CENTRE FOR BUDGET STUDIES

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Appendix- IV

M.Sc. Econometrics & Financial Technology

2023 Admission

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MSc Econometrics and Financial technology

Objectives and Outcome:

Master of Econometrics and Financial Technology (MSc) is a four semester programme aiming at providing rigorous training in economics, quantitate techniques and analytical methods for an in-depth understanding of economics and finance. Econometrics and Financial Technology are inseparable parts of financial analysis in the contemporary world. The course is so designed as to enable students to experience a unique blend of economics, finance and econometric tools that will give them state of the art knowledge in the subject and inculcate in them problem solving skills that are most required in the job market. Students will be given meticulous training in problem solving capability, using real world examples with the help of econometric packages. There are 3 Practical lab training courses spread over the 2nd to 4th semesters with a view to skill up students in data processing, estimation, and analysis. In addition, students will have to take an internship with an industry, financial institution, or a research organization to gain hands on experience in their area of specialization. What distinguishes this course of study from the run of the mill programme is its emphasis not only on theory but also on application. Pursuance of this course will have imparted students a thorough knowledge of economic theory, finance and econometric tools with practical experience eminently required for university/ college teaching, working in rating agencies, financial institutions, corporate enterprises, and research organizations.

Regulations for the Master's Programme in Econometrics and Financial Technology

1. ELIGIBILITY FOR ADMISSION

1.1. Eligibility for admission to M.Sc. Econometrics and Financial Technology shall be a Bachelor's Degree in Economics/Econometrics/Finance/Data Science/Commerce or BSc. Mathematics /Statistics or B.Tech. with 55% marks.

1.2 Candidates who have appeared in the Final Year Degree Examination but awaiting results are permitted to seek provisional admission to the course. Such candidates required to provide evidence of the minimum academic qualification prescribed on or before their enrolment to the first semester M.Sc. Econometrics and Financial Technology examination of CUSAT to be held for the same batch of students. If they fail to do so they shall be removed from the rolls.

1.3 Admission to the M.Sc. Econometrics and Financial Technology shall be based on the scores obtained by the candidate in the CAT conducted by the University. The questions for the CAT are of multiple choices from Economics (40%), mathematics and Statistics (30%) Finance (20 %) remaining general awareness.

1.4 There shall be 20 seats for the program. Reservations will be based on university norms. 2 supernumerary seats shall be reserved for candidates with a minimum of one year of industry experience.

1.5 Reservation rules applicable to nonprofessional courses in Kerala as laid down by the State Government from time are applicable in the case of admission to the degree.

1.6 Payment of fees: Fees for the programme must be paid as prescribed by the University.

1.7 Re-admission to the programme shall be permitted only if the candidate satisfies the conditions laid down by the University and with permission of the Registrar.

2. COURSE STUDY:

2.1. The course work for the M.Sc. Econometrics and Financial Technology degree shall be in accordance with the schemes of examination and syllabus prescribed. The course shall extend over a period of two academic years comprising of four semesters. Each semester shall extend over a period of 16-18 weeks.

2.2 The minimum attendance required by the candidate shall be 75 %.

3. SCHEME OF STUDIES:

A minimum of 82 (Eighty-two) credits shall be offered during the four semesters.

3.1. Core course: Core courses are Mandatory courses for all students pursuing a particular program or degree. These courses are foundational courses that provide a broad and comprehensive understanding of the subject matter. Core courses are designed to ensure that all students have a common understanding of the fundamental concepts and principles of the field of study.

3.2. Electives: Elective courses are courses that students can choose to take from a list of optional courses in addition to the core courses. Elective courses allow students to tailor their education to their interests and goals, and to explore specific topics in more depth.

The student is required to take at least one elective from the fintech track in both the 3rd and 4th semesters.

3.3. Audit Course: Course that can be opted by the student and does not carry any credit.

3.4. Capstone project: In the second semester, a capstone project with 1 credits is introduced to get the hands-on experience. the capstone project might involve applying econometric and financial modeling techniques using Python to a real-world problem or data set. The continuous assessment consists of two components: 50% of the marks are allocated for the internal report, and the remaining 50% are allocated for the viva voce. The project includes a detailed report that documents the problem being addressed, the design of the solution, the development process, and the results of the project. The students also have to attend a viva voce. The student will be eligible for the viva only if the supervising faculty approves and recommends it.

3.5. Project Report and Viva Voce: In the fourth semester there shall be a project report and viva voce. The Project Report is equivalent to **3 (three)** credits. The Viva Voce examination is based on a presentation made by candidate in the department with an external expert. The continuous assessment consists of two components: 50% of the marks are allocated for the project report, and the remaining 50% are allocated for the viva voce.

3.6. Internship: Internship has to be completed before the Third-semester examination.

The assessment criteria for the internship will be based on the internship report submitted by the students. The student shall submit a detailed report of their internship experience, including the projects they have worked on, the techniques they have used and the insights they gained. The students can provide examples of the data analysis projects they have worked on to analyse their ability to use the statistical software, data analysis tools and programming language. They can also submit copies of reports or presentations they created during the internship. The student should also submit an experience certificate from the internship supervisor.

The internship is an opportunity for the students to get a work-integrated learning where they can apply their theoretical knowledge and skills in a workplace setting. This helps to close the gap between the students' skills and job market requirements and equip the graduates better.

3.7. Students shall also do the MOOC Courses with 6 credits in total, the students will have to choose from the pool of courses offered by SWAYAM/NPTEL so that they complete courses that add up to 6 credits. They are allowed to take 3 courses of 2 credits each.

4. **SEMESTER GRADE-TRANSCRIPT**

The University under its seal shall issue a semester Grade transcript to the students on completion of each semester. The semester Grade transcript shall contain the following:

a. Title of the course taken as core, elective and audit, (An audit course shall be listed only if he student has secured a pass).
b. Title of the online course.
c. Title of the Major project if any.
d. The credits associated with and the grades awarded for each course,
e. The number of credits (core and elective separately) earned by the student and the Grade Point Average.
f. The total credits (core and elective) earned till that semester.

The following grading system shall be adopted for all the programs, The following grades will be awarded based on the overall performance in each subject.

Range of Marks Grades	Grades	Weightage
90 and above	S-Outstanding	10
80 to 89	A-Excellent	9
70 to 79	B-Very good	8
60 to 69	C-Good	7
50 to 59	D-Satisfactory	6
Below 50%	F-Failed	0

Overall performance at the end of the semester will be indicated by Grade Point Average (GPA) calculated as follows.

$$GPA = \frac{G1CI+G2C2+G3C3+\ldots\ldots\ldots\ldots..GnCn}{C1+C2+C3+\ldots\ldots\ldots\ldots..\ldots..Cn}$$

'G' refers to the grade weightage and 'C' refers to the credit value of the corresponding course undergone by the student, At the end of the final semester Cumulative Grade Point Average (CGPA) will be calculated based on the above formula, considering the Credits and Grades earned during the entire programme of study.

Classification for the Degree/ Diploma will be given as follows based on CGPA:

First Class with distinction	8 and above
First Class	6.5 and above
Second class	6 and above

The semester Grade Transcript issued at the end of the final semester shall contain the details of all the courses taken which shall include the titles of the courses, credits associated with each course, the CGPA and the class.

The CGPA to percentage conversion may be done via the formula

%marks = (CGPA – 0.5)*10

SEMESTER - I

Course Code	Title of Paper	Core/ Elective	Credits	Contact Hours/ Week	Continuous evaluation marks	End Semester Marks	Total Marks
23-345-0101	Microeconomics	C	4	4	50	50	100
23-345-0102	Macroeconomics	C	4	4	50	50	100
23-345-0103	Mathematics for Economics and Finance	C	4	4	50	50	100
23-345-0104	Statistics for Economics and Finance	C	4	4	50	50	100
23-345-0105	Financial Economics	C	4	4	50	50	100
23-345-0106	Financial Reporting and Analysis (Audit Course)	C					
TOTAL CREDITS FOR FIRST SEMESTER = 20				20			

SEMESTER – II

Course Code	Title of Paper	Core/ Elective	Credits	Contact Hours/ Week	Continuous evaluation marks	End Semester Marks	Total Marks
23-345-0201	Advanced Macroeconomics	C	4	4	50	50	100
23-345-0202	Corporate Finance	C	4	4	50	50	100

23-345-0203	Econometrics	C	4	4	50	50	100
23-345-0204	Security Analysis and Portfolio Management	C	4	4	50	50	100
23-345-0205	Behavioral Finance	C	4	4	50	50	100
23-345-0206	PythonLab-I	C	1	2	100		
23-345-0207	Capstone Project	C	1	2	100		
TOTAL CREDITS FOR SECOND SEMESTER = 22				24			

SEMESTER – III

Course Code	Title of Paper	Core/ Elective	Credits	Contact Hours/ Week	Continuous evaluation marks	External Evaluation Marks	Total Marks
23-345-0301	Applied Econometrics	C	4	4	50	50	100
23-345-0302	Fintech-I	C	4	4	50	50	100
23-345-0303	Research Methodology	C	4	4	50	50	100
23-345-0304	PythonLab-II	C	1	2	100		
23-354-0305	Internship		2		100		
23-345-0306	Major Issues in Indian Economy with Special Reference to Kerala	Audit course					
	Elective-1	E	3	3	50	50	100
	Elective-2	E	3	3	50	50	100
TOTAL CREDITS FOR THIRD SEMESTER = 21				20			

SEMESTER - IV

Course Code	Title of Paper	Core/ Elective	Credits	Contact Hours/ Week	Continuous evaluation marks	External Evaluation Marks	Total Marks
23-345-0401	Project Report and Viva Voce	C	3	2	-	100	100
23-345-0402	PythonLab-III	C	1	2	50		
23-345-0403	Fintech-II	E	3	3	50	50	100
	Elective-3	E	3	3	50	50	100
	Elective-4	E	3	3	50	50	100

	MOOC*	E	6	-	-	100	600
TOTAL CREDITS FOR FOURTH SEMESTER = 19				13			

Total Eighty-two credits. PG Regulations of CUSAT is applicable to this programme.

*****_Students shall also do the MOOC Courses with 6 credits in total, the students will have to choose from the pool of courses offered by SWAYAM/NPTEL so that they complete courses that add up to 6 credits. They are allowed to take 3 courses of 2 credits each._

List of Electives

CODE	**SEMESTER III**
20-372-0411	Financial Derivatives and Risk Management
23-345-0307	Asset Pricing: Theory and Practice
23-345-0308	Artificial Intelligence and Blockchain Technology
23-345-0309	Digital Banking and Payments
23-345-0310	International Finance
23-345-0311	Game Theory
	SEMESTER IV
23-345-0404	Investment Banking Services
23-345-0405	Data Analytics
23-345-0406	Financial Econometrics
23-345-0407	Panel Data Econometrics
23-345-0408	Multivariate Methods
23-345-0409	Budgetary Analysis and Fiscal Management in India
23-345-0410	Fiscal Federalism: Theory and Practice with Special Reference to Kerala
23-345-0411	Public Economics
23-345-0412	Public Choice and Policy
23-345-0413	Insurance Economics
23-345-0414	Fintech Venture Management and Entrepreneurship

Credit Distribution Semester wise

Semester	Credits
1	20

2	22
3	21
4	19
Total credits	82

Total eighty-two credits. PG Regulations of CUSAT is applicable to this programme.

SEMESTER 1

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0101	**Microeconomics**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	concepts of demand, LES and utility maximisation
CO2	Understanding	the concept of various production functions, market, and firm
CO3	Applying	The demand and supply conditions and assess the position of a company
CO4	Analysing	Real-world business problems with a systematic theoretical framework
CO5	Evaluating	Effect of non-price factors on products and services of monopolistic and oligopoly firms.
CO6	Creating	Competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	2	1							
CO2	3	3								
CO3	3	2		1						

CO4	3			2						
CO5	3					2				
CO6	3						2			

Microeconomics

Objectives: This course has been designed with the objective to help a student to understand the basic principles of microeconomics, the Marginalist approach and the justification of mathematical models to describe consumer and firm behavior. Become familiar with basic concepts of microeconomics and acquire analytical skills to analyze problems of economic policy. Improve student's analytical skills and ability to solve problems, which will be useful in several other areas of economics.

Module 1: Compensated Demand Curves and Functions- Revealed Preference - The Constant Elasticity of Demand function- The Dynamic Demand function-Lagged Adjustment in Interrelated Markets- The Linear Expenditure Systems; the Expenditure Function; Modern Utility Analysis of Choices Involving Risk and Uncertainty- Bernoulli, Neumann-Morgenstern, Friedman-Savage and Markowitz Hypotheses- Indirect Utility Function (duality theory)- - Ray's Identity-- Duality in Consumer Theory- Snob Effect , Bandwagon Effect-Veblen Effect—Inter Temporal Consumption

Module 2 : Production Function: Cobb Douglas, CES, VES and Translog Production Functions- Euler's Theorem-Technical Progress and Production Function- Production Function vs Production Process Costs of Production – Short Run and Long Run Cost Curves-Derivation of Long Run Total Cost Curve from Production Function-Shephard's Lemma and the Elasticity of Substitution-Profit Maximisation and Competitive Supply- Short Run and Long Run Supply Curves -Long Run Supply Elasticity- Economies of Scale and Economies of Scope --Long Run Average Cost Curves- Modern Theories of Cost -- Engineering Cost- Critical evaluation of Profit Maximisation Model; Baumol's Sales Revenue Maximization Model; Williamson's Model of Managerial Discretion; Marris Model of Managerial Enterprise; Behavioural Model of Cyrt and March

Module 3: Analysis of Competitive Market- Short Run and Long Run- Efficiency of a Competitive Market- Import Quotas and Tariffs- Taxes and Subsidies - Multiplant Monopoly—Degree of Monopoly Power—Price Discrimination- Monopoly Control -Price and Output Determination Under Monopsony and Bilateral Monopoly --The Spatial Interpretation of Monopolistic Competition—-- Oligopoly—The Cournot, Bertrand and the Stackelberg Model—Kinked Demand Curve Model—Collusion and the theory of Games—Contestable Markets. Developments in Pricing Strategies-Average or Full Cost Pricing- Mark up Pricing- Limit Pricing Theory- Bains Version- Silos – Labini Model of limit Pricing- Public Utility Pricing.

Module 4 : A Graphic Model of General Equilibrium with Two Goods-Comparative Static Analysis-General Equilibrium Modelling and Factor Prices (Walrasian Type)-A Mathematical Model of Exchange-A Mathematical Model of Production and Exchange-Arrow-Debreau General Equilibrium Model. Computable General Equilibrium Model.Pigovian Welfare Economics; Pareto Optimal Conditions; Value Judgement; Social Welfare Function -Compensation Principle; Theory of Second Best – Arrow's Impossibility Theorem; Rawl's Theory of Justice

Module 5 : Introduction to nash Equilibrium – theory of rational choice – interacting decision makers – strategic games – best response functions dominated actions - nash equilibrium – cournots model of duopoloy-bertrands model – stacklebergs model of duopoly markets

Reference:

- Walter Nicholson and Christopher Snyder: **Microeconomic Theory: Basic Principles and Extensions,** Thompson South-Western, 11th Edition, 2012
- Robert Pindyck and Daniel Rubinfeld, **Microeconomics**, Pearson, 8th Edition, 2019
- Geoffrey A. Jehle and Philip J. Reny, (2011)Advanced Microeconomic Theory 3rd Edition, Prentice Hal
- Osborne, M.J.An Introduction to Game Theory, Oxford University Press, 2004

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0102	**Macroeconomics**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	national income, calculation methods of national income, and concepts related to na income.
CO2	Understanding	macroeconomic issues such as money, foreign exchange, inflation, unemployment, economic growth and foreign trade.
CO3	Applying	AD-AS model to explain the equilibrium levels of real GDP and price level; define aggregate demand (AD) and explain the factors that cause it to change; define aggregate supply (AS) and explain the factors that cause it to change
CO4	Analysing	rate of inflation; explain how the rate of inflation is calculated
CO5	Evaluating	tenets of Neoclassical Economics; identify the Neoclassical portion of the AS curve and explain the logic for it; differentiate between the long run and short run aggregate supply curves
CO6	Creating	appropriate macro policy options in response to the state of the economy; understar effectiveness and limitations of fiscal and/or monetary policy for a given state economy; choose an appropriate fiscal and monetary policy for a given state economy

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2	3									
CO3		3								
CO4			3							
CO5				3						
CO6						3				

Macroeconomics

Objectives: This course has been designed with the objective to help a student understand the forces determining macroeconomic variables and concepts in investment, consumption, money, liquidity through theories; Be familiar with macroeconomic terminology, such as the multiplier, the natural level of unemployment, and fiscal policy. Be capable of interpreting and evaluating media reports on the macro-economy**.**

Module 1 : National accounting concepts - Classical macroeconomics-Say's Law, Say's Identity and Say's Equality-Classical labour market and product market equilibrium-The Quantity Theory of Money-Fisher's and Cash Balance Approaches-Classical theory of interest-Classical Dichotomy-Neutrality of money-Patinkin's real balance effect.

Module 2 : Keynes' psychological law of consumption – MPC and MPI, implications of the law; Empirical evidence on consumption function; short run and long-run consumption function – absolute income, relative income, permanent income and life cycle hypotheses. Investment theories (MEC, MEI, accelerator, flexible accelerator, Neo Classical, financial and Tobin's-Q ratio)-Keynesian cross analysis of two, three and four sectors-Demand for money theories (Keynes, Baumol, Tobin and Friedman)-Supply of money theories-Effective Demand and underemployment equilibrium- modern money theory.

Module 3 : Classical, Keynesian and Monetarist approaches to inflation; Structuralist theory of inflation; Philips curve analysis. Short run and long run Philips curve; Tobin's modified Philips curve; Policies to control inflation. Business cycle-meaning and features; Theories of Business cycle Hawtrey, Keynes, Samuelson ,Kaldor, Hicks, Goodwin's model.

Module 4 : IS-LM model (closed economy) The Neoclassical and Keynesian macroeconomic models-The interaction of real and monetary models-the Neoclassical and Keynesian version of IS-LM model-fiscal and monetary analysis in IS-LM model-fiscal policy and crowding out effect-Ricardian equivalence- the relative efficacy of fiscal and monetary policy-the Aggregate supply in the short and long run-Aggregate demand and price determination-Pigou effect and Real Balance effect in the IS-LM model.

Module 5 : IS-LM model (open economy) The Mundell-Flemming Model The Fiscal and Monetary Policy Operation under Fixed and Floating Exchange Rate Regime – Trade Policy in IS-LM Models. Aggregate Demand Aggregate Supply framework-Phillip's Curve Adaptive expectations and vertical long run Phillips Curve. NRUE

References:

- Rudiger Dornbusch and Stanley Fisher, Macroeconomics,1994, McGraw-Hill
- James Galbraith and William Darity, Macroeconomics, 1994, Houghton Mifflin
- Brian Snowdown and Howard Vain , Modern Macroeconomics-An Introduction to Competing Schools of Thought, 2005 , Edward Elgar
- Macroeconomics-An Introduction to Keynesian and Neo-classical Controversies, 1986 by Rosalind Levacic and Alexander Rebman, ELBS, McMillan

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0103	**Mathematics for Economics and Finance**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	exposed to economic concepts in mathematical format through simple illustrations and prepares the ground for more scientific study.
CO2	Understanding	Use derivatives and integration concepts useful for economic analysis.
CO3	Applying	Solve unconstrained optimization problems involving functions of single and multiple variables.
CO4	Analysing	Use the Lagrange multiplier method to solve constrained optimization problems involving functions of single and multiple variables.
CO5	Evaluating	problems involving variables that discretely and continuously grow over time, and compute present discounted values, future compounded values, and rates of growth.
CO6	Creating	Successfully use mathematics in economics and business applications.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	1									
CO2	2									
CO3			3							
CO4			3							
CO5				3						
CO6						3				

Mathematics for Economics and Finance

Objectives: This course has been designed with the objective to help a student to know the principal results of single and several variable calculus, including calculation of derivatives, partial derivatives of both explicit and implicit functions and solving optimization problems. Use mathematical methods for research analysis and interpretation. Identify, critically evaluate and synthesize the substantive theories for creating models for understanding economic behavior.

Module 1 : The nature of Mathematical Economics- Economic Models: Real Number System, Functions of Two or More Independent variables; Equilibrium Analysis: Linear and Non-Linear Models, General Market Equilibrium, Equilibrium in National Income Analysis; Linear Models Leontief Input-Output Models. Compound Interest, Present Discount Value, rate of Return, Annuities and Perpetuities, Bond Price, Continuous Time, Continuous Growth, Payment Streams, Duration, Applications.

Module 2: Comparative Statics: Derivative and the Slope of a Curve, Limit Theorems, Continuity and Differentiability of a Function, Differentiation, Partial Differentiation, Application to Comparative- Static Analysis, Jacobian Determinants; Differentials and Total Derivatives, Comparative Statics of General Function Models, Applications in Economics and Finance, Limitations of Comparative Statics.

Module 3: Optimization: Optimum and extreme Values, Relative Maximum and Minimum, Higher Derivatives, Malcurian and Taylor series, Nth Derivative Test; Exponential and Logarithmic Functions, Growth, Optimal Timing, Applications of Exponential and Logarithmic Functions; Quadratic Forms, Concavity, Convexity and their Economic Applications; mathematical optimization, Optimization with Equality Constraints, Quasi-concavity, Quasi-convexity and their Economic applications in Utility and Production.

Module 4: Dynamic Analysis: Dynamics and Integration, Economic Applications of Integrals, Domar Growth Model, Natural Resource pricing; Continuous Time- First Oder Linear Differential Equations, Dynamics of market Price, ardlGrowth Model, Inflation and Unemployment, Higher Order Linear Differential Equations. Discrete-Time: First Order Difference Equation, Dynamic Stability of Equilibrium, Cob-Web Model, Market Model with Inventory, The Qualitative- Graphic Approach. Samuelson Multiplier-acceleration Model, Philip's Curve in Discrete Time, Generalization Model. Simultaneous Differential Equations and Difference Equations: Solving Simultaneous Dynamic Equation, Dynamic Input-Output Models, Philip'sCurve, Linearization of a Nonlinear Differential-Equation System.

Module 5: Mathematical Programming: Examples and General Formulation of Linear Programing, Covex Sets and LP, PERT,CPM Simplex Method, Duality and Economic Interpretation, Kuhn- Tucker Sufficiency Theorem, Economic Applications, Limitations of Mathematical Programming.

References:

- Chiang, Alpha C and Kevan Wainwright (2005): Fundamentals Methods of Mathematical Economics, 4th edition, McGraw Hill, New Delhi.
- Bierens, Herman J (2005): Introduction to the Mathematical and Statistical Foundations of Econometrics, Cambridge University Press.

- Snyder, Christopher and Walter Nicholson (2012): Micro Economic Theory- Basic Principles and Extensions, 11th edition, CENGAGE Learning, New Delhi.
- Mukherjee, A., & Guha, S. (2011). Mathematical Methods and Economic theory. Oxford University Press.
- Hillier, F. S., & Lieberman, G. J. (2001). Introduction to Operations Research (8th ed.). McGraw-Hill.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0104	**Statistics for economics and finance**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	statistical concepts useful for economic analysis
CO2	Understanding	understand the issues regarding data collection, processing organizing and presentation ar issues involved therein.
CO3	Applying	Apply correctly a variety of statistical techniques, both descriptive and inferential.
CO4	Analysing	Data using MS Excel
CO5	Evaluating	Identify, critically evaluate and synthesize the substantive theories and create mode understanding economic behaviour.
CO6	Creating	Creating and Interpret computer output and use it to solve problems.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2									
CO2	2									
CO3			3							
CO4				3						
CO5				3						
CO6				3						

Statistics for Economics and Finance

Objectives: The objective of the paper is to make students familiar with theory and application of statistical methods. This course covers the statistical foundations of data analysis including the statistical theory and its applications in Economics. In particular, this Module broadly covers the descriptive statistics, theory of probability, statistical distributions, estimation and hypothesis testing, and non-parametric tests.

Module 1 : An overview of Descriptive Statistics. Correlation and multiple Regression. **Probability Theory:** Concept of probability, Bayes theorem: Random variables – discrete and continuous, density functions and conditional probability. Moment generating function and Central Limit Theorem.

Module 2: Probability Distributions: Discrete and continuous, binomial, negative binomial, poison, geometric and hyper-geometric, exponential, normal, log normal and gamma; joint, marginal and conditional distribution, characteristic function and moment generating, functions of random variables, Bivariate Distributions; joint and conditional distribution, odd ratio, test if independence.statistical estimation, confidence, interval,Estimation of
mean and proportion- EXCEL LAB applications

Module 3: Estimation of inference; estimating Parameters: The method of maximum likelihood, the method of moments, interval estimation, properties of estimators, minimum variance estimators: The Cramer – Rao Lower Bound, sufficient estimators, consistency, Bayesian estimation. EXCEL LAB applications

Module 4: Hypothesis testing: Statistical hypothesis, simple versus composite, critical region, types and size of errors – type I and type II, power of a test, p-value, Hypothesis test about a population mean, population proportions, difference between two population means, differences between tow proportions, a population variance, the ratio of two population variances, test of goodness of fit, the analysis of contingency tables (chi-square test for testing independence of two classification criteria) test for correlation, Rao-Blacwell Theorem, Cramer Rao Identity. Analysis of Variance (Anova) analysis of covariance. EXCEL LAB applications

Module 5: Non-Parametric statistics; introduction. Sign Test, Wilcoxon test, The Kruskal – Wallis, test, the Friedman test, testing randomness, comparing parametric and non-parametric procedures. EXCEL LAB applications

References

- Seymour Lipschutz and Marc Lars Lipson, **Probability**, Mc Graw Hill, Chennai, 2018.
- Murary R Spigel, **Probability and Statistics**, Shaum Series, United States, 2010.
- David M Levine, David F Stephen, Kathryn A Szabat, **Statistics for Managers**, Pearson, Noida 2018.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0105	**Financial Economics**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	be exposed to the classical finance model that underpins modern finance
CO2	Understanding	How cost and information influence choices in financial investment

CO3	Applying	how securities are priced and affected by the institutional arrangements in securities markets, including taxes and other government regulations
CO4	Analysing	asymmetric information in various financial markets.
CO5	Evaluating	The factors that determine the debt-equity and dividend policy choices of firms.
CO6	Creating	Investment avenues and measurement of risk

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2			3						
CO2	2			3						
CO3			3							
CO4				3						
CO5				3						
CO6					3					

FINANCIAL ECONOMICS

Objectives: The course focuses equally on the theoretical framework as well as the practical aspects of the functioning of financial markets. The course is intended to provide an in-depth understanding of the operational issues of capital and money market network along with its regulatory framework. This course provides a thorough conceptual and practical operations of the financial markets, institutions and instruments network in Indian context.

Module 1-Introduction to Financial Markets Capital markets, consumption and investments with and without capital markets, market places and transaction costs and the breakdown of separation; Fisher separation theorem; the agency problem; maximization of shareholder's wealth

Module2-Capital Structure Choice The value of firm with tax, Modigliani-Miller irrelevance hypothesis, choices in financing-debt and equity, the financing mix: trade-offs and theory; signalling hypothesis; effect of agency cost on capital structure, cost of capital, empirical determinants of capital structure choice

Module 3-Investment Avenues-Investment decisions-Investment alternatives, Criteria for evaluation-evaluation of various investment alternatives-The theory of choice: Utility theory Given Uncertainty-Axioms of choice under uncertainty-developing utility functions-Mean variance paradox-State Preference theory-Uncertainty and Alternative Future States-Derivation of Pure Security prices-Non-Arbitrage Profit condition-economic determinants of security prices-Firm Valuation.

Module4-Market Microstructure Defining capital market efficiency, relationship between the value of information and efficient capital markets, rational expectations and market efficiency, market efficiency with costly information, efficient capital market theory and empirical models

Module 5-Special Topics-Value at risk – Theory of VaR and estimation techniques-Acquisitions and takeovers – mergers activities as growth strategies, theories of mergers, implications and empirical evidence.

REFERENCES

- Houthakker, H.S. and P.J. Williamson, Economics of Financial Markets, Oxford University Press, 1996
- Copeland, T. E. and J. F. Weston, Financial Theory and Corporate Policy, Addison Wesley, 1992
- Hull, J. Options, Futures and other Derivatives, fifth edition, Prentice Hall, 2002
- Brealey, R. and S. Myers, Principles of Corporate Finance, fifth edition, New York, McGraw Hill, 1997.
- Panjer, H.H. Financial Economics: with applications to Investments, Insurance and Pensions, Actuarial Foundation, 1998.
- Prasanna Chandra, Investment Analysis and Portfolio Management, TMH, New Delhi 2016

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
I	23-345-0106	**Financial Reporting & Analysis (Audit course)**		C	50	

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Explain accounting concepts, conventions and policies guiding the preparation of fin reports by reporting entities
CO2	Understanding	Understand the accounting process and rules affecting financial reports and disclosure
CO3	Applying	Develop skills in accounting as well as financial reporting based on the understanding of the different contents delivered with examples and cases
CO4	Analysing	Analyse the real time financial data and demonstrate ability to prepare prospective financial information
CO5	Evaluating	Evaluating financial statements and reports
CO6	Creating	Create an analytical framework to map business transactions and events to financial reports, estimate quality of financial reporting and suggest new ideas and plans for initiating strategic actions to lead the business into new directions

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2			3						
CO2	2			3						
CO3			2	3						
CO4			2	3						

CO5				3						
CO6				3						

FINANCIAL REPORTING AND ANALYSIS

Objective: This course has been specially designed to provide understanding of accounting process and financial reporting with special focus on the underlying principles, concepts, and policy framework. The course will help students to develop their skills in reading financial reports, andanalysing and interpreting financial statements using knowledge of the accounting principles, andfinancial analysis techniques.

Module 1: Context and Purpose of Financial Reporting: Accounting Principles, Concepts, Conventions and policies. Concepts and conventions; business entity, money measurement, going concern, accruals, periodicity, matching, consistency, materiality, relevance, reliability, substance over form, neutrality, prudence, completeness. Qualitative characteristics of financial information; relevance, faithful representation, comparability, verifiability, timeliness and understandability.Accounting policies: Ind AS and IFRS (an overview)

Module 2: Accounting Process and System: Accounting Equations, Book Keeping and Record Maintenance - Concept of double entry andfundamental principles - Journal, Ledger, Trial Balance, Subsidiary Books; accruals and cash basis accounting; Core financial statements.

Module 3: Financial Statements: Form and contents of financial statements of joint stock companies in India, Important characteristics of Corporate Accounting, Standalone versus Consolidated financial statements, preparation of financial statements.

Module 4: Analyzing and Interpreting Financial Statements:Types of Financial Analysis and Tools for analysis. Accounting ratios; statement of profit and loss ratios; balance sheet ratios, and mixed ratios. Computations and interpretations with real industry/firm level data

Module 5: Cash flow analysis: Income versus Cash flows; purpose and importance of understanding cash flows; operating, investing and financing cash flow activities; preparing cash flow statements from income and position statements data. Practicals with real industry/firm level data

References

- Lawrence Revsine, Daniel Collins, Bruce Johnson, Fred Mittelstaedt (2011). Financial Reporting and Analysis.McGraw-Hill.
- T.P Ghosh (2015). Illustrated Guide to Indian Accounting Standards. Taxmann Publications
- Garg Kamal (2019). Beginners Guide to Ind-As and IFRS. Bharat Law House
- Miller-Nobles, Tracie L., Mattison, Brenda L., and Matsumura, Ella Mae (2016).Horngren's Financial and Managerial Accounting: The Financial Chapters. Pearson (global edition).
- Shukla, M. C., Grewal, T. S.(2017). Advanced Accounts, S. Chand & Company Ltd.
- Bhattacharyya, Asish K (2018). Corporate Financial Reporting and Analysis, Prentice Hall of India.
- M.Y.Khan&P.K.Jain, Management Accounting: Text, Problems and Cases. Tata McGraw Hill

- Gupta, R. L., and Radhaswamy M. (2014) Financial Accounting. Sultan Chand & Sons.
- Sarngadharan, M. and Rajitha Kumar S. (2011) Financial Analysis for ManagementDecisions, Prentice Hall of India
- Maheshwari, S. N., and Maheshwari, S. K. (2018). Financial Accounting, Vikas PublishingHouse.

SEMESTER II

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
II	23-345-0201	**Advanced Macroeconomics**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcor	Cognitive Abilities	Course Outcomes
CO1	Remembering	Main theories of macro economics
CO2	Understanding	How macroeconomic concepts evolve throughout different schools of thought
CO3	Applying	Various theories and models to determine foreign exchange rates
CO4	Analysing	Models of growth and its Empirical applications
CO5	Evaluating	Modern advancements in the field of macroeconomics given by various New classical, Neo Keynesian, Post-Keynesian and New Keynesian economists
CO6	Creating	Theoretical Framework for Monetary and Fiscal Policies.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2	3									
CO3			3							
CO4			2							
CO5			3							
CO6					3					

Advanced Macroeconomics

Objectives: This course has been designed with the objective to help the students understand the macroeconomic variables and its interactions in the economy. This course helps the students to be familiar with the growth models and also the exchange rate systems and also learn the modern developments in macroeconomics.

MODULE 1 : Monetary policy- -inflation targeting-Taylor's Rule-Fiscal Policy-fiscal multipliers-crowding out effect-Ricardian Equivalence

MODULE 2 : Growth models: Harrod-Domar model; Neo – classical model; Golden rule of accumulation; Optimal growth turnpikes. Theories of Trade Cycles : Multiplier-Accelerator interaction model, Kaldor and Hicks' models. Neoclassical

economic theory: Solow-Swan growth model and its extension; Ramsey growth model; Empirics of neoclassical theory: Conditional and unconditional convergence; Endogenous growth theory: AK model; Romer model with knowledge spillovers and increasing returns to scale; Uzawa Lucas model with human capital Endogenous growth theory: Models with endogenous technological change, R&D based growth theory; Empirics of endogenous growth theory and technological change, Putty-Clay model, human capital and economic growth, product variety and innovation, learning by doing, role of R&D and economic growth

MODULE 3: Foreign Exchange rate determination: Mint Parity Theory, Purchasing Power parity theory, BOP Theory—Exchange rate systems—Balassa and Samuelson model – monetary models of exchange rate determination – flexible price monetary model – Dornbusch sticky price model – Frankel real interest rate differential model. Managed Floating systems—Nominal, Real and Effective exchange rate—Forward rate, Spot rate- Speculation and arbitrage, role of expectations, currency swaps, future and options — Foreign Exchange Risks—Hedging and Speculation—IMF and International Liquidity Management - Indian Rupee and its fluctuations in international currency market.

MODULE 4 : Modern Developments In Macroeconomics- New Classical Macroeconomics: i. Rational Expectations Hypothesis – Monetary surprise model – Inter-temporal substitution model – Ineffectiveness proposition – Lucas critique. Supply Side Economics- Supply Shocks and Stagflation- Laffer Curve - Policy Implications. Real Business Cycle Theory. The Dynamically Stochastic General Equilibrium model.

MODULE 5 : Neo-Keynesianism - Disequilibrium Models - R. W. Clower and Leijonhufvud – Dual Decision Hypothesis– Quantity Constrained Model of Malinvaud and Barro - Coordination Failure. Fundamental arguments of Post – Keynesians – Kalecki's Pricing Model – Financial Instability model of Hymn Minsky. New Keynesian Macroeconomics- Normal Rigidities- Real Rigidities- Sticky Price(Menu Cost) Model- Efficiency Wage Hypothesis - Insider- outsider Model and Hysteresis- Coordination Failure - Policy Implications.

References:

- Rudiger Dornbusch and Stanley Fisher, Macroeconomics,1994, McGraw-Hill
- James Galbraith and William Darity, Macroeconomics, 1994, Houghton Mifflin
- Brian Snowdown and Howard Vain, Modern Macroeconomics-An Introduction to Competing Schools of Thought, 2005 , Edward Elgar
- Macroeconomics-An Introduction to Keynesian and Neo-classical Controversies, 1986 by Rosalind Levacic and Alexander Rebman, ELBS, McMillan

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
II	23-345-0202	**Corporate Finance**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	key themes in corporate finance
CO2	Understanding	role of finance in an organisation
CO3	Applying	explain and analyse the interrelationship between finance and governance
CO4	Analysing	analyse the relationship between strategic decision making and corporate fina decisions.
CO5	Evaluating	Dividend policies of various financial firms
CO6	Creating	portfolio theory and communicate more effectively in an academic or a business context

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2	1		3						
CO2	2			3						
CO3				3						
CO4				3						
CO5				3						
CO6				3						

Corporate Finance

Objectives: This course introduces students to the conceptual and practical operations of the capital market and its institutional framework in Indian context. The course is intended to provide the theoretical underpinnings of financial economics and also to provide hands on training in applying economic concepts to select financial products.

Module 1 : Introduction: meaning and scope of corporate finance- corporate finance decisions - objectives of corporate finance - profit maximization v. shareholders' wealth maximization- limitations to value maximization – sales maximization, Utility maximization and Behavioral models - social responsibility of business- agency problem and corporate governance.

Module 2 : Financial environment: Financial markets – money and capital markets, foreign exchange market, and derivatives markets. Principles of finance and concept of firm valuation: return, risk and time value of money – cash flows - present and future values - perpetuities and annuities –risk-return trade off.

Module 3 : Investment decisions: Capital budgeting/investment decisions – meaning, importance and determinants of capital investment decisions – evaluation criteria for capital investment decisions – payback period method; Average Rate of Return (ARR), Net Present Value (NPV) and Profitability Index (PI); Internal Rate of Return (IRR) and Modified Internal Rate of Return (MIRR): Decisions on current asset investments

Module 4: Financing Decision: Cost of Capital– concept and significance – explicit and implicit costs of capital –Specific and composite cost of capital. Capital structure – meaning, significance and determinants- EBIT-EPS analysis -operating, financial and composite leverage –Point of indifference– Capital Structure Theories – Net Income (NI), Net Operating Income (NOI) and Modigliani Miller (MM) approach - Optimum capital Structure.

Module 5: Dividend decision: dividend policy - forms of dividend – types of dividend policy –factors affecting dividend policy – legal framework of payment of dividend – dividend theories – relevance models- Walter, Gordon and Lintner approach - Modigliani Miller (MM) irrelevance model.

References

- Soloman, Ezra, Theory of Financial Management, Columbia Press
- James C Van Horne and Sanjay Dhamija. Financial Management and Policy, Pearson Education
- Ross S.A., Westerfield, R.W. and Jaffe, J. Corporate Finance, McGraw Hill
- Prasanna Chandra. Financial Management Theory and Practice, Tata McGraw Hill
- Khan, M.Y. and P.K. Jain. Financial Management: Text, Problems and Cases, Tata McGraw Hill
- Pandey, I.M. Financial Management, Tata McGraw Hill
- Ravi M. Kishore. Financial Management-Theory, Problems, Cases, Taxmann
- Eugene F. Brigham and Joel F Houston. Fundamentals of Financial Management**, Cengage Learning**
- **Brealey R.A. and Myers, S.C. Principles of Corporate Finance, McGraw Hill**
- **Damodaran, A. Corporate Finance: Theory and Practice. John Wiley & Sons Inc.**
- **Vyuptakesh Sharan. Fundamentals Financial Management. Pearson Education**

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
II	23-345-0203	**Econometrics**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	principles of econometric methods and tools
CO2	Understanding	Econometrics for quantitative analysis in economics.
CO3	Applying	econometrics for model building and as a forecasting tool
CO4	Analysing	econometric modeling for analysis and decision making and use econometrics fo analysis in MS Excel and EViews
CO5	Evaluating	estimation issues and their implications including, biased selection, nonlin heteroskedasticity and mulitcollinearity.
CO6	Creating	Econometric model based on real time situations

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10

CO1	3		3							
CO2	3		3							
CO3	3		3							
CO4	3		3							
CO5	3		3							
CO6	3		3							

Econometrics

Objectives: The course is designed to impart the learning of principles of econometric methods and tools. This is expected to improve student's ability to understand of econometrics in the study of economics. This course is intending to provide a thorough and sound understanding of the essential theoretical base, an introduction into the important and useful techniques of modeling and also an understanding of the broad applications of econometrics.

Module 1: Introduction to econometrics and model building**.** Simple Regression Analysis Specification of the two variable regression model, Ordinary Least Squares estimation, Assumptions, BLUE property, General and confidence approach to hypothesis testing, partial effects and elasticity, goodness of fit, model evaluation, ANOVA

Module 2: Multiple Regression Analysis Motivation, Assumptions and OLS estimation, Interpretation of OLS estimation, Goodness of fit, matrix approach to linear regression models, testing of hypothesis for a single parameter, for linear combination of parameters, for multiple linear restrictions. Choice of function forms: linear, loglinear, log-log, quadratic functional forms, Box-Cox test, models with quadratics and interaction terms.

Module 3: Dummy Variables Regression on dummy (qualitative) variables with two categories, with more than two categories intercept shifters, dummy variable trap, interaction of two categorical variables, interaction of categorical and continuous (quantitative) variables- slope shifters, piecewise linear regression model, Chow test for cross-section data and for time-series data (test structural stability of regression models)

Module 4: Extensions of Linear Models and Non-Linear Estimation Method of maximum likelihood and its properties (including consistency), trinity of classical tests (Wald test, Lagrange multiplier, likelihood ratio), Consequences, detection and remedial measures of multicollinearity, heteroskedasticity (WLS, MLE), and autocorrelation (GLS), Specification error (omitted variable, inclusion of irrelevant variables, measurement error in dependent and independent variables), method of moments (IV method)

Module 5: Multi-Equation Models seemingly unrelated regression and its application. Structural equation models-specification, endogenous, exogenous and predetermined variables, structural versus reduced form, simultaneity bias, identification: rank versus order condition, exact and over identifications, methods of estimation: indirect least squares, instrumental variable estimation, two-stage least squares and three-stage least squares.

Reference.

- Gujarati and Porter, Basic Econometrics, Fifth Edition, McGraw Hill/Irwin, 2009.
- Greene, William H. Econometric Analysis. 6th Edition, Prentice Hall. 2008.
- Studenmund, A. Companion Website for using Econometrics: A Practical Guide., Seventh Edition, Pearson

SEMESTER	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
II	23-345-0204	**SECURITY ANALYSIS PORTFOLIO MANAGEMENT**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic terms related to security valuation
CO2	Understanding	Understand the different theories on portfolio
CO3	Applying	Develop application of risk reward relationship in security market
CO4	Analyzing	Analyze the strategies adopted in portfolio management
CO5	Evaluating	Evaluate the price volatility and its impact
CO6	Creating	Develop clearer idea regarding security valuation techniques

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1			3							
CO2			3							
CO3			3							
CO4			3							
CO5			3							
CO6			3							

SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

Objectives: This course aims at providing an in depth understanding of the theories, principles, and techniques of security valuation, analysis and portfolio management of fixed income securities, equity and derivative securities as well as portfolio management of index funds and insurance companies.

Module 1 : Valuation of Equity Shares A Philosophical Basis for Valuation − The Role of Valuation − Dividend Discount Models − Free Cash Flow to Equity Discount Models − Free Cash Flow to the Firm − Cost of Capital Approach − Firm

Valuation − Estimating Equity Value per Share − Relative Valuation − Earnings Multiples − Book Value Multiples − Valuing Financial Value Firms.

Module 2: Valuation of Equity Shares -Fundamental Analysis Economic Analysis − Economic Forecasting and Stock Investment Decision – Forecasting Techniques − Industry Analysis − Industry Life Cycle − Structural Analysis − Techniques for Evaluating Relevant Industry Factors − Sources of Information for Industry Analysis – and Company Analysis − Analysis of Financial Statements − Impact of Changes in Accounting Policies − Sizing up the Present Situation & Prospects − Management Evaluation −Forecasting Earnings.

Module 3: Valuation of Equity Shares -Technical Analysis Theory of Technical Analysis − Dow Theory- Bar Charts − Point and Figure Charts − Contrary Opinion Theories − Relative Strength Analysis − Moving Average Analysis − MACD, Oscillator, Elliot Wave Theory Evaluation of Technical Analysis- Portfolio Theory –Models of Risk Reward Relationship Standard Capital Asset Pricing Model– Characteristics of Opportunity Set Characteristics of Portfolio − Diversification − Minimum Variance Portfolio – Efficient Frontier (with and without short sales) Arbitrage Pricing Theory – Fama-French Three Factor Model. Single Index Model− Beta Estimation and Forecasting.

Module 4: Portfolio Theory- Efficient Market Hypothesis (EMH) – Various forms of Efficient Markets Hypothesis − Weak form − Semi-strong and Strong Form Empirical evidence on Efficient Market Hypothesis−Implications of EMH for Security Analysis, Portfolio Management and Investment Passive vs Active Management Strategies − Index Funds Markowitz Risk Return Optimization − Sharpe's Optimization. Evaluation of Portfolio Performance and Risk adjusted Measures Return (Money Weighted v/s Time Weighted) − Risk Adjusted Performance Measures − Sharpe's Ratio − Treynor's Ratio − Jensen's Alpha − Sortino Ratio −Fama's Decomposition of Overall Return − − Evaluation of Actively Managed Portfolios − Benchmark Based Performance Evaluation.

Module 5: Valuation of Fixed Income Securities Syllabus Bond Returns and Prices − Systematic and Unsystematic Risk involved in Fixed Income Securities − Present Value Model and Bond Valuation − Duration Shifts − Convexity – Bond Price Volatility − Term Structure of Interest Rates −Analysis of Bonds with Embedded Options. Bond Portfolio Management – Duration, Shift and Immunization − Passive and Active Strategies

Reading List:

- Frank, Fabozzi (2011), Markowitz, Harry, Equity Valuation and Portfolio Management, Wiley.
- Reilly, Frank K. and Brown, Keith C. (RB) (2002), Investment Analysis and Portfolio Management, 7th Ed. Dryden.
- Frank, Fabozzi, (Ed.) (1989), Portfolio Investment Management, Probus Publishing.
- Das, Satyajit (2003), Swaps/Financial Derivatives, 3rd Ed., Vol. 1-4, Wiley Finance.
- Haugen, Robert (1987), Modern Investment Theory, Prentice-Hall of India

Semester	Course Code	Course Title	Credi	C/E	Marks	
					Internal	External
II	23-345-0205	BEHAVIOURAL FINANCE	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic concepts of behavioural finance
CO2	Understanding	Role of behavioural finance in investment decision of individuals and industry
CO3	Applying	Applying behavioural financial theories on decision making of investors, corporates financial professionals
CO4	Analysing	Analysing the market outcome of the application of behavioural finance
CO5	Evaluating	Evaluating the financial performances by identifying different biases
CO6	Creating	Risk averting ability of investors and industries by analysing their financial behaviour

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2							3		
CO2		2	2							
CO3							1			
CO4								3		
CO5										
CO6										3

Behavioural Finance

Objectives: This course examines the behavioural strategies that investors rely upon to make decisions, the structure, and speculative dynamics of returns in world equity markets and the practical implications of behavioural finance.

Module 1: Foundations of Behavioural Finance Financial Decision Making – Investor Biases Overconfidence Bias − Representativeness Bias − Anchoring and Adjustment Bias − Cognitive Dissonance Bias − Availability Bias − Self-Attribution Bias − Illusion of Control Bias − Conservatism Bias − Ambiguity Aversion Bias − Endowment Bias − Self-Control Bias − Optimism Bias − Mental Accounting Bias − Confirmation Bias − Hindsight Bias – Loss Aversion Bias − Recency Bias − Regret Aversion Bias − Framing Bias − Status Quo Bias.

Module 2: The Expected Utility Rule − Frames for Actions – Contingencies and Outcomes − Discounting − The Discounted Utility Model − How and Why Discount Rates Vary − Hyperbolic Discounting Factors − Learning − Rational Learning – Over Inference and Law of Small Numbers − Disagreement − Tastes and Capital Asset Pricing Model − Bubbles − Past, Present and Future − Tulipmania and the Didactic Value of Bubbles − Regulatory Origins of the Bubble.

Module 3: Asset Pricing under Prospect Theory Basics of Prospect Theory − Prospect Theory's Application to Finance − The Cumulative Probability Version of the Prospect Theory − Cumulative Prospect Theory and Asset Pricing − Does Prospect Theory Work.

Module 4: Overconfidence and Optimism A Model of Trading Under Optimistic Investors − Price Setting − Conditions for Overconfident Pricing of the Risky Asset − Pricing in the Odean's Model − The Implications of Odean's Model for Financial Markets − Do Investors Trade Too Much? Optimism in Corporate Finance − Facing Failure − Who Dares Loses? − The Hubris Theory of Takeovers.

Module 5: Theories of Overreaction and Underreaction The DHS Model − A Model of Investor Sentiment − A Unified Theory of Underreaction − Momentum Trading − and Overreaction in Asset Markets - Empirical Findings – Contrarian Investment − Extrapolation and Risk − Evidence on the Characteristics of Cross-sectional Variation in Stock Returns − Momentum − Market Efficiency and Biases in Brokerage Recommendations.

References

- Forbes, William, (2011), Behavioural Finance, Wiley- India Edition.
- Shefrin, Hersh, (2005), A Behavioral Approach to Asset Pricing, Elsevier Academic Press.
- Montier, James, (2002), Behavioural Finance- Insights into Irrational Minds and Markets, John, Wiley & Sons, Ltd.
- Montier, James, (2007), Behavioural Investing- A Practitioner's Guide to Applying Behavioural Finance, John Wiley & Sons, Ltd.
- Pompian, Michael M. (2006), Behavioral Finance and Wealth Management- How to Build Optimal Portfolios That Account for Investor Biases, John Wiley & Sons, Inc
- Lucy F Ackert and Richard Deaves,(2011),Understanding behavioral finance,Cengage learning.

Readings

- Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.
- Kahneman, D. (2011). Thinking, fast and slow. Farrar, Straus and Giroux.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
II	23-345-0206	**PythonLab I**	1	c		

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basics of Python Programming and its useful concepts
CO2	Understanding	Data Types, conditional statements, functional programming and Read-Write Operations in Python
CO3	Applying	Python libraries such as Numpy, Pandas, Matplotlib and Scikit-Learn in manipulating, indexing, selecting, visualizing and preprocessing data
CO4	Analysing	Machine Leaning approaches such as supervised learning, unsupervised learning and reinforcement learning
CO5	Evaluating	Classification and Regression algorithms of supervised learning
CO6	Creating	Analytical framework for determining the accuracy of a dataset using supervised Learning algorithms

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	1									
CO2			3							
CO3							2			
CO4				3						
CO5					2					
CO6						3				

PythonLab I

Objective: This course gives the students an overview on the basics of python programming and its useful concepts. It also looks through various python libraries which are necessary for the implementation of machine learning techniques. This course also provides insights on the main algorithms of supervised learning.

Module 1: Introduction to Python – Python identifiers-Python operators and Comments – data types: mutable and immutable-Python lists, tuple, dictionary and sets-basic operations-conditional and loop statements – functional programming in Python-Read-Write operation in Python

Module 2: Python toolbox (numpy and pandas)– Basics of numpy, computation on numpy, aggregations-computation on arrays-comparisons,masks and Boolean arrays- fancy indexing-sorting arrays-structured data-numpy structured array.-Data Manipulation with pandas-introduction to pandas objects-data indexing and selection-operating on data in pandas-handling missing data-hierarchical indexing-combining datasets-aggregation and grouping-pivot tables.

Module 3: Data visualization with matplotlib-The matplotlib library-matplotlib Architecture-pyplot-Using the kwargs-adding further elements to the chart and saving charts-handling date values-line chart, histogram, bar

chart, pie chart, advanced charts-mplot3d-MultiPanelPlots.

Module 4: Scikit-learn and Data Preprocessing- Introduction to Scikit-learn-Scikit-learn-Preprocessing-Model Selection-Training and Testing the data-Various case studies on implementation of ML Algorithms through Scikit-learn-Data Preprocessing- Dimensionality reduction-PCA-Correlation-Features Extraction Algorithm

Module 5: Machine Learning-Introduction-Machine Learning approaches: Supervised Learning, Unsupervised Learning and Reinforcement Learning- Steps of Machine Learning Process-Supervised Learning: Classification and Regression-Classification algorithms: K-Nearest Neighbours, Naïve Bayes, Decision Tree, Random Forest, Support Vector Machine, Logistic Regression-Linear Regression: Simple Linear and Multilinear Regression

References

- Jake VanderPlas, Python Data Science Handbook- Essential Tools for Working with Data, O'Reily Media Inc.,2016.
- Zhang.Y, An Introduction to Python and Computer Programming, Springer Publications, 2016

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
IV	23-345-0407	**Capstone project**	1	C		

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Remembering Basic programming concepts, Key economic and financial concepts theories relevant to the project and Techniques for data collection, cleaning, and manipulation using Python
CO2	Understanding	How to use Python for data analysis and visualization in the context of economics finance and How different economic and financial models can be implemented in Python
CO3	Applying	Applying Programming skills in Python to solve real-world economic and financia Problems, Knowledge of economic and financial theory to guide data analysis and interpretation and Techniques for visualizing and communicating complex econor and financial data to others
CO4	Analysing	The effectiveness of different economic and financial models in explaining observe data
CO5	Evaluating	Evaluating The strengths and weaknesses of different economic and financial mod

		predicting real-world outcomes, The validity and reliability of economic and finan data used in the project and The potential limitations or biases in the project's data methodology
CO6	Creating	Creating Python scripts and programs to automate data analysis and reporting, Interactive data visualizations and dashboards to communicate project findings and Innovative solutions to economic and financial problems based on creative thinking and analysis

Objective : To provide students with the opportunity to apply their knowledge and skills in economics and finance to a real-world problem, using the programming language Python to collect, analyze, and visualize data. To develop and demonstrate proficiency in using Python for data analysis and visualization in the context of economics and finance. To get hands-on experience needed to apply their economics and finance education to real-world problems, using modern data analysis tools and techniques.

SEMESTER III

Semester	Course Code	Course Title	Credi	C/E	Marks	
					Internal	External
III	23-345-0301	**APPLIED ECONOMETRICS**	4	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Advanced Econometric tools and its application
CO2	Understanding	Understanding time series models and econometric analysis
CO3	Applying	Econometric models for analysing, interpreting and forecasting data
CO4	Analysing	Analysing nature and structure of time series data using various statistical pac
CO5	Evaluating	Evaluating time series data using empirical research
CO6	Creating	Creating innovative methodology for time series and panel models

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2			3							
CO3			3							1
CO4				3						
CO5					3					
CO6						3				2

APPLIED ECONOMETRICS

Objectives : The objective of the course is to provide a solid theoretical and practical foundation for the interpretation of empirical evidence in economics.

Module 1 : Univariate Time-series Models. Introduction to stationary processes, autocovariance functions, autocorrelation and partial autocorrelation, autoregressive and moving average models, conditions for stationary and invertible process, Box-Jenkins approach, forecasting.

Module 2: Multivariate and Multiple Equation Models. Motivation for multivariate model, Autoregressive Distributive Lag Models, Simultaneity and motivation for Vector autoregressive (VAR) models, Testing for order of VAR models, Block significance and tests for causality including Granger causality, Forecasting, Impulse response function, Variance decomposition.

Module 3: Modeling Non-Stationary Time-series processes. Deterministic and stochastic trends, Integrated process and random walk, random walk with drift, Unit root and tests for unit root- Dickey-Fuller and Augmented Dickey Fuller tests, Phillips-Perron Test and KPSS test, Unit Roots and Structural Breaks, Unit roots in regression residuals and spurious regression, Cointegration and its testing using Engel-Granger method, Lead-lag and Long Run relationships, Characteristic Root, Rank and Cointegration, Testing for and estimating cointegrating systems using Johansen method based on VARs, Vector Error Correction Models.

Module 4: Modeling volatility clustering Volatility-Meaning and measurement, Volatility clustering, Econometric models of volatility, Conditional heteroscedasticity in ARMA models, Estimation and Testing for ARCH and GARCH models for volatility clustering in economic time-series, multivariate regression models and conditional heteroscedasticity, Asymmetric GARCH models-GJR model and EGARCH.

Module 5: Applications of econometrics – Case studies and Empirical Anlaysis using Real world Data

Readings

- Baltagi, Badi. Econometric Analysis of Panel Data, 5th Edtion, Wiley, 2013.
- Brooks, C., Introductory Econometrics for Finance, 3rd Edition, Cambridge University Press,2014.
- Enders, W., Applied Econometric Time Series, second edition, John Wiley and Sons, 2006.
- Hamilton, J. D., Time Series Analysis, Princeton University Press, 1994.
- Pesaran, H.M. Time Series and Panel Data Econometrics¸Oxford University Press, 2015

Course Cod	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0302	**Fintech I**	4	C	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic concepts of modern Financial Technology
CO2	Understanding	Role of banks and other financial institutions in strengthening innov financial technologies
CO3	Applying	Applying fintech techniques in financial activities.
CO4	Analysing	Analysing technologies in FinTech
CO5	Evaluating	Evaluating fintech transformation in banking and related sectors
CO6	Creating	Measuring Fintech applications in customer experiences

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2		3								
CO3		2								
CO4				2						
CO5					3					
CO6										3

Fintech I

Objective: To provide in- depth knowledge regarding modern financial techniques and its application practices by banking and financial institutions

MODULE 1: Introduction to fintech - Fintech meaning and scope – The Economic Crisis of 2008 and the Emergence of FinTech – The Drivers of Fintech- Cost- Disintermediation- Innovation Customer Experience-Widening of Ecosystem-Increased Smartphone Use-The Sub-Segments of Fintech-Payments-Lending + P2P Lending-Crowdfunding-Investment / Wealth Management-Capital Markets-Personal Finance and Budgeting (PFM)-Insurtech-RegTech- Banking / B2B Tech

MODULE 2: Technologies Underlying FinTech - Blockchain-Key Concepts- Parameters – Distributed- Immutable Contract-based, etc.- Smart Contracts- Security and Privacy- Enterprise Blockchains + Private/Public/Hybrid Blockchain- Applications in Finance and Insurance (Trade Finance, B2B Payments)- R3 – Collaboration Ecosystem Case Study- Artificial Intelligence-Introduction to AI- Use Cases in Finance and Fintech-Introduction to ML (Machine Learning)- Introduction to NLP (Neuro Linguistic- Programming)- Chatbots – Use Case for AI- Collaborative Filtering-Biometrics- Internet of Things- Big Data.

MODULE 3: Regulation and Technology - Technologies for Better Regulatory Compliance- Regulatory Intelligence-Compliance and Governance- Reporting- Technologies for Managing Risk- Market Risk -Conduct Risk- Cyber Risk-Technologies for Identifying Financial Crime- Money Laundering- Market Abuse- Others- KYC and Onboarding-Biometrics-Selfies and Photo- AML Checks- Centralised Identity Databases – Singapore as a Case Study- Regulatory Sandboxes

MODULE 4: FinTech Applications Around Consumer Innovation **-** Alternative Payments- Payment Wallets- Cryptocurrency- Cross-Border Payments /International Money Transfer- (Case Study – Transfer wise)-Point-of-Sale Technologies- Alternative Lending- P2P Lending- Digital Credit- Loan Marketplaces- Digital Mortgage (House Loan) Platforms- Small Business Lending Case Study – Kabbage- Student Lending Case Study – SoFi- Challenger Banking / Digital Banking- Robo-Advisory and Digital Wealth Investment management through Smartphones- Case study: Nutmeg- Hybrid Wealth Management- Case Study: Future Advisor / BlackRock- Pension Planning- Tax Planning- Life Goal Planning- ESG Funds

MODULE 5: Fintech Applications Around Banking Innovation - B2B Payments- Payments Infrastructure – Real- Time, RTGS, NETS etc-Payment Gateways- Trade Finance- E-Invoicing- B2B Platforms for Wealth Management- B2B Platforms for Lending – Banking-as-e-Service- Collaboration Models between Fintechs and Banks- Case Studies: DBS Bank + Digibank, HSBC, BBVA, Turkey

Reference:

- Davie Mohan: The Financial Services Guide to Fintech: Driving Banking Innovation Through Effective Partnerships, Kogan Page, 2020.
- Susanne Chishti,The FINTECH Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries, Wiley, 2016
- Susanne Chishti, Toney Croddock, BhagvanKommadi and Markos Zachariadis, The PayTech Book, Wiley, 2020
- Marcos Lopez de Prado, Advances in Financial Machine Learning, Wiley, 2018

Semester	Course Code	Course Title	Credi	C/E	Marks	
					Internal	External
III	23-345-0303	**Research Methodology**	4	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Research and its working procedure
CO2	Understanding	Differences in research methods and methodologies
CO3	Applying	Applying research methodologies in qualitative and quantitative models
CO4	Analysing	Analysing various research and understanding its characteristics
CO5	Evaluating	Evaluating research procedure and presentation of research report
CO6	Creating	Organised research paper

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2		3								
CO3		2								

CO4			3							
CO5				3						
CO6										3

RESEARCH METHODOLOGY

Objective: This course aims at preparing students to strengthen their research abilities with the standard paraphernalia of research methodology. The contents of this course are designed to facilitate research at micro and macro levels and of both qualitative and quantitative nature. Apart from learning research techniques and developing necessary skills, the participants of this course would also develop scientific and rational thinking. *Prerequisite for this course is intermediate-level knowledge of economic theory, statistics, and econometrics along with some degree of writing and computer skills*

Module 1 : Importance of Research Methodologies.Research techniques in social sciences and their limitations.Theory and basis of research.Empirical and theoretical research. Types of research

Module 2 : Stages of research process.Identification of problem/issue, data, theory and estimation and related problems.Thinking, Field Research Designs; the process of field research, Exploratory Research, Casual Inference.Methods of communication in survey.Vision survey and communication techniques.Art of asking questions and getting quality information.

Module III.Preparation of Research Proposal Questionnaire. Sample Design Types of Sampling, Theories of Sampling. the Nature of Sampling. Measurement and Scaling; Measurement, Measurement Scales, the Characteristics of Sound Measurement the Development of Measurement Tools, Scaling, the Nature of Scaling, Response Methods, Scale Construction.

Module IV. Data Collection Methods, Survey Instruments and Field Procedures, Survey Instrument Designs, the Survey Situations, the Instrument Development Process, Questionnaire Development, Field Procedures, Personal Interviewing, observations. Experimentation and Simulations; Experimentation and Simulation.Choice of Research Technique, Experimental Research Design, Simulation.

Module V. Observation, Observation Designs. Use of Secondary Data; the Nature of Secondary Data Sources, the Use of Secondary Data, Types of Secondary Data Sources, Statistical Sources, Data Research Procedures, Evaluating Secondary Data. Data Presentation and Analysis: Elements of Analysis, Data Preparation, Special Data Problem, Tabulation, Data Presentation, and Data Analysis. Report Writing; the Questions and analysis of Research Proposal. Organization of Research Paper. citation styles

Reference:

- Irchenhall C. and Grout P., (latest edition), Mathematics for Modern Economics, Herifaq Publishers, New Delhi.
- Holt, Rinehart and Winston, Holt-Sounders Japan Ltd. Tokyo (Latest edition).
- Johnson, Glenew Research Methodology for Economists: Philosophy and Practice, McMillan Publishing Co. (Latest edition).
- Kidder Louise H., Research Methods in Social Relations.
- Lambert, P., (1985) Advanced Mathematics for Economists. Static and Dynamic Optimization, Basil Black Well.

- Neuman W. Lawrence, (1997) Social Research Methods, Qualitative and Quantitative Approaches, Allyn and Bacon; Boston.
- Uma, Sekarn, (1992), Research Methods for Business. A Skill Building Approach, John Willey & Sons, Inc.
- Young Pauline V., (2015), Scientific Social Survey and Research, Prentice Hall Inc.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0304	**Pythonlab II**	1	c		

Course Outcomes: On successful completion of the course the student will be able to

Course Outcom	Cognitive Abilities	Course Outcomes
CO1	Remembering	Machine Learning approaches of supervised and unsupervised learning
CO2	Understanding	Algorithms of Unsupervised Learning such as Clustering and Association
CO3	Applying	Machine Learning techniques in economics and finance
CO4	Analysing	Textual data using Natural language Processing
CO5	Evaluating	Feature Engineering and Feature Selection Models
CO6	Creating	Visualization of Data using Tableau

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3		3							
CO2		3								
CO3			3							
CO4					3					
CO5			2							
CO6						3				

PythonLab II

Objective: This course takes into consideration the unsupervised learning algorithms of machine learning and the applications of machine learning in Finance and Economics. It also analyzes the application of python programming and machine learning techniques on areas such as text analysis and feature engineering. It also gives a basic on idea on use of tableau as a data visualization tool.

Module 1: Machine Learning (Unsupervised Learning)-Clustering-Clustering types-K-Means Algorithm- Hierarchical Clustering-Association Rule Mining- Association Rule Strength Measures-Support, confidence and lift.

Module 2: Applications of Machine Learning in Finance and Economics-Calculation of technical indicators from historical stock data-historical stock data analysis-Supervised learning prediction of firm dyanamics-Machine Learning for financial stability-Tree Ensemble-Cragging-Regularization, Shrinkage and Sparsity.

Module 3: Feature Engineering-Categorical Features-One-hot Encoding-Binning and Discretization-Linear Models and Trees-Interactions and Polynomias-Univariate Nonlinear Transformations-Feature Selection

Module 4: Text Analysis-Introduction to Natural Language Processing-Applications-Types of Textual Data- Analyzing Sentiments-Bag of Words-Stopwords-Tf-Idf-Tokenization-Stemming-Lemmatization-Topic modelling- Document Clustering

Module 5: Tableau-Introduction to Tableau-Tableau Interface-Connecting Data-Joins-Data Types-Show Me- Filters-Groups-Sets-Building Charts and Graphs in Tableau-Aggregate Functions-Calculated fields-Creating dashboard pages-Case Study for Visualization

References

- Jake VanderPlas, Python Data Science Handbook- Essential Tools for Working with Data, O'Reily Media Inc.,2016.
- Zhang.Y, An Introduction to Python and Computer Programming, Springer Publications, 2016

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0306	**INTERNSHIP**	2			

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Important economic concepts and theories that they learned in their coursework
CO2	Understanding	Understanding How economic principles are applied in specific industries or secto and the roles and responsibilities of different professionals in the economics field
CO3	Applying	Applying Economic analysis techniques to real-world problems or data, Knowledg economic theory to inform business decisions or strategies, Problem-solving and c thinking skills in a professional setting
CO4	Analysing	Analysing Economic data or trends to identify patterns or insights, The effectiveness of economic policies or programs in achieving desired outcomes and potential impacts of economic changes or events on a company or industry

CO5	Evaluating	Evaluating The effectiveness of different economic policies or strategies in achieving desired outcomes and The potential risks and benefits of different economic decisions or investments
CO6	Creating	Creating Business reports or presentations that incorporate economic analysis and data, New strategies or proposals for addressing economic challenges or opportunities and Innovative solutions to economic problems based on creative thinking and analysis

Objective : The objective of an internship is to help students and recent graduates develop the skills, knowledge, and experience they need to succeed in their chosen field.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0307	Major Issues in Indian Economy Special Reference to Kerala	Audit Course			

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Major concepts in Indian macroeconomics
CO2	Understanding	Evolution of Indian Economy
CO3	Applying	Application and debating the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements
CO4	Analysing	Analysing various environmental Challenges and Policies
CO5	Evaluating	Evaluating Centre State Financial Relations and Finance Commissions
CO6	Creating	contextual perspectiveand identify and analyse current issues

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2									
CO2		1								
CO3			2							
CO4				2						
CO5										
CO6										

Major Issues in Indian Economy with Special Reference to Kerala

Module 1: Evolution of Indian Economy Since Independence- Structural Transformation and Economic Growth- Major Debates on Indian Economy- Second and Fifth Five-year Plans-Structural Retrogression and Industrial Stagnation in the Mid-Sixties-Mode of Production Controversies- Development in Agriculture and Industry- Reforms in Agriculture- Reforms in MSME Sector- Challenges in Tourism Sector- Emergence of IT as a new Engine of Growth

Module 2 : Poverty, Unemployment and Development- Persistence of Poverty- Globalization and Inequality- Nature, Measurement and Incidence of Unemployment- Developments in Health and Education- Covid 19 and Impact on the Economy - Neo-liberal Policies and Development

Module 3: Financial Sector Reforms- NPAs, Bankruptcy Code, Twin Deficit Problems-Bad Bank-Asset Monetisation Policies-FDI and FII Inflows

Module 4: Environmental Challenges and Policies- Dimensions and Magnitude of Environmental Issues in India- Policies to Mitigate Environmental Challenges

Module 5: Cooperative Federalism and GST- Budget Deficits and Public Debt- Corporate Debt- Centre State Financial Relations and Finance Commissions

Reference:

- Amartya Sen and Jean Dreze, Poverty and Famines, Hunger and Public Action, India Development and Social opportunity. OUP New Delhi 2013.
- PulapreBalakrishnan, Economic Growth and its Distribution in India, , Orient Blackswan, p[rivate Ltd. New Delhi 2015.
- Avidyanathan& K.L Krishna, Institutions and Markets and India's Development, OUP New Delhi 2010.
- Viral .V. Acharya, Quest for Restoring Financial; Stability, Sage, New Delhi 2020
- NilanjanBanik, The indian Economy: A Macro-Economic Perspective, Sage.2015
- Abijith Banerjee & Esther Duflo, Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty, Penguin Books, Gorigoan, 2013
- S. Janakarajan, Indian Economy in Transition, Sage, New Delhi, 2015.
- Government of India, Budget Documents, Various Years
- Government of Kerala, Budget Documents, Various Years
- Government of India, Economic Survey, Various Years
- Abhishek Gupta and Susmita Gupta, 2021, Environmental Studies, Sage

Semester IV

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
IV	23-345-0401	**PythonLab III**	1	c		

Course Outcomes: On successful completion of the course the student will be able to

Course Outcom	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basics of Machine learning and its extension to deep learning
CO2	Understanding	Foundations of Artificial Intelligence, its tools and deep learning algorithms
CO3	Applying	Computer vision techniques for image classification and object detection
CO4	Analysing	Time Series Data using Neural networking techniques of Deep Learning
CO5	Evaluating	Recommendation system and issues related to it
CO6	Creating	Digital image processing strategies for image formation, image filtering and image detection

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3									
CO2		3								
CO3			3							
CO4				3						
CO5					3					
CO6						3			2	1

PythonLab III

Objective: This course offers insights on Artificial Intelligence and Deep Learning and its various applications. It also deals with areas such as digital image processing, computer vision and recommendation systems.

Module 1: Artificial Intelligence and Deep learning-Application of AI- Introduction to AI Tools and frameworks- Tensorflow, Keras, OpenCV-Deep Learning-Deep Learning working and Algorithm

Module 2: Neural Networking-Applications and types of neural networks-Artificial Neural Networks-Convolutional neural network-Reccurrent Neural Network-Forward Propogation and Backward Propogation-Application of Deep Learning using Tensor flow and Keras in Time series analysis

Module 3: Digital Image Processing-Image formation-image filtering-edge detection- principal component analysis-corner detection-SIFT-Applications: Large Scale Image Search

Module 4: Computer Vision-Geometric Techniques in computer vision-image transformations-camera projections- camera calibration-depth from stereo-Two view structure from motion-object tracking-Machine Learning for Computer Vision-image classification-object detection-semantic segmentation

Module 5: Recommendation system-Introduction-Recommender system function-Understanding ratings- applications of recommendation system-issues with recommender system.

References

- Aurelien Geron,Hands-On Machine Learning with Scikit-Learn, Keras, and Tensorflow: Concepts, Tools, and Techniques to Build Intelligent Systems, O'Reilly Media, Inc., 2019

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
IV	23-345-0403	**FinTech II**	3	c	50	**50**

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Recall data sources for decision making in investment
CO2	Understanding	Understand the importance of portfolio optimization and risk manageme investment decision making
CO3	Applying	Apply data analysis techniques to make informed investment decisions
CO4	Analysing	Analyze the effectiveness of different credit risk modeling techniques
CO5	Evaluating	Evaluate the effectiveness of algorithmic trading models in generating returns
CO6	Creating	Create a data-driven investment strategy using portfolio optimization and management techniques

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2									
CO2		3								
CO3			3							
CO4				3						
CO5					3					
CO6						3			2	1

Fintech II

Objective: Understand how quantitative and qualitative information can be used to make credit and trading decisions also learn different technologies in fintech.

Module 1: Data Driven Decision Making in Investment: WealthTech-Introduction to DDM in investment-data sources-data analysis techniques for decision making-portfolio optimisation-risk management

Module 2: ALGORITHMIC TRADING- Architecture of Algorithmic Trading- Lifecycle of Algorithmic Trading- Risk, Costs and Roles in Algorithmic Trading- Conceptualization and Backtesting Strategies- Business aspects of FinTech in Capital Markets-Fund Management and Algorithmic Trading-Setting up an Algo bot

Module 3: INSURTECH-How does InsurTechwork-Business model disruption- Aggregators-AI/ML in InsurTech-IoT and InsurTech-Risk Modeling-Fraud Detection-Processing claims and Underwriting-Innovations in Insurance Services-Unicorns and business models

Module 4: Data Driven Credit Modelling - Introduction to credit risk modelling concepts- PD model validation-PD model calibration-Regression-based models of default and data pre-processing-Tree-based models-Loss Given Default: theory, data acquisition and modelling -Mortgages

Module 5: Evolution of RegTech- RegTechEcosystem: Financial Institutions-RegTechEcosystem: Startups-Ensuring Compliance from the Start: Suitability and Funds-RegTechStartups: Challenges-RegTechEcosystem: Regulators-Use Case of AI in Smart Regulation and Fraud Detection-Regulatory Sandboxes-Smart Regulation

References :

- Chan, E. (2013). Algorithmic Trading: Winning Strategies and Their Rationale. John Wiley & Sons.
- VanderLinden, S. L., Millie, S. M., Anderson, N., & Chishti, S. (2018). The INSURTECH Book: The Insurance Technology Handbook for Investors, Entrepreneurs and FinTech Visionaries. John Wiley & Sons.
- Chishti, S., & Puschmann, T. (2018). The Wealthtech Book: The FinTech Handbook for Investors, Entrepreneurs and Finance Visionaries. John Wiley & Sons.
- Loesch, S. (2018). A guide to financial regulation for Fintech entrepreneurs. John Wiley & Sons.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
IV	23-345-0403	**Project report and viva voce**	3	C		

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes

CO1	Remembering	Recall the fundamental concepts and theories of econometrics and fintech.
CO2	Understanding	Understand and Interpret the results of econometric analyses and explain significance for financial decision-making.
CO3	Applying	Use econometric software and programming languages to estimate models, analyze and generate forecasts.
CO4	Analysing	Analyze financial data using econometric models and techniques to identify pat trends, and relationships.
CO5	Evaluating	Evaluate the appropriateness of different econometric models and technique different types of financial data and problems.
CO6	Creating	Design and conduct independent research projects that apply econometric model techniques to new or unexplored areas of financial analysis.

Objective: To provide students with practical experience in applying econometric techniques to analyze financial data and solve problems related to fintech and To develop students' skills in data analysis and interpretation, as well as their ability to use econometric software and programming languages commonly used in fintech.

Electives

CODE	**SEMESTER III**
20-372-0411	Financial Derivatives and Risk Management
23-345-0307	Asset Pricing: Theory and Practice
23-345-0308	Artificial Intelligence and Blockchain Technology
23-345-0309	Digital Banking and Payments
23-345-0310	International Finance
23-345-0311	Game Theory
	SEMESTER IV
23-345-0404	Investment Banking Services
23-345-0405	Data Analytics
23-345-0406	Financial Econometrics
23-345-0407	Panel Data Econometrics
23-345-0408	Multivariate Methods
23-345-0409	Budgetary Analysis and Fiscal Management in India
23-345-0410	Fiscal Federalism: Theory and Practice with Special Reference to Kerala
23-345-0411	Public Economics

23-345-0412	Public Choice and Policy
23-345-0413	Insurance Economics
23-345-0414	Fintech Venture Management and Entrepreneurship

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
20-372-0411	**Financial derivatives and Risk Management**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Explain the basic concepts and terms related to derivative instruments and their valu procedures
CO2	Understanding	Understand the uses of derivatives in different risk context and appreciate various management strategies comparing their relative merits and demerits
CO3	Applying	Develop application skills in risk management and price forecasting based on the understa of the different contents delivered with examples and cases
CO4	Analysing	Analyze the risk management strategies with the use of established derivative trading instru under different investment scenarios
CO5	Evaluating	Evaluate and make informed judgment on the use of derivative instruments in risk contro price forecasting.
CO6	Creating	Develop financial derivatives pricing and risk management ideas in a clear and precise mar

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2									
CO2		3								
CO3		3								
CO4				3						
CO5					3					
CO6						3				

Financial Derivatives and Risk Management

Course Objective: The objective of the course is to provide a rigorous understanding of theory and applications of derivatives instruments and develop working knowledge and skills on their uses in portfolio allocation and risk management in asset markets.

Module 1: Introduction to derivatives and risk management - risk and uncertainty - market risk - sources of market risk - Financial derivatives– concept and meaning - need and importance - classification of derivatives - derivative markets and instruments - functions -major participants- structure of derivative market and regulations in India

Module 2: Forwards and Futures - Forward contract- meaning, features and uses - futures contracts - meaning, characteristics and applications - hedging with futures- futures pricing -cost of carry and reverse cost of carry VaR- Margining and MTM - stock and stock index futures - currency futures - commodity futures.

Module 3: Options- meaning, need and importance - embedded options - exotic vs vanilla options-option types - short and long positions - hedging with options and Pairs trading - basic option trading strategies - straddle, strangle and spread - option trading in India

Module 4: Options pricing– intrinsic value and time value - pay offs - put-call parity- price bounds - factors affecting option pricing - Martingale measures-pricing models - Binomial model - Black Scholes model-Option Greeks- definition and properties.

Module 5: Swaps- concept, features and applications- types of swaps- generic and non-generic swaps- interest swaps - currency swaps - cross currency swaps - swaption contracts - hedging with swaps. Credit derivatives - types of credit risks - credit default swaps -credit linked notes

Reference:

- John C Hull, *Options Futures and Other Derivatives*, Pearson Education.
- Kevin Dowd, *Measuring Market Risk*, John Wiley & Sons
- Robert W. Kolb&James A. Overdahl, *Financial Derivatives: Pricing and Risk Management*, John Wiley & Sons
- Sundaram Janakiraman, *Derivatives and Risk Management*, Pearson Education
- Jayanth Rama Varma, *Derivatives and Risk Management*, TMH
- BishnupriyaMishraand Sathya Swaroop Debasish, *Financial Derivatives*, Excel Books
- S.L. Gupta, *Financial Derivatives: Theory, Concepts and Problems*, Prentice Hall of India

S.S S Kumar, *Financial Derivatives*, Prentice Hall of India.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0307	Asset Pricing: Theory and Practice	3	c	50	**50**

Course Outcomes: On successful completion of the course the student will be able to

Course Outcome	Cognitive Abilities	Course Outcomes

CO1	Remembering	Know and explain what is finance, therole of financial markets
CO2	Understanding	To understand historicalreturns and indexing, decision underuncertainty, portfolio th arbitrageand equilibrium pricing, term structure ofinterest rates, agency / incentives
CO3	Applying	Estimating and Evaluating Asset Pricing Models
CO4	Analysing	Expected Returns in the Time Series and Cross Section Models
CO5	Evaluating	Implications of Existence and Equivalence Theorems-Conditioning Information-Factor Pricing Models
CO6	Creating	Strong knowledge base in asset pricing theories and its practical implications

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2									
CO2		1								
CO3			3							
CO4				3						
CO5					2					
CO6						3	2		1	2

Asset Pricing: Theory and Practice

Objective: The objective of this paper is to familiarize students with a number of research areas and tools that are particularly important in the recent asset pricing and international finance literature.

Module 1: Asset Pricing Theory-Consumption-based Model and Overview- Applying the Basic Model-Contingent Claims Markets-The Discount Factor- Mean-Variance Frontier and Beta Representations- Relation Between Discount Factors, Betas and Mean-Variance Frontiers- Implications of Existence and Equivalence Theorems-Conditioning Information-Factor Pricing Models

Module 2: GMM in Explicit Discount Factor Models- GMM General Formulas and Applications- Regression-based Tests of Linear Factor Models- Maximum Likelihood Method- Time Series, Cross Section and GMM/DF Tests of Linear Factor Estimates

Module 3: Bonds and Options- Option Pricing -Option Pricing Without Perfect Replication- Term Structure and Interest Rates-Bond Options, Cap and Blac Models- Pricing Options and Convertible Bonds Based on an Actuarial Approach- Implementing Option Pricing Models When Asset Returns Are Predictable

Module 4: Expected Returns in the Time Series and Cross Section Models- Time Series Predictability- The Cross Section: CAPM and Multifactor Models- Applications- Equity Premium Puzzle and Consumption-based Models- New Models – Applications- ITO's Lemma

Module 5: Continuous Time Asset Pricing Models - Continuous Time One Dimensional Asset Pricing Models- Brownian Motion Model - Simple Asset Pricing with Geometric Brownian Motion- Price Simulation with Geometric Brownian Motion- Binomial Brownian Motion

Reference:

- John H. Cochrane, Asset Pricing, New Age International Private Limited, 2010

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0308	Artificial Intelligence and Blockchain Technology	3	c	50	**50**

Course Outcomes: On successful completion of the course the student will be able to

Course Outcom	Cognitive Abilities	Course Outcomes
CO1	Remembering	Acquire Knowledge on intelligent agents and problem solving by using various s strategies
CO2	Understanding	Basic concepts of AI & Machine learning
CO3	Applying	Apply planning and reasoning algorithms for solving real life problems.
CO4	Analysing	Building blocks of blockchain
CO5	Evaluating	Formulate and solve problems with uncertain information using fuzzy inferences
CO6	Creating	Apply knowledge representation and natural Language processing concep implementingchat bot applications and semantic search.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1										2
CO2					3					
CO3									3	
CO4			2							
CO5	1									
CO6										3

Artificial Intelligence and Blockchain technology

Objectives: The objective is to provide learners with the knowledge and understanding of the innovative technologies of Artificial Intelligence and Blockchain.

Module 1: Artificial Intelligence – Basic concepts of AI & Machine learning, Machine learning pipeline – Use cases of Machine learning – Neural networks – AI and policy - Biases, fairness and inclusion, explainability, privacy and data ownership

Module 2: Natural Language Processing in finance - Chatbots, Conversational Interfaces and Voice Assistants, Sentiment analysis – case study, Fraud detection – case study

Module 3: Blockchain – Definitions, Decentralized P2P networks, Benefits, Layers of Blockchain, Blockchain use cases

Module 4: Building blocks of blockchain – Cryptography and cryptocurrency– Symmetric vs Asymmetric Key cryptography, Game theory – Nash equilibrium, Zero-sum games, Engineering - Blockchain, Merkle trees, Hashing, Distributed ledger technologies

Module 5: Bitcoin – History of money, Bitcoin, Bitcoin blockchain, Bitcoin network and transactions – Consensus and block mining, block propagation, bitcoin wallets - Ethereum and Smart Contracts – Ethereum Ecosystem

References:

- Patterson, Introduction to Artificial Intelligence, Pearson Education India, 2015
- Kevin Knight, Artificial Intelligence, McGraw Hill Education, 2017
- Tom M. Mitchell, Machine Learning, McGraw Hill Education, 2017
- David Shrier, Basic Blockchain: What It Is and How It Will Transform the Way We Work and Live, Kindle Edition, 2020
- Dominik Campanbella, The Impact of Blockchain Technology on Capital Markets, Kindle Edition, 2018
- Edward A. Harrod, Cryptocurrency, Blockchain Technology and Cryptocurrency Mining, Kindle Edition, 2018
- Priyansu Sekhar Panda et al., Beginning Blockchain: A Beginner's Guide to Building Blockchain Solutions, Apress, 2018

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0309	**Digital Banking and Payments**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes

CO1	Remembering	Basic concepts of Digital banking, cashless payments and cybersecurity
CO2	Understanding	Dimensions of Digital Banking and channels of digital payment
CO3	Applying	Banking technology and data mining in digital Banking
CO4	Analysing	CRM and its role in digital banking
CO5	Evaluating	Cyber Security measures and systems in banking environment
CO6	Creating	Authentication methodologies and security measures and regulatory environment of internet banking

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1					2					
CO2					3					
CO3					3					
CO4					2					
CO5					3					
CO6					3					

Digital banking and payments

Objective: This course aims at providing insights to students regarding the new avenues of digital banking and cashless payments.

Module 1 : Digital Banking: Meaning- Definition- Need for digitalization- Advantages to the customers- opportunities to the Bank- Dimensions of digital Banking- Customer dimension (customer in a digitalized environment)- Regulatory dimension- Technology dimension- Data dimension- Analytical dimension (customer analysis, analytical CRM, fraud analytics, risk analytics, operational analytics, HR analysis, network analysis)- Internal dimension- channels of digital payment (ATM, Kiosk, Mobile Banking, etc.)

Module 2: Digital Banking and Cash-less Payments: Cash less payments- meaning- benefits of cashless payment-methods of cash less payments (cards, USSD, AEPS, UPI, point of sale) NFC cards- wallet platform- E-KYC- features of E-KYC services- Aadhaar based payment- UIDAI- ASAs- AUA- NEFT- smart cards- cyber security for digital payment – Digital currency.

Module 3 : CRM and digital Banking: CRM- Meaning- definition- role of CRM in banking- CRM in a digitalized environment- current status of e-CRM in banks- e-CRM techniques- benefits of e- CRM- data warehousing and data mining- analytical CRM- customer retention.

MODULE 4 : Banking Technology Management: constituents of banking technology (Computer science, communication technology, marketing science, information technology, finance and risk management)- role of ICT in banking- centralized banking services- Data mining- Application of data mining in banking- CRM through data mining- CRM and banking technology management- Integrated Circuit Card (ICC)- SWIFT (Society for Worldwide Interbank Financial Telecommunication)- origin of the society- working of SWIFT.

MODULE 5 : Cyber Security and Banking: Information security- software based security systems- hardware based security systems (smart card, M chip)- hackers- techniques used by the hackers- phishing- pharming- key loggers- screen loggers- phishing Trojans- transaction poisoning- card related fraud- site cloning- false merchant site- authentication methodologies and security measures (password protection- smart cards- biometric characteristics)- encryption and security- customer confidentiality- regulatory environment of internet banking.

References:

- Ousley , Mark Rhodes (2013), Information Security, The Complete Reference, Second Edition, McGraw Hill.
- Stallings, William (2010), Cryptography and Network Security Principles and Practices, Third Edition, PHI Learning.
- Caelli. J., & Longley D. and Shain M (1991), Information Security Handbook, Macmillan.
- EMC (2009), Information Storage Management: Storing, Managing and Protecting Digital Information, Wiley.
- Keyes, Jessica (2000), Financial Services Information Systems, 2nd Edition , Auerbach Publications.
- Kaptan SS & Choubey NS (2003), E-Indian Banking in Electronic Era, Sarup & Sons, New Delhi.
- IIBP, Banking Technology, Indian Institute of Bankers Publication
- Vasudeva (2005), E-Banking, Common Wealth Publishers, New Delhi.

Semester	Course Co	Course Title	Credi	C/E	Marks	
					Internal	External
III	23-345-0310	**International Finance**	4	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic concepts of International finance
CO2	Understanding	Understanding the link between international finance and economic growth
CO3	Applying	International financial practices in different international organisations.
CO4	Analysing	Analyse the experience of world nations in linking international trade and finance
CO5	Evaluating	Evaluating the empirical application of international economic and financial policies
CO6	Creating	Model building for studying international financial issues

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2						
CO2	2			3						

CO3				2						
CO4				3						
CO5			2	3						
CO6				2					2	

International Finance

Objective: The students are expected to know the performance of an open economy. For this, the issue of why international trade and gain from trade is addressed in Module I. Trade in the context of economic growth and market imperfections can provide a more realistic picture. It is treated in Module II. Foreign exchange market is the fulcrum of international finance in any economy. Its functions and theories are sketched in modules III and IV. The nature of international capital market and financial management of the multinational firms are key aspects of the last module. The last three modules empower a student in understanding the fundamentals of international finance.

Module 1: Introduction to International Finance-International Financial Markets-Trends in international trade and cross border financial flows-impact on risk management-Overview of international monetary systems and recent developments in international markets-balance of payments.

Module 2: Balance of Payments Accounts-Principles of balance of payments-implications of the bop accounting identity balance of payments theory: different approaches and synthesis, imports, exports and deriving currency supply and demand curve

Module 3: Modern Theories Foreign Exchange Rates-Stock vs Flow theories-the monetary theory of exchange rates-asset approach to exchange rates-portfolio-balance approach to exchange rates-sticky price theory, theories of overshooting

Module 4: Global Finance and cost of capital-Returns on foreign assets-Depository Receipts-Cost of Capital- The Capital Asset Pricing Model-Global Equity Beta and cost of equity-Risk-free Rate-Cost of Debt and the WACC- Systematic Foreign Exchange risk-Risk-Adjusted Uncovered Interest Parity Operating Risk Approach-Accounting Beta Method-Emerging Market Investments-Cost of Capital in a foreign country-unlevering equity betas

Module 5: Exchange Rate Forecasting-Framework for the process of forecasting foreign exchange rates-Benefits of using different techniques of forecasting under different circumstances-evaluating the forecasts-Accurate vs Useful forecasts-Techniques of forecasting exchange rates at the short, medium and long run horizons.

References:

- Shapiro, Alan C. (2006) Multinational Financial Management, 8/e, Wiley & Sons. ISBN 0471737690.
- Eiteman, D. K., Stonehill, A. I., Moffeit, M. H. (1999) Multinational Business Finance, 8th Ed., Addison Wesley.
- Levi, Maurice D. (2009), International Finance, 5th Ed., Routledge.
- Levich, Richard M. (2001), International Financial Markets Prices and Policies,2nd Ed.,McGrow-Hill Irwin

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
III	23-345-0311	**Game theory**	4	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Concepts of Game theory and Nash Equilibrium
CO2	Understanding	Extension of Game theory such as bounded rationality, algorithmic game theory, Evolutionary game theory and Agent based modelling
CO3	Applying	Game theory on areas of pricing, advertising and trade
CO4	Analysing	Single Period Pricing and Dynamic Pricing models with conceptual illustrations
CO5	Evaluating	Game theory models on tariff wars, trade negotiations and trade policies
CO6	Creating	Models for marketing strategy determination using game theory

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2						
CO2				3		2				
CO3				3			1			
CO4		2		3						
CO5				3				1		
CO6				2					2	

Game theory

Objective: This course brings light to the applications of game theory on pricing, advertising and international trade. It also deals with theoretical and applied concepts of game theory.

Module 1: Applications of nash equilibrium-illustrations of nash equilibrium-auctions-accident laws-introduction to extensive games-subgame perfect nash equilibrium-backward induction-illustrations of extensive games-ultimatum game.

Module 2: Game theory models of Pricing-Single-Period Pricing Games-Bertrand and Cournot Competition-Continuous Price, Product Differentiation and Best Response Function-Multiple Equilibria and a Game of Chicken-Sequential Action and a Stackelberg Game-An Airline Revenue Management Game-Dynamic Pricing Games-Effective Competitive Strategies in Repeated Games-Behavioural Considerations in games-State-Dependent Dynamic Pricing Games-Open vs Closed-Loop Equilibria-Dynamic Stackelberg Pricing Game

Module 3: Applications of Game theory on advertising

Module 4: Game Theory models and its applications in International trade-Tariff wars/Trade wars-Tariff setting model using infinitely repeated prisoner's dilemma game-Trade Negotiations-Negotiations as Imperfect Game-Negotiations as Theory of Moves-Trade Policy (using Brander Spencer model)

Module 5: Some extensions of game theory-Bounded Rationality-Algorithmic Game Theory-Evolutionary Game Theory-Agent-Based Modelling

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0404	**INVESTMENT BANKING SERVICES**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outc	Cognitive Abilities	Course Outcomes
CO1	Remembering	The basic concepts and terms related to investment banking services and financial ma
CO2	Understanding	Understand the role and functions of investment bankers relating to the c mobilization from financial markets
CO3	Applying	Analyze and compare the relative merits and demerits of various fund sources tha contribute capital to the continued prosperity and survival of business firms.
CO4	Analysing	Analysing the financial decision making
CO5	Evaluating	Make informed judgment on the role of investment bankers in providing services ca diverging needs of investors as well as firms
CO6	Creating	Creating project financing models

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1										
CO2										
CO3										
CO4										
CO5										
CO6										

Investment Banking Services

Objective: The objective of this course is to give students a thorough understanding on the role of investment banking services in the growth and development of dynamic capital market.

Module 1: Investment Banking- Concept, Emergence and Functions of Investment Banks- Investment Banking Services- Fund based vs Fee based services -Investment banking vs Merchant Banking - Investment banking in India- Players in Investment banking sector - Regulations for Investment banks

Module 2 : Issue Management- Managing new issues - Primary market in India - Pre issue management - lead merchant banker - appointment of intermediaries - prospectus and offer documents - underwriting - Post issue management obligations- recent developments in issue management

Module 3: Project financing - Venture Capital **-** Concept and features - Private equity- Investment banking perspectives in private equity - securitization - meaning, features and issues in securitization - credit syndication and consortium finance

Module 4: Factoring- concept, classifications and functions - International factoring-**Forfeiting -** difference between factoring and forfeiting - hire purchase and lease financing - types of lease - benefits of leasing - Corporate restructuring

Module 5: Fee Based Services-Depository Services -Depository System in India - Stock Broking- role of stock brokers and Sub brokers in capital market - Credit Rating - Concept and rating process - Credit Rating Agencies in India - Equity research and IPO grading - sovereign rating - portfolio management services

References

- Joshua Rosenbaum & Joshua Perl, *Investment Banking: Valuation, Leveraged Buyouts and Mergers & Acquisitions*, John Wiley & Sons Inc., New Jersey
- Christine Ennew, Trevor Watkins and Mike Wright: *Marketing of Financial Services*, Butterworth-Heinemann, Woburn MA
- Lott Tom, Loosvelt, Derek and Jarvis, William, *Vault Career Guide to Investment Banking*, Vault Inc.
- J.C.Verma, *A Manual of Merchant Banking*, Bharath Publishing House, New Delhi
- M. Y. Khan, *Financial Services*, Tata McGraw –Hill, New Delhi
- H.R. Machiraju, *Merchant Banking*, New Age Publishers, New Delhi
- S. Gurusamy, *Merchant Banking and Financial Services*, Tata McGraw Hill, New Delhi
- Pratap G Subramanyam, *Investment Banking: Concepts, Analysis & Cases*, Tata McGraw-Hill, New Delhi

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
	23-345-0405	**Data Analytics**	3	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes

CO1	Remembering	Explore the fundamental concepts of data analytics
CO2	Understanding	Understand data analysis techniques for applications handling large data
CO3	Applying	Understand various machine learning algorithms used in data analytics process
CO4	Analyzing	Visualize and present the inference using various tools
CO5	Evaluating	Learn to think through the ethics surrounding privacy, data sharing and algori decision-making
CO6	Creating	Live project Modeling Process

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2	1					
CO2				3						
CO3	1			3						
CO4		2		3						
CO5				3				1		
CO6				2					2	

Data Analytics

Objectives : To provide strong foundation for data analytics and application area related to it and understand the underlying core concepts and emerging technologies in data analytics.

Module 1: Data Analytics - Types – Phases - Quality and Quantity of data – Measurement - Exploratory data analysis - Business Intelligence.

Module 2: Big Data and Cloud technologies - Introduction to HADOOP: Big Data, Apache Hadoop, MapReduce - Data Serialization - Data Extraction - Stacking Data - Dealing with data.

Module 3: Introduction to data visualization – Data visualization options – Filters – Dashboard development tools – Creating an interactive dashboard with dc.js - summary.

Module 4: Machine learning – Modeling Process – Training model – Validating model – Predicting new observations –Supervised learning algorithms – Unsupervised learning algorithms.

Module 5: Data Science Ethics – Doing good data science – Owners of the data - Valuing different aspects of privacy - Getting informed consent - The Five Cs – Diversity – Inclusion – Future Trends.

Reference

- Davy Cielen, Arno D. B. Meysman, Mohamed Ali, Introducing Data Science, Manning Publications Co., 1st edition, 2016.

- Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, An Introduction to Statistical Learning: with Applications in R, Springer, 1st edition, 2013.
- Bart Baesens, Analytics in a Big Data World: The Essential Guide to Data Science and its Applications, Wiley.
- D J Patil, Hilary Mason, Mike Loukides, Ethics and Data Science, O' Reilly, 1st edition, 2018.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
	23-345-0406	**Financial Econometrics**	3	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Knowledge and understanding quantitative methodologies used by studer economics and finance, including data collection, data processing and analysis, r design and analytics
CO2	Understanding	Applying knowledge and understanding to techniques for analyzing quantitative d economics and finance
CO3	Applying	Making judgments regarding the suitability of particular methods to research in economics and finance
CO4	Analysing	concepts and notation that is frequently used in financial econometrics
CO5	Evaluating	empirical results and raise sensitivity for problems and pitfalls in imperial studies.
CO6	Creating	applications of financial theory based on real financial data using statistical/econor techniques

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1		3				3			3	
CO2		3				3				
CO3									2	
CO4			3							
CO5			3	1					2	
CO6			3	2		3				

Financial Econometrics

Objective : The objective of the course is to equip students with a working knowledge of important econometric techniques used in international finance and financial economics. Students correctly specify, estimate and test the econometric models discussed during the lectures and possess the ability to properly interpret the results provided by these procedures. Students know how to use essential tools for working with financial data. Ability to perform all the mentioned econometric techniques by using appropriate software.

Module 1: Data sources and Query- Secondary data sources for cross sectional and time series data in finance. Querying for specific micro and macro level data using prowess. Basic and advanced query for papers and articles in finance area

Module 2 : Stochastic processes theory, financial assets and returns. Analysis of empirical "stylized" facts.Models and methods for predicting the level of future returns and Time-Series Analysis (ARMA models): specification, inference and forecasting.

Module 3: Models for volatility analysis and prediction (EWMA, ARCH and GARCH models): specification, inference and forecasting.

Module 4: ARMA-GARCH models for Risk Management: predictions of Value at Risk and Expected Shortfall.

Module 5: Models for macro-finance analysis: (volatility) term structure models and Bayesian Structural Vector Autoregressive models for the role of financial shocks. Introduction to Bayesian Analysis and review of Monte Carlo Simulation Methods

Reference:

- Campbell, John Y.; Lo, Andrew W.; MacKinlay, Archie Craig, The econometrics of financial markets, Princeton, N.J.: Princeton Univ. Press, 1997
- Tsay, R. S. (2014). Financial Time Series. Wiley.
- Brooks, C. (2018) Introductory Econometrics for Finance, Second Edition. Cambridge University Press.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage Learning.

Semester	Course Code	Course Title	Credit	C/E	Marks	
					Internal	External
IV	23-345-0407	**Panel data Econometrics**	3	c	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Foundations of Panel data econometrics, its nature and types
CO2	Understanding	Various Panel data models
CO3	Applying	Panel data models on Regresssion analysis, in various fields of macroeconomics and finance
CO4	Analysing	Advanced Topics in panel data econometrics and its empirical applications
CO5	Evaluating	.Stationary and Non Stationary Panel data modelling
CO6	Creating	Panel Data models for economic and financial applications

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1			3						3	
CO2			3						3	

CO3	2	2	2	3					3	
CO4			3						3	
CO5			3	2					3	
CO6			3						3	

Panel Data Econometrics

Objective : This course deals with Panel Data Econometrics Model Building and its application in the fields of economics and finance.

Module 1: Introduction to Panel Data Econometrics - Nature of panel data -Types of panel data: balanced and unbalanced panels, Panel data models: fixed effects, random effects, and hybrid models Panel data regression analysis: pooled OLS, fixed effects, random effects, and first difference estimators Testing for model selection: Hausman test, Breusch- Pagan Lagrange multiplier test, and Pesaran CD test

Module 2: Panel Data Regression Analysis-Dynamic panel data models: general method of moments (GMM) estimators, system GMM, and difference GMM, Panel data models with endogenous variables: instrumental variables (IV) estimation, fixed effects IV, and Hausman-Taylor models. Heterogeneous panel data models: random coefficients and random slopes models. Limited dependent variable panel data models: binary, multinomial, ordered, and count models.

Module 3: Nonlinear Panel Data Models- Nonlinear panel data models: binary response models, fractional response models, and nonlinear dynamic panel data models Estimation methods for nonlinear panel data models: maximum likelihood estimation, simulated maximum likelihood, and quasi-maximum likelihood estimation- survival models and duration models-Panel data models for spatial econometrics: spatial error, spatial lag, and spatial Durbin models- Empirical applications of nonlinear panel data models

Module 4: Stationary and non-stationary Panel data modelling -The first generation panel data cointegration model-Pedroni panel data cointegration tests- Common factor panel data models- Panel data analysis in macroeconomics, finance, and other fields- Empirical applications of cointegration models- Panel unit root tests-Panel cointegration-Causality- Panel Var models

Module 5: Advanced Topics in Panel Data Econometrics- Panel data models with heterogeneous treatment effects: difference-in-differences, regression discontinuity, and instrumental variables- Panel data models with cross-sectional dependence: spatial panel models, network panel models, and factor models- Panel data models with sample selection bias: selection models and endogenous switching models- Empirical applications of advanced panel data econometric techniques

References

- Arellano, M., & Bond, S. (1991). Panel Data Econometrics.
- Wooldridge, J. M. (2002). Econometric Analysis of Cross Section and Panel Data.
- Kleiber, C., & Zeileis, A. (2008). Applied Econometrics with R.
- Marchenko, Y. V. (2018). Panel Data Analysis – Fixed and Random Effects using Stata.
- Baltagi, B. H. (Ed.). (2015). Panel Data Analysis: Advantages and Challenges.

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0408	**MULTIVARIATE METHODS**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes

CO1	Remembering	Basic concepts of multivariate techniques on distribution and analysis
CO2	Understanding	Understanding principal component analysis, factor analysis and cluster analysis
CO3	Applying	Applying the multivariate analysis in research models
CO4	Analysing	Analysing the applicability of multivariate techniques in empirical research
CO5	Evaluating	Evaluating the results of different multivariate techniques
CO6	Creating	Creating empirical models based on PCA, Factor analysis and Discriminant Analys

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1		2				2				
CO2		3				3				
CO3			3			3			2	
CO4			3			3			2	
CO5			3						2	
CO6			3			3			2	

MULTIVARIATE METHODS

Objective: To create knowledge on different multivariate techniques and its application using statistical different software.

Module 1: Multivariate normal distributions: Definition Mean vectors, Variance - Matrices, Correlations, Bivariate Normal Distributions, Multivariate outliers, Multivariate Summary Statistics, Assessing Multivariate Normality Covariance.

Module 2: Principles Components Analysis: Objectives of Principal Components Analysis, Principal Components Analysis on the Variance – Covariance Matrix Σ Principal Component Scores, Component Loading Vectors, Estimation of Principal Components – Estimation of Principal Components Scores, Determining the Number of Principal Components – Method 1 & 2, PCA on the Correlation Matrix- Principal Component Scores, Component Correlation Vectors, Sample correlation Matrix, Determining the Number of Principal Components, Testing for Independence on the Original Variables.

Module 3: Factor Analysis: Objectives of factor Analysis, The factor Analysis Model, Factor Analysis Equations, Solving the Factor Analysis Equations, Choosing the Appropriate Number of Factors, Computer Solutions of the Factor Analysis Equations, Rotating Factors, Oblique Rotation Methods, Factor Scores.

Module 4 : Discriminant Analysis: Discrimination for Two Multivariate Normal Populations, Cost Functions and prior Probabilities (Two Populations), A General Discriminant Rule (Two populations), Discriminant Rules (More than Two populations), Variable Selection Procedures, Canonical Discriminant Functions, Nearest Neighbour Discriminant Analysis, Classifications Trees.

Module 5 : Cluster Analysis: Measures of Similarity and Dissimilarity, Graphical aids in Clustering, Clustering Methods, Multidimensional Scaling.

References:

- D.E. Johnson (1998): Applied Multivariate Methods for Data Analysis. Duxbury, USA.
- A.C. Rencher (1995): Methods of Multivariate Analysis, John Wiley, New York.
- M.S. Srivastava (2002): Methods of Multivariate Statistics, John Wiley, New York.

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0409	**Budgetary Analysis and Fiscal Management: Theory and Indian Experience**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic concepts and different classification of budget
CO2	Understanding	Understanding theories underlying in different budget practices.
CO3	Applying	Applying different tax practices during budget preparation
CO4	Analysing	AnalysingFiscal management practices in India and Kerala
CO5	Evaluating	Evaluating different budget making processes
CO6	Creating	Preparing budget

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				3						2
CO2				3						2
CO3				3	2				2	
CO4	3		3						2	
CO5	3		3						2	
CO6				3						2

Budgetary Analysis and Fiscal Management: Theory and Indian Experience

Objective: Creating awareness and in-depth knowledge in budgetary analysis and fiscal management with the practices followed in India.

Module 1: Budget Concepts and Theory**:-**The Roles of Budgets-Plans, Resource Allocation, Management, Control, Historical Record, Accountability, Fiscal Sustainability, Transparency -Distinction between public budgeting from the budget of a corporation or a family - Budget outcomes - Difference between budgeting and accounting- Size and Growth of Government and Purposes of Budgeting-Preparation- Approval –Implementation -Execution**-** Functions of Budgeting- Control Function -

Management Function - Planning Function- Policy Function - Collaboration Function- Basic Budget Techniques-Cost Estimation - Budget Justification - Budget Review - Budget Management and Execution

Module 2: Budget Classification and Budget System Reforms- Economic and Functional Classification- Weaknesses of Traditional Budgets -Alternative Classifications: Performance, Program, Zero – Base -New Performance Budgets- Results-Capital Budgets versus operating Budgets - Time Value: Compounding (Future Value), Discounting (Present Value), Annuities-Budget Execution **- M**anaging a budget during the operating period - Cash management, budget formats, pre- and post- budget audits, and apportionment- Post- budgeting techniques- 5-quarter rolling forecasts.

Module 3: Revenue in the Budget Process.Baseline Forecast, Tax Estimates ("Scoring"), Tax Expenditures- Goods and Services Taxation- Why Tax Consumption - Structural Issues: Direct, Indirect; General, Selective; Unit, Ad Valorem; Single, Multiple Stage - Retail Sales and use; Value Added Tax - Selective Excises: Luxury, Sumptuary, Quasi- price-**Cess-** Property Taxation **-** Property Tax Structure: Real and Personal Property - Property Tax Rate Setting, Limits andControls-Property Tax Assessment - Relief Mechanisms: Exemptions, "Circuit Breakers", Abatements, DeferralsIncome Taxation **-** Individual Income Taxes: Defining the Base, Rate Structures, Effective RatesCorporate Income taxes: Defining the Base, Apportionment, Rates-Payroll Taxes: Rate Structure,-Equity-Corporate Tax-Indirect Tax- GST- Non-tax Revenue. Revenue Forecasting, Estimating Revenues and Tax Expenditure Impacts-Predicting revenues in relation to fiscal policy- national debt- Revenue Policy Criteria and Their Application:Revenue Structures: International Comparisons, Federal, State, Local - Policy Criteria: Equity, Adequacy and Disparity, Collectability, Economic Distortion, Transparence-"Corrective" Taxation.

Module 4 : India- Central and State Budgets **-**Process of Making Union Budgetand the State Budgets-Budget Practices in the Local Governments- Spending Pattern in the Union Budget- Revenue and Expenditure in the Appropriate Process- Union Budget Process - Surpluses, Deficits and Debt - Generational Accounting, Revising Budget System -State and Local Budget Systems **-**Patterns of State and Local Expenditure - Diversity of State- Local Fiscal Structures and Processes- Extraordinary Controls on State- Local Government Finance- Kerala Budgets

Module 5 : Fiscal Management-Committed Expenditures-Salary, Pension and Interest Outgo- DiscretionarySpending-Capital expenditure- Primary Deficit-Fiscal Deficit- Fiscal Imbalances: Causes and Consequences - Fiscal Responsibility Act- The Public Accounts--The Expenditure Management System (EMS)- Tax efficiency and fairness
- The role and mandate of the Auditor General- The Constitutional Distribution of Taxation Powers in India--The link between budgetary policy, public finance and democracy-Public Debt-Union and State government and local government debt- Debt and Economic Growth- Debt management strategy- Sustainability of Debt- Domar Gap. Institutions and Intergovernmental financial relations-Finance Commission – 15th Finance Commission and Devolution to Kerala- Constitution which deals with power distribution between centre and states.

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- John L. Mikesell, *Fiscal Administration,* 8th Edition, Indiana University, Bloomington, 2011
- Alan J. Auerbach and Martin Feldstein, Handbook of Public Economics, Vol. 1 and 2, Elsevier, Amsterdam, North Holland, 1987
- M.A. Oommen, Have the State Finance Commissions Fulfilled Their Constitutional Mandate? he Third Tier and Fourteenth Finance Commission, Economic and Political Weekly, 45(30), July 24, 2010

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0410	**Fiscal Federalism: Theory and Practice with Special Reference to Kerala**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Objectives and practices of fiscal federalism
CO2	Understanding	Understanding fiscal federalism in developing and developed countries
CO3	Applying	Applying theories of fiscal federalism
CO4	Analysing	Analysing the effect of fiscal federalism principles.
CO5	Evaluating	Evaluating the pros and cons of decentralized planning
CO6	Creating	Creating a model on financial reporting

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				3					2	
CO2				3					2	
CO3	3								2	
CO4	3		3						2	
CO5	3		3						2	
CO6				3			2		2	

Fiscal Federalism: Theory and Practice with Special Reference to Kerala

Objective: To provide deep knowledge of application and outcome of fiscal federalism practices followed in Kerala.

Module 1: Fiscal Federalism in Developed and Developing Countries-The Pros and Cons of Institutional Decentralisation-Types of Federalism- Laboratory Federalism and Welfare Reform- Interjurisdictional Competition and Environmental Federalism-Cooperative Federalism-Democratic Federalism-Public Sector Institutions and Market Preserving Federalism

Module 2 : Economic and Political Objectives in a Federal System-Economic Efficiency and Political Participation-Measurement of Economic Efficiency in Developing Countries- Tradeoff Between Efficiency and Political Expediency-Citizen Impact on Political Outcome and Political Participation- Corruption, Capture and Fiscal Decentralisation

Module 3 : The Basic Theory of Fiscal Federalism-The Teibout Model and the Real World-Optimal Federalism- Public Education and Public Health in a Federal System-Fiscal Instruments in a Federal System-Taxation -Incidence and Efficiency Effects of Property Tax-Jurisdictional Boundaries- Intergovernmental Grants-Types of Grants-The Flypaper Effect- Central State and State LSG Financial Relations in India

Module 4: Fiscal Decentralisation and Economic Development- Conflicting Views on Decentralisation on Economic Growth-Measures of Decentralisation- Empirical Studies on Impact of Decentrlisation on growth-From Economic Growth to Fiscal Decentralisation -From Fiscal Decentralisation to Economic Growth-Economic Issues in the Estimation of a Relation -Direct and Indirect Linkages of Decentralisation to Economic Growth-Subnational Government and Economic Development-Decentralisation of Governance and Development-Departures of Developing Countries from Fiscal Federalism Literature-Issues in Adapting the Theory of Decentralisation for Developing Countries-Empirical Evaluation of Decentralised Delivery of Public Services-Decentralisation and Local Business Development

Module 5: Federalism in India-73rd and 74th Amendment of Indian Constitution- TheThree Tier System of Local Governments-Decentralised Planning- The Kerala Experiment- Tax Efforts of Local Bodies- Own Tax Revenue of Local Bodies in Kerala-Devolution from the State to Local Bodies- Trends in the Expenditure of Local Bodies- Sectoral Pattern of Expenditures-Decentralised Planning on Kerala's Economic Development- Deepening of Democracy and Women Empowerment-Decentralisation and the Marginal Communities- Decentralised Planning Process in Kerala- Financial Reporting in Local Bodies – Local Budgets- Financial and Political Accountability in Local Bodies

References

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- Douglas Morgan, Kent Robinson, Dennis Strachota and James A Hough, *Budgeting for Local Governments and Communities,*Routledge,(2015)
- M.A. Oommen and AbhijitDatta, *Panchayat and its Finances Concepts,* (1995)
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- M.A. Oommen, The Third Tier and Fourteenth Finance Commission, Economic and Political Weekly, 48(45-46), Nov. 16, 2013
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- Raghabendra Jha, H. Nagarajan and A. Tagat, Restricted and Unrestricted Fiscal Grants and Tax Effort of Panchayats in India, Economic and Political Weekly, 64(32), August 10, 2019
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Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0411	**PUBLIC ECONOMICS**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basics of public finance
CO2	Understanding	Understand theory of governmental function of resource mobilization and expend management
CO3	Applying	Applying equity and efficiency measures to real life situation
CO4	Analysing	Analysing efficiency measures often used in resource and expenditure management wi hurting the population and ensure
CO5	Evaluating	Evaluating the social welfare while maximizing social output
CO6	Creating	Creating models based on theories of public Economics

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2						2
CO2	2		3						3	
CO3	3			3		2			2	
CO4	3		3				2		2	

CO5	3	2		3					2	
CO6		2	3					2		3

PUBLIC ECONOMICS

Objective: The objective of this course is to give students a thorough grounding in the theory of how governments harness resources and spend the proceeds for the welfare of the people and how efficiently resource mobilization and expenditure can be managed.

Module 1 : Introduction to Public Economics-Government size- Role of Governments in production, consumption and Distribution Decisions-Market Efficiency and Market Failure

Module 2 : Taxation and Income Distribution- Optimal Taxation--Partial and General Equilibrium Models-Incidence, Equity and Efficiency of Taxation.

Module 3 : Public Goods and Externality -- Public Goods and Public Choice-Positive and Negative Externalities-Welfare Spending-Social Insurance and Social Security-Income Redistribution-Externality- Nature of the Externality- Bilateral versus Unilateral Externality- Remedial Measures – Regulation- Coase Theorem- Ex-ante Regulation versus Ex-Post Liability- Price versus Quantity Regulation- Externality and Land Use Regulations

Module 4 : Normative Theories of Social and Fiscal Justice: Cost-Benefit Analysis- Monitoring and Evaluation Techniques - Performance Outcome Analysis- Goal based, process based and outcome-based Approaches.

Module 5 : Public Finance in India and Kerala-Revenue Mobilisation-GST- Income Tax-Corporate Tax—trends and pattern of public expenditure-capital expenditure-Fiscal deficit , Public Debt-policies of income redistribution.

References:

- Anthony Barnes Atkinson and Joseph E. Stiglitz (1980), Lectures in Public Economics, McGraw Hill, New York.
- Harvey S. Rosen and Ted Gayer (2012), Public Finance, Tata McGRAW , New Delhi.
- AmareshBagchi (2005), Readings in Public Finance, Oxford University Press, USA.

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0412	**Public Choice and Policy**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Basic principles of Public choice and policy

CO2	Understanding	Understand the link between social welfare theories and public policies
CO3	Applying	Applying public policy practices in democracy
CO4	Analysing	Analyze the public policy and choice in income distribution in India
CO5	Evaluating	Evaluate the impact of different public policies in India
CO6	Creating	Students will have learned how to grapple with society's most urgent issues ranging economic and social policy to environmental problems

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2					2	
CO2	2	2			2				3	
CO3	3		3			2			3	
CO4	3		3						2	
CO5	3	2	3	2	2				3	
CO6	2		2				1			3

Public Choice and Policy

Objective: To provide post graduate students in- depth knowledge, analytical skills, and sophisticated understanding of how governments and markets work and equip them with the critical knowledge and skills needed to make problem solving their specialty.

Module 1: Introduction to Public Policy- Design and Evolution- Characteristics of Policy Problems- Models of policy making- Agenda Setting and Framing- Designing Intervention and Implementation- Policy Evaluation- Instruments and Tools

Module 2 : Social Welfare-Basics of Welfare Economics- Pareto Optimality- The First and Second Fundamental Theorems of Welfare Economics

Module 3: arket Mechanism and Market Equilibrium- Market Failure and Rationale for Government Intervention- Efficient Provisioning of Public Goods and Privately Provided Public Goods-Public Choice- Externalities

Module 4: Political Economy-Direct Democracy-Representative Democracy-Social Insurance and Redistribution-Unemployment and Health Insurance-Social Security

Module 5: Income Redistribution- Rationale for Income Redistribution-Expenditure Programme for the Poor-Taxation - Incidence and Efficiency- Taxation and Income Distribution-Public Expenditure and Income Maintenance- Globalisation and Income Inequality- Policy Measures

(All Topics are to be taught with reference to India)

References:

- B. Guy Peters, **Advanced Introduction to Public Policy**, Edward Elgar Publishing, Cheltenham, U.K. . Northampton, MA, USA, 2015
- Jonathan Gruber, **Public Finance and Public Policy**, 5th Edition, Worth Publishers: New York, 2016
- Rajesh Chakrabarti and KaushikiSanyal, Public **Policy in India**, Oxford University Press: London, 2017
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- Thomas Piketty, **Capital in the Twenty-First Century**, Cambridge: Massachusetts, 2014
- Victor Bekkers, Menno Fenger and Peter Scholten, **Public Policy In Action: Perspectives on the Policy Process**, Edward Publishing, Cheltenham, U.K. . Northampton, MA, USA, 2017
- Wayne Parsons, **Public Policy: An Introduction to the Theory and Practice of Policy Analysis,** Edward Publishing, Cheltenham, U.K. Northampton, MA, USA, 1995

Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0413	**INSURANCE ECONOMICS**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Principles and concepts in insurance economics
CO2	Understanding	Understanding different types and theorems associated with insurance economics
CO3	Applying	Applying insurance practices
CO4	Analysing	Analysing financial and risk management in insurance economics
CO5	Evaluating	Evaluating insurance pricing techniques
CO6	Creating	Empirical models by linking economic and credibility and risk management theories

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2			2			
CO2	2	2		3			2			
CO3				2	2		2			
CO4	3		3	3		2	3			
CO5		2		3	3		2			
CO6		2	3			2				3

INSURANCE ECONOMICS

Objective: To introduce insurance economics and its theories in risk management. Equip the student to deal with unpredictable occasions.

Module 1: Principles of General Insurance-Nature of General Insurance-Basic mechanism- Types of Life Insurance: permanent, whole, universal, endowment, joint, group- Premium Principles and Their Properties- Life Tables, Different Forms: Cohort, Current, Singleand Multiple Decrements-Functions of LifeTables- Survival Distribution- DeMoivre Law-Curtate Expectation of Life - Uniform Distribution of Deaths and Constant Force of Mortality-Aggregate Table- Select and Ultimate Table.

Module 2: Expected utility- St. Petersberg Paradox- Bernoullis Solution- Von Neumann MorgensternExpected Utility Theorem- Risk Preference, Demand for Full Insurance- Maximum Premium-Insurance at Fair Odds- Partial Insurance-Insurance Market-State Space Approach, Contingent Commodities-Zero Profit Constraint- Odd Price Ratio

Module 3: Fundamental Concepts of Credibility Theory**-** Empirical Bayes Approach to Credibility Theory, - Credibility Premium Formulae and Standard Elementary Models- Credibility Premiums- Aggregate Claim Distribution for Short Term - Insurance Contracts, - Aggregate Claim Distribution and Application of Binomial, Poisson-Negative Binomial Distribution and Normal Distribution

Module 4: Risk Management and Insurance-The Concept of Risk- Business Risks and Individual Risks- Risk Management Methods Loss Control- Loss Financing and Internal Risk Reduction Methods- Frequency of Loss- Magnitude and Severity of loss- Important Distributions of Claim Costs- Diversification and Polling Arrangement- Contract Costs- Diversification of Underwriting Risk- Reinsurance-Proportional and Non-proportional Contracts- Insolvency Issues

Module 5: Insurance Pricing -Fundamentals -Fair Premium- Fair Profit Loading- Actuarial Science Pricing Techniques - Individual Risk Theory and Collective Risk Theory- Financial Pricing of Insurance- Insurance Capital Asset Pricing Model-Present Value Model and Option Pricing Mode - Types of Insurance Products- Life and Health Insurance- Term, Endowment and Whole Life Policies-Universal and Variable Life Group Insurance- Annuity Contracts with Level and Varying Benefits-Future Life Time Random Variable and its Distribution Function- Deferred Probabilities-Analytical Laws of Mortality-Gompertz, Maheham Single Decrement Life Table- Select and Ultimate Life Table.

References:

- Harrington and G. Niehaus, Risk Management and Risk, Tata McGraw-Hill, second edition, 2004
- Rajeda, G. Principles of Risk Management and Insurance, eighth edition, Pearson Education, 2004
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Course Code	Course Title	Credit	C/E	Marks	
				Internal	External
23-345-0414	**Fintech Venture Management Entrepreneurship**	3	E	50	50

Course Outcomes: On successful completion of the course the student will be able to:

Course Outcome	Cognitive Abilities	Course Outcomes
CO1	Remembering	Recall key concepts and terminology related to venture management entrepreneurship, Remember the steps involved in starting and managing a new ve and remember the key elements of a business plan and financial Statements.
CO2	Understanding	Explain the fundamental principles of venture management and entrepreneu Understand the importance of market research and analysis in entrepreneurship And Comprehend the different sources of funding available to new ventures.
CO3	Applying	Apply the principles of venture management and entrepreneurship to real- scenarios
CO4	Analysing	Analyze the competitive landscape of the industry in which the venture operates
CO5	Evaluating	Students will be able to evaluate the strengths and weaknesses of different fi ventures and make informed investment or partnership decisions based on their ana
CO6	Creating	Students will be able to create innovative fintech business ideas and prototypes, and develop effective strategies for launching and scaling them.

CO – PSO Mapping Table:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1				2					2	
CO2				3					3	
CO3	2			3					2	
CO4	2			3		2			3	
CO5				3			3		3	
CO6	2	2		3					2	3

FinTech Venture Management and Entrepreneurship

Objective: Understand various aspects of FinTech venture management, business plan and entrepreneurial finance.

Module 1: Creating FinTech Business Plan- Entrepreneurial Strategy: Generation of new business opportunity, Decisions under Uncertainty, entry strategy, environmental instability - Risk Reduction strategies, Market scope strategy- Imitation strategies-Strategic Project Leadership skills

Module 2: The Concept of Project, Project Life Cycle - Project Planning, Feasibility – Project proposal & preparation of DPR

Module 3: Types of firms - market analysis- product development- market segmentation and analysis - product life cycle- advertising - distribution channels

Module 4: Entrepreneurial Finance: Financing and Managing New Venture-Importance of Financial Management as an integral part of Entrepreneurship -Sources of Finance-Various sources of Investment - Basics of Venture Capital and Angel Investment -Debt Financing

Module 5 : Startups in Emerging market: Emerging market - definition, concept and features. India's start up revolution– Trends, Imperatives, benefits. The typical stages of a startup, opportunities for Startup in Finance sector. Legal foundations, regulatory environment and startup funding, Case studies on real fintech startups and their journey.

References:

- Kotler, P., Keller, K. L., Koshy, A., & Jha, M. (2016). Marketing Management: A South Asian Perspective. Pearson Education India Limited.
- Larson, E. W., & Gray, C. F. (2019). Project Management: The Managerial Process (8th ed.). McGraw Hill Education.
- Boone, L. E., & Kurtz, D. L. (2007). Principles of Marketing (12th ed.).
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