **MODULE 2: Structure of Kerala Economy**

Development experience of Kerala: an overview- Kerala's development since the formation of the state- features of the state-structural composition-primary, secondary and tertiary sectors-changes over the years NSDP, GSDP, and PCI- Kerala model of development-a comparison with the highest SDP State in India.

## **MODULE 3: Demographic Changes**

Demographic features of Kerala: Size & Growth rate, Sex Composition, Age Composition, Birth & Death rate, IMR—Demographic transition in Kerala—Occupational distribution—Migration: Inter-regional & International—Problem of Unemployment—Educated unemployment—Trends in urban and rural poverty in Kerala- Major poverty reducing schemes- Environmental issues in the state.

## **MODULE 4: Kerala's Economic Development**

Trends in the production and productivity of major crops –Cropping Pattern—Relevance of plantation and cash crops in the economy—Progress of land reforms in Kerala—Agricultural Credit and Indebtedness—Impact of new economic reforms on the agricultural sector in Kerala—WTO and agricultural sector—Major issues in the agricultural sector.

Industrial growth in the pre-reform and post reform period—Status of Public Sector Units in Kerala— Scope of MSME's and its prospects---Performance of major traditional industries in Kerala—Industrial Backwardness: Causes & Remedial measures---Kudumbasree.

Service Sector: Growth of the Banking sector: Problems and Prospects--Direction and Composition of Kerala's trade—Extend of IT development in the state—Potential of tourism industry.

## **Reading List**

Sury, M.M (2016): *Twenty Five Years of Economic Reforms in India-1991 to 2016*, New Century Publications, New Delhi.

Surya Bhushan (2016): *Agriculture and Environment in India*, New Century Publications, New Delhi.

Uma Kapila (2013): *Indian Economy since Independence*, Academic Foundation, New Delhi.

Prakash, BA (2012): *The Indian Economy since 1991: Economic Reforms and Performance*, Pearson Education, New Delhi.

Dutt, Ruddar and Sundaram: *Indian Economy*, S Chand & Company, New Delhi.

Mishra, J K & V K Puri: *Indian Economy: The Development Experience*, Himalaya Publishing House, Mumbai.

B A Prakash (ed) (2004): *Kerala's Economic Development: Performance and Problems in the Post-Liberalization Period*, Sage Publications, New Delhi.

M AOomen (1993): *Essays on Kerala Economy*, Oxford and IBH.

K C Zachariah, E T Mathew & Irudaya Rajan (2003): *Dynamics of Migration in Kerala*, Orient Longman, New Delhi.

K C Zachariah and Irudaya Rajan (2012): *Kerala's Demographic Future: Issues and Policy Options*, Academic Foundation, New Delhi.

K Rajan (ed) (2009): *Kerala Economy: Trends During the Post Reform Period*, Serial Publications, New Delhi.

State Planning Board, *Economic Review*, Various Years, Thiruvananthapuram.

**SEMESTER 6****CORE COURSE XII****AUAE642: FINANCIAL ECONOMICS****Credit: 4****Inst.Hours:5**

<b>Name Of The Course: AUAE642: Financial Economics</b>	
<b>Course Outcomes</b>	
CO1	To provide an overview of the financial system in India.
CO2	To equip students with basic knowledge of the functioning of the financial markets and services.
CO3	To expose the students to the activities of the securities market.
CO4	To familiarize the students to the Indian financial system.

<b>AUAE 642: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By providing an overview of the growth and development of financial system, the regulatory institutions, the banking and non-banking institutions, and the financial sector reforms.	PSO8	Understand	Factual	An assignment on the evaluation of the financial sector reforms.
CO2	By providing an understanding of the money market and capital market and the instruments used for their functioning.	PSO8	Understand	Factual	An assignment on the stock exchanges in India.
CO3	By exposing the students to the securities market, types of risk involved, and technical analysis of the market.	PSO8	Analyze	Factual	An assignment on the performance of the derivatives market.
CO4	By familiarizing the students about the actual functioning of the Indian stock exchanges, performance of the Development Financial institutions, an idea about the credit rating agencies, and an assessment of the financial sector reforms.	PSO8	Analyze	Factual	Class discussion on the capital market in India.

## **MODULE 1: An Overview of Indian Financial System**

Growth and development of financial system in India—Regulatory and promotional institutions: RBI, SEBI, IRDA—Banking institutions: Commercial and Co-operative banks—Non-Banking Financial Institutions—Financial sector reforms in India: Banking sector reforms, Capital market reforms.

## **MODULE 2: Financial Markets**

Money Market: Definition, Features—Instruments of money market: Call & Notice money, Treasury Bills, Commercial Bills, Commercial Paper, Certificate of Deposits, Repos.

Capital Market: Meaning and Structure—Primary and Secondary markets.

Primary or New Issue Market: Functions, Intermediaries: Merchant bankers, Under writers, Registrar & Share transfer agent, Bankers to the issue, Stock brokers—Instruments of Capital market: Preference Shares, Differed shares, Equities, Ordinary shares, Bonds and Debentures, Government Promissory Notes, Public Sector Bonds, Initial Public Offer—Dematerialization of shares—Functioning of Depositories.

Secondary Market—Nature and functioning of stock exchanges—Settlement and Trading in stock exchange—Players in stock exchanges—Speculators—Bulls, bears, Lam Duck, Stag—Kerb Trading, Insider Trading—Listing of Securities.

## **MODULE 3: Security Market Analysis**

Market for derivatives: Futures/Forwards and options—SWAPS—Risk and return on securities—Types of risk—Security valuation—Constant growth model—P/E ratio—Technical analysis of the market—Dow theory—Elliot Wave theory.

## **MODULE 4: Indian Financial System**

Structure of Indian Financial System—Organization and Management of Indian Stock Exchange--: NSE, BSE—Stock market indicators: SENSEX, NIFTY—Stock market operations: Over The Counter Exchange of India (OTCEI), Inter-connected Stock Exchange (ISE), Depositories in India: NSDL, CSDL—Development Financial Institutions—Pension and Provident Funds—National Pension System and Pension Funds Regulatory and Development Authority—Mutual Funds, Venture Capital Funds—NBFIs, Chit Funds—Credit Rating Agencies in India: CRISIL, ICRI, CARE—Financial Sector Reforms—Narasimham Committee Report.

## **Reading List**

Bhole L M (1999): *Financial Institutions and Markets*, Tata McGraw Hill, New Delhi.

Khan M Y (1996): *Indian Financial System*, Tata McGraw Hill, New Delhi.

Gupta N K & Monika Chopra (2008): *Financial Markets, Institutions and Services*, Ane Books, India.

Singh Preeti (2009): *Dynamics of Indian Financial System: Markets, Institutions and Services*, Ane Books, New Delhi.

Gupta S P (2007): *Monetary Economic Institutions: Theory and Policy*, Chand & Co.

Smith P F (1978): *Money and Financial Intermediation: The Theory and Structure of the Financial System*, Prentice Hall.

Machiraju M R (1999): *Indian Financial System*, Vikas Publishing House, New Delhi.

Chandra P (1997): *Financial Markets*, Tata McGraw Hill, NY.

**SEMESTER 6****CORE COURSE XIII****AUAE643: INTERNATIONAL ECONOMICS****Credit: 4****Inst.Hours:4**

<b>Name Of The Course: AUAE643: International Economics</b>	
<b>Course Outcomes</b>	
CO1	To enable the students to understand the basic concepts related to international trade.
CO2	To familiarize the students with the trade policies that influences the trading between countries.
CO3	To appraise the students about the important facts about the Balance of Payment of the country and about the exchange rate.
CO4	To expose to the students India's position in the external sector.

<b>AUAE 643: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By enabling the students to understand the basic concepts related to International trade and the traditional theories of trade.	PSO9	Understand	Conceptual	An assignment on the application of the H-O theorem in the Indian trade situation.
CO2	By discussing in detail about the trade policies and their effects on trade.	PSO9	Understand	Conceptual	A discussion on the applicability of free trade and protection in India.
CO3	By appraising the students about the concept of BoP, its disequilibrium condition, measures to correct it and a detailed examination of the foreign exchange rate.	PSO9	Understand	Conceptual	A discussion on the exchange rate.
CO4	By acquainting the students with the performance of India's foreign trade, its BoP situation, foreign institutions providing funds, and the impact of international organizations on India's foreign trade.	PSO9	Understand	Factual	An assignment on the measures adopted to correct deficit in the BoP before and after 1991.



## **MODULE 1: International Trade Theories**

Trade as an engine of growth—Inter-regional and international trade—Theory of Absolute Cost Advantage—Comparative Advantage theory—Haberler's Opportunity Cost theory—Heckscher-Ohlin theorem—Leontief Paradox—Gains from trade: Static and Dynamic gains—Terms of Trade—Offer Curve—Community Indifference Curve—Production Possibility Curve.

## **MODULE 2: Trade Policy**

Free Trade vs. Protection—Types of tariff and quota—Impact of tariff and quota under partial equilibrium analysis—Different non-tariff restrictions—Optimum tariff—Free trade and policy of tariff in relation to economic growth with special reference to India.

## **MODULE 3: Balance of Payment**

Concept of BOT and BOP—Equilibrium and disequilibrium in the BOP—Measures to correct deficit in the BOP—Devaluation and Depreciation—Importance of devaluation to foreign trade—Marshall-Lerner condition—J Curve effect—Absorption approach.

Foreign Exchange rate determination: Mint Parity Theory, Purchasing Power parity theory, BOP Theory—Exchange rate systems—Fixed and Flexible exchange rates—Managed Floating systems—Nominal, Real and Effective exchange rate—Forward rate, Spot rate—Foreign Exchange Risks—Hedging and Speculation—IMF and International Liquidity Management.

## **MODULE 4: Foreign Trade in India**

Changes in the direction and composition of foreign trade—Trade reforms in India: EXIM policy—Measures adopted to correct deficit in the BOP before and after 1991—Flow of foreign capital: MNCs, FDI, FII—International organizations: IMF, World Bank, GATT, WTO and their impact on India's foreign trade.

## **Reading List**

Salvatore, D: International Economics, MacMillan Press Ltd, London.

Sodersten, Bo: International Economics, Macmillan Press Ltd, London.

Chacholiadas, M: International Trade: Theory and Policy, McGraw Hill, Japan.

Carbugh, Robert J: International Economics, Cengage Learning.

Dutt, Ruddar and Sundaram: Indian Economy, S Chand & Co, New Delhi.

**SEMESTER 6**

**CORE COURSE XIV**

**AUAE644: DEVELOPMENT ECONOMICS**

**Credit: 3**

**Inst. Hours:4**

<b>Name Of The Course: AUAE644: Development Economics</b>	
<b>Course Outcomes</b>	
CO1	To understand the basic concepts related to economic growth and development.
CO2	To examine the different tools for measuring economic growth and development.
CO3	To acquaint the students with the essential theories of development.

<b>AUAE 644: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By enabling the students to understand the concepts of growth and development, basic characteristics of LDCs, obstacles to grow and the Development Gaps.	PSO10	Understand	Conceptual	An assignment on the characteristics of LDCs
CO2	By acquainting the students with the different methods of measuring economic growth and development and inequalities.	PSO10	Understand	Conceptual	An assignment on the critical assessment of the tools for measuring economic growth and development.
CO3	By exposing the students to the theories regarding the views of development and the theories on the approaches to development.	PSO10	Understand	Conceptual	An assignment on the most applicable approaches to promote economic growth in India.

## **MODULE 1: Basic Concepts of Development**

Economic growth and economic development: Definitions and Distinctions—Characteristics of LDCs—Main obstacles to growth—Development Gap—Vicious Circle of Poverty—Human Capital & Economic Growth—Research & Development and Economic growth.

## **MODULE 2: Tools of Measuring Development**

Gross National Product—Per Capita Income—Social Indicators: Human Development Index, Physical Quality Life Index, Human Poverty Index, Happiness Index--Gender Development Index—Multi Dimensional Poverty Index—TAI, Green Index ( India's rank in the above mentioned indices)—Basic Needs Approach—Tools for measuring income inequality: Lorenz Curve, Gini Coefficient—Distribution of world income and its disparities—Concept of Sustainable Development: Need, Instruments & Issues.

## **MODULE 3: Theories of Development**

**Views of Development:** Adam Smith, David Ricardo, T R Malthus, Karl Marx, Schumpeter—Growth models: Neoclassical model of Robert M Solow, Neo Keynesian model of Joan Robinson, Harrod- Domar model, Concept of endogenous growth.

**Approaches to Development:** Rostow's stages of growth, Lewis theory of unlimited supply of labour, Fei-Rannis model, Nurkse's theory of disguised unemployment, Leibenstein's critical minimum effort thesis, Big Push theory, Balanced and Unbalanced growth, Myrdal's theory of Circular Causation.

### **Reading List**

Thirlwall, A. P (2011): Growth and Development with Special Reference to Developing Economies, Macmillan, U K.

Taneja, M.L and R M Myer (2014): The Economics of Development and Planning, Vishal Publishing Co, Punjab.

Todaro, Michael. P: Development in Third World, Longman Group Ltd, London.

Meier, G M (1995): Leading Issues in Economic Development, OUP, New Delhi.

Kindleberger, C P (1977): Economic Development, 3<sup>rd</sup>ed., McGraw Hill, New York.

**SEMESTER 6****ELECTIVE COURSE****AUAE691.a: BASIC ECONOMETRICS**

<b>Name Of The Course: AUAE691.a: Basic Econometrics</b>	
<b>Course Outcomes</b>	
CO1	To provide an understanding of Econometrics.
CO2	To equip students with basic knowledge for the estimation of simple linear regression model.
CO3	To train the students with basic knowledge for the estimation of multiple linear regression model.
CO4	To study the basic violations of classical assumptions.

<b>AUAE691.a: Tagging Course Outcomes</b>					
<b>CO</b>	<b>CO Statement</b>	<b>PSO</b>	<b>Cognitive Level</b>	<b>Knowledge Category</b>	<b>Assessment</b>
CO1	By examining the nature, scope and methodology of Econometrics.	PSO3	Understand	Conceptual	An assignment on the scope of Econometrics.
CO2	By the method of ordinary least squares and by introducing the properties of estimators.	PSO3	Analyze	Procedural	An assignment on testing of hypotheses using an appropriate problem.
CO3	By introducing various concepts of multiple linear regression model.	PSO3	Analyze	Procedural	An assignment on creation of a multiple regression model.
CO4	By introducing the basic violations of classical assumptions and their Consequences, Detection and Remedies	PSO3	Analyze	Procedural	An assignment on the consequences of and the tests for serial correlation.

### **Module 1: Introduction**

Nature and scope of Econometrics- Methodology of Econometrics.

### **Module 2: Simple Linear Regression Model-Two Variable Cases**

Estimation of model by method of ordinary least squares---Properties of Estimators---Gauss Markov Theorem---Goodness of Fit---Test of Hypotheses---Forecasting.

### **Module 3: Multiple Linear Regression Model**

Least Square Estimation--- $R^2$  and Adjusted  $R^2$ ---Partial Regressive Coefficients---Testing of Hypotheses---Functional Forms of Regression Models---Qualitative (dummy) Independent Variables---Forecasting.

### **Module 4: Violations of Classical Assumptions**

Violations of Classical Assumptions: Consequences, Detection and Remedies---Multicollinearity---Heteroscedasticity---Serial Correlations.

### **Reading List**

D.N. Gujarati and D.C. Porter, Essentials of Econometrics, McGraw Hill, 4<sup>th</sup> Edition, International Edition, 2009. Chapter 1

GMK Madnani, Introduction to Econometrics: Principles and Applications, Oxford & IBH Publishing Co, 8<sup>th</sup> Edition, 2008. Chapter 1.

Christopher Dougherty, Introduction to Econometrics, Oxford University Press, 3<sup>rd</sup> Edition, Indian Edition, 2007. Chapter 2.

Jan Kmenta, Elements of Econometrics, Indian Reprint, Khosla Publishing House, 2<sup>nd</sup> Edition, 2008

## SEMESTER 6

### ELECTIVE COURSE

#### AUAE691.b: HISTORY OF ECONOMIC THOUGHT

**Credit: 2**

**Inst.Hours:4**

#### **Objectives:**

The course intends to familiarize the students with the broad contours of Social Sciences, specifically Economics. The course also aims to create an enthusiasm among students regarding the origin and evolution of different schools of thought in Economics

#### **Module 1: Early Economic Thought**

Greek and Roman economic thought - economic ideas of Plato and Aristotle-

Mercantilism-meaning-Factors responsible for the rise of mercantilism - Physiocrats-Natural order-primacy of agriculture-Tableau Economique

#### **Module 2: Classical Economic Thought**

Three Pillars of Classical School: Adam Smith- laissez faire economy-division of labour, theory of value- value in use and value in exchange – diamond-water paradox. David Ricardo- Theory of value-views on distribution-theory of rent - stationary state. Say's law of market. Thomas R. Malthus-Theory of population, Theory of Glut

#### **Module 3: Marxist Political Economy**

Karl Marx- Materialistic interpretation of History, Dialectical materialism, Labour theory of Value-surplus value-organic composition of capital- Industrial reserve Army-Class war- Crisis of capitalism

#### **Module 4: Indian Economic Thought**

Kautilya's Arthashastra - Economic Thoughts of Dadabhai Naoroji –

Mahadev Govind Ranade (M.G. Ranade) - Romesh Chandra Dutt (R.C. Dutt) - B.R. Ambedkar - J.C. Kumarappa –Mahatma Gandhi-Jawaharlal Nehru- Amartya Sen

## **Reading List**

Eric Roll (1956): History of Economic Thought, 3rd , Englewood Cliffs, N.J.

PrenticeHall, Inc, 1956

Goddanti Omkarnath (2016): 'Indian Development Thinking' from Handbook of alternative theories of economic development Edited by Erik S. Reinert, Jayati Ghosh and Rainer Kattel

Dasgupta, Ajit K.(1993): A History of Indian Economic Thought, Routledge, London

Lokanathan, V (2013): A History of Economic Thought, S.Chand & Company Ltd, New Delhi

## **Additional Reading**

Rangarajan, L.N. (2001): Kautilya – The Arthashastra, Penguin Books India Pvt.Limited, New Delhi

Singh, V.B. (1975): From Naoroji to Nehru – Six Essays in Indian Economic Thought, The Macmillan Company of India Limited, New Delhi

Ajit K. Dasgupta, Gandhi's Economic Thought, Routledge, London. Year

Blaug, Mark, (1997) Economic Theory in Retrospect, 5th Edition, Cambridge University Press, Cambridge, UK

## SEMESTER 6

### ELECTIVE COURSE

#### AUAE691.c: MATHEMATICAL ECONOMICS

**Credit: 2**

**Inst.Hours:4**

#### **Objectives:**

#### **Module 1: - Introduction to Mathematical Economics**

Nature and scope of mathematical economics – Mathematical representation of Economic Models- Ingredients of a mathematical model- Variables, constants and parameters- Relations and Functions- ordered pairs- Domain and Range- Types of Functions- constant function, Polynomial function, Rational function, Non algebraic functions – functions of two or more independent variables- Linear function, quadratic function, Explicit and Implicit Functions.

Static (or Equilibrium) Analysis – the market equilibrium – Partial market equilibrium- General market equilibrium

#### **Reading List:**

*Alpha C. Chiang, Fundamental methods of Mathematical Economics; Tata McGraw-Hill*

*(International Edition (Part 1, chapter 1 and 2))*

*Edward T Bowling, Introduction to Mathematical Economics; McGraw Hill, New Delhi*

#### **Module 2:- Optimization Problems**

Maximum and Minimum of functions-first derivative test-second derivative test- Concavity and Convexity- Functions of several variables and Partial derivatives- optimization of multivariable functions- necessary versus sufficient conditions – constrained Optimization with equality Lagrange Multiplier – Linear Programming– Basis concepts- General formulation of Linear Programs – Nature of feasible, basic and optimal solution; Graphic solution



**Reading List:**

*Alpha C. Chiang, Fundamental methods of Mathematical Economics; Tata McGraw-Hill (International Edition. (Part 4: chapter 9 and 12; Part 6: Chapter 19)*

*Edward T Bowling, Introduction to Mathematical Economics; McGraw Hill, New Delhi*

**Module 3:- Theory of value**

Cardinal and Ordinal Utility - Mathematical derivation of consumer's equilibrium - Consumer' surplus- Slutsky Theorem - Income and substitution effect - Method of demand forecasting

**Reading List:**

Henderson, J.M and R.E Quandt, Micro Economic Theory: A mathematical Approach, McGraw. Hill, New Delhi

William J. Baumol, Economic Theory and Operations Analysis; Prentice- Hall of India Private Limited

**MODULE 4: Theory of Production**

Production function—Adding- up theorem—Cobb-Douglas—Derivation of cost function from a production function—Marginal analysis—Equilibrium of a firm—Perfect market equilibrium—

Monopoly equilibrium—Discriminating Monopoly—Producer's surplus

**Reading List:**

Henderson, J.M and R.E Quandt, Micro Economic Theory: A mathematical Approach, McGraw Hill, New Delhi

William J. Baumol, Economic Theory and Operations Analysis; Prentice- Hall of India Private Limited

## SEMESTER 6

### CORE COURSE XV

#### AUAE645: PROJECT AND PROJECT BASED VIVA-VOCE

**Credits : 4**

**Inst. Hours: 6**

**(3 each in Sem V and Sem VI)**

As part of the requirements for BA Programme, every student must do a project either individually or as a group under the supervision of a teacher. The project is expected to equip the student to identify an issue or topic and conduct the study in a systematic and scientific way. Students will get the opportunity to apply various tools they have learned and present the report in a structured manner.

#### **Guidelines**

1. Project work may be done individually or as a group (Maximum 5 students). The topic selected should be related to theory or economic issues. The work may use primary or secondary source of data. It should be typed in 35- 60 pages with spiral binding. The printing has to be in paper A4, with Times New Roman font 12 for content and 14 for titles with a line spacing 1.5
2. The guidance for doing the project has to be given in Semester V and Semester VI. Three instructional hours in each semester have been provided for this purpose.
3. The area of study should be finalized in the Semester V and final report should be submitted at the end of the Semester VI.
4. A pre submission seminar should be undertaken in the Semester VI for reviewing nature and quality of the project work. The supervising teacher should ensure that the work is not a reproduction of any work conducted earlier.
5. Students should be given classes on research methodology before the commencement of the project work
6. The project Work shall contain the following:
  - (i) An Acknowledgement of the student and declaration certificate of the Supervising Teacher.
  - (ii) Introduction and Review of literature

(iii) Methodology

(iv) Analysis

(v) Conclusions and Suggestions if any

(vi) Bibliography

7. Evaluation Indicators

Introduction and Review of literature	10%
Methodology	20%
Analysis	40%
Conclusions and Suggestions if any	20%
Bibliography	10%