SEMESTER II - Theory Core Papers

1. **Macro Economics**

Part A Introduction			
Program: PG II year	**Class :MA(Economics) Semester - II**	**Year: Ist Year**	**Session: 2025-26**
Subject: Economics			

1	**Course Code**	**Eco - 103**
2	**Course Title**	**Macro Economics (CC- 21)**
3	**Course Type (Core Course/ Discipline Specific Elective/)**	**Core Course**
4	**Pre-requisite (if any)**	To study this course, a student must have had this subject in Degree. Open for all
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** **CLO 1** To understand core macroeconomic concepts, variables, and national income accounting methods. **CLO 2** To analyze the functioning of aggregate demand and supply in determining macroeconomic equilibrium. **CLO 3** To compare Classical and Keynesian economic models and evaluate their assumptions and criticisms. **CLO 4** To explain the objectives, instruments, and macroeconomic impacts of fiscal and monetary policy using the IS-LM framework. **CLO 5** To interpret key theories of consumption, investment, and money demand, and relate them to current economic trends.
6	**Credit Value**	**5 credits**

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7	**Total Marks**	Max. Marks: 40 + 60	Min. Passing Marks: 35

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 50

Unit	Topics	No. of Lectures (1 Hour Each)
Unit 1	**Introduction to macroeconomics and its concepts :** **Macroeconomic variables:** Consumption expenditure, savings, investment, national income and its components. Concept of stock and flow variables. Circular flow of money in two sector, three sector & open economy. Aggregate Supply & aggregate demand curve. Equilibrium in AS & AD in the long run. **Methods of national income accounting:** Income Approach, Expenditure Approach, Value Added Approach. **Unit Activity: Identify Stock and Flow variables from the news article and justify your reasoning.** **Calculate year-on-year growth of the National Income of India for the last three years, for Market Price, Factor cost and GVA.**	08
Unit 2	**Classical and Keynesian Economics** **Classical Economics:** ClassicalTheory,Say'sLawofMarket,ClassicalModelwith andwithoutsavingandInvestment,Criticismofthe Model. **KeynesianModel**ofaggregatedemandandsupply. Keynes Vs Classicals, Criticismof the Model. **Unit Activity:** Identify Indian government policies in the recent past which have been successful in Keynes's concept. **IKS: Growth Pattern, Structures of Economy in Ancient India and Significance of Indian Knowledge System in Modern Trade**	12
Unit 3	**Introduction to Fiscal & Monetary Policy** Its Objectives and instruments of Fiscal Policy. Objectives & instruments of Monetary Policy. Effect of these instruments on the economy. **IS-LM Curve** – The Goods market: IS curve. The Money market: LM Curve. Equilibrium in IS-LM	10

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	Curve, crowding effect and effects of Tax, Money supply on these curves. **Multiplier Theory** – Simple Investment & Govt. Budget multiplier, Tax Multiplier & Foreign Trade Multipliers, Effects of Multipliers. **Unit Activity: Exercise 5 numerically on the concept of IS-LM curve in estimating equilibrium income and interest rate.**	
Unit 4	**Theories of Consumption and Investment- Consumption:** Concept of Consumption Function, APC and MPC. Factors affecting consumption. Theories of consumption –Absolute, relative, life cycle, Permanent Income Hypothesis. **Investment:** Investment Function, Determinants of Investments, MEC and MEI, Dynamic Multiplier. Saving function and Paradox of thrift. Trend of Consumption, Saving and Investment in India. **Unit Activity: Estimate growth of Aggregate Consumption Expenditure of India, Gross savings, Financial savings and Physical Savings for the last three years.**	**10**
Unit 5	**Money** – Functions & Types, Theories of Demand for money-Pre Keynesianism, Liquidity Preference theory, Theories of Demand for money-Post Keynesianism, Money multiplier and its components, Supply of money and stock of money supply **Unit Activity: Make a time series of M3 and M4 for the past 8 weeks. What are New Monetary Aggregates of Money Supply**	**10**

Keywords/Tags: MEC (marginal efficiency to capital), MEI (marginal efficiency to Investment, Paradox of thrift,

Part C-Learning Resources

Text Books, Reference Books, and Other resources

1. Shapiro,E.(1996),MacroeconomicAnalysis,GalgotiaPublications,NewDelhi.
2. Mankiw, N.G. (2009) Macroeconomics. 7th Edition, Worth. New York.
3. Dornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York.

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4. Ackley,G.(1978),Macroeconomics:TheoryandPolicy,Macmillan,NewYork.

5. AhujaH.L.Modern Economics 13thEdition, 2008, S.Chandand Company Ltd.,New Delhi.

6 Jhingan, M.L. (2002) Macro Economics Theory. Vrinda Publishers, New Delhi.

7 Agrawal S., (2025) Growth of Indian Economy through Indian Knowledge System. **IKS - Chapter 29 -** https://shodhsamagam.com/uploads/issues_tbl/1743859421rowth-of-Indian-Economy-through-Indian-Knowledge-System.pdf

Suggested equivalent online courses:

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 Marks University Exam (UE): 60 Marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	40
External Assessment : University Exam Section Time : 03.00 Hours	**Section(A)** : Very Short Questions **Section (B) :** Short Questions **Section (C)** : Long Questions	60

Any remarks/ suggestions:

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2. Computer Application for Economic Analysis

<table>
<tr><td colspan="4">Part A Introduction</td></tr>
<tr><td>Program: PG II year</td><td>Class :MA(Economics) Semester - II</td><td>Year: Ist Year</td><td>Session: 2025-26</td></tr>
<tr><td colspan="4">Subject: Economics</td></tr>
</table>

<table>
<tr><td>1</td><td>Course Code</td><td colspan="2">Eco- 103</td></tr>
<tr><td>2</td><td>Course Title</td><td colspan="2">Computer Application for Economic Analysis</td></tr>
<tr><td>3</td><td>Course Type (Core Course/ Discipline Specific Elective/)</td><td colspan="2">Core Course -(CC -22)</td></tr>
<tr><td>4</td><td>Pre-requisite (if any)</td><td colspan="2">To study this course, a student must have had this subject in Degree.
Open for all</td></tr>
<tr><td>5</td><td>Course Learning outcomes (CLO)</td><td colspan="2">On successful completion of this course, the students will be able to:
CLO 1. Master data management and manipulation.
CLO 2. Apply statistical analysis techniques.
CLO 3. Implement data visualization tools.
CLO 4. Utilize R programming for data analysis.
CLO 5.Work with advanced statistical software (SPSS)</td></tr>
<tr><td>6</td><td>Credit Value</td><td colspan="2">5 credits</td></tr>
<tr><td>7</td><td>Total Marks</td><td>Max. Marks: 40 + 60</td><td>Min. Passing Marks:35</td></tr>
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<table>
<tr><td colspan="3">Part B- Content of the Course</td></tr>
<tr><td colspan="3">Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 50</td></tr>
<tr><td>Unit</td><td>Topics</td><td>No. of Lectures
(1 Hour Each)</td></tr>
<tr><td>Unit 1</td><td>MS-Excel: Introduction, Features of MS-Excel, Worksheet, Workbook, Cell Pointer, Cell Range, Cell address, Name Box,</td><td>10</td></tr>
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<table>
<tr>
<td></td>
<td>Function Bar, insert function, Functions-Date, Time, DAY, TODAY, VLOOKUP, HLOOKUP, Basic Statistical Functions-Sum, Average, Max, Min, Count, Insertion of charts, wrap text, merge & Centre.

Unit Activity:

1. Worksheet & Workbook Basics:
o Create a new workbook and rename 3 worksheets as "Sales,""Expenses," and "Summary."
o Enter sample data (e.g., product names, monthly sales, costs) using cell ranges (A1:D10).
o Use Merge &Center to create a header titled "2024 Sales Report."
2. Formulas & Functions:
o Apply SUM, AVERAGE, MAX, and MIN to calculate total sales, average costs, and highest/lowest values.
o Use TODAY() and DAY() to auto-populate the current date and extract the day from it.
o Create a VLOOKUP table to find product prices from a reference list.
3. Charts & Formatting:
o Insert a Column Chart to visualize monthly sales data.
o Use Wrap Text for lengthy product descriptions and adjust column widths.
IKS Activity : Discuss the use of binary methods in development of IT.</td>
<td></td>
</tr>
<tr>
<td>UNIT 2</td>
<td>MS- Excel:Data Validation, Import Procedure of Data Analysis Tab, Hypothesis, T-test, Measures of central tendency (Mean, Median, Mode), Correlational Analysis, Linear Regression,</td>
<td>10</td>
</tr>
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	What-if-Analysis- Goal Seek, Scenario Manager, Data Table. **Unit Activity:** 1. Data Validation & Import: o Set Data Validation rules to restrict entries in the "Region" column (e.g., "North,""South,""East,""West"). o Import a CSV file into Excel using the Data Analysis ToolPak. 2. Statistical Analysis: o Calculate Mean, Median, and Mode for a dataset (e.g., student scores). o Perform a T-Test to compare average sales between two regions. o Use Correlational Analysis to find relationships between advertising spend and sales. 3. What-If Analysis: o Apply Goal Seek to determine the required sales to achieve a profit target. o Create scenarios using Scenario Manager (e.g., "Best Case,""Worst Case").	
Unit 3	**R Programming:** Introduction, Features of R, R Studio, Installation of R, R. Basic Syntax, R Packages, Basic Algebra, Vectors, Operators, Data Types, String, Matrices, lists, Data Frame, Sorting, R, Charts & Graphs, Arrays, Factors, Built-in functions- abs, sqrt, ceiling, trunc, round, floor, seq, rnorm, print, log(x), exp (x). **Unit Activity:** 1. Setup & Syntax: o Install R and RStudio. Write a script to print "Hello, R!" and perform basic algebra (e.g., 5^3 + sqrt(25)). 2. Vectors & Matrices: o Create a numeric vector of temperatures (e.g., temp <- c(22, 25, 19, 30)). o Build a matrix of student marks and	**10**

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	use rowSums() to calculate totals.
	3. Functions & Data Frames:
	  o Generate a sequence of numbers using seq() and round decimals with floor(), ceiling(), and trunc().
	  o Create a data frame for employee details (Name, Age, Salary) and sort it by salary.
	4. Visualization:
	  o Plot a bar chart for monthly sales data using R's built-in functions.	

Unit 4	SPSS: Introduction, Features of SPSS, Uses of SPSS, Installation of SPSS, Qualitative & Quantitative data, Variables – Nominal, Ordinal, Ratio, Interval, Method of preparing datasheet and entering data according to its characteristics, Importing MS- Excel file in SPSS.
	
	Unit Activity
	1. SPSS Setup & Data Types:
	  o Install SPSS and create a new dataset. Define variables (e.g., Nominal: Gender, Ordinal: Education Level).
	2. Data Entry & Import:
	  o Prepare a datasheet for survey responses (e.g., Age, Income, Satisfaction Score).
	  o Import an Excel file (e.g., "Customer_Data.xlsx") into SPSS.
	3. Variable View vs. Data View:
	  o Adjust variable properties (e.g., labels, measurement scales) in Variable View.
		10

Unit 5	**SPSS:** Use of various statistical tools on SPSS, t-Test, Chi Square test, functions to estimate descriptive statistics Frequency, Measures of central tendency and variation (Mean,	**10**

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Mode, Median).

Unit Activity:

1. Descriptive Statistics:

- Run Frequency Analysis for categorical data (e.g., product categories).
- Calculate Mean, Median, and Mode for a numeric variable (e.g., monthly income).

2. Hypothesis Testing:

- Perform a Chi-Square Test to check associations between gender and product preference.
- Conduct an Independent Samples T-Test to compare employee performance across departments.

3. Data Visualization:

- Generate a Pie Chart to show the distribution of survey responses.

Keywords/Tags: Excel, R, SPSS, Data Analysis

Part C-Learning Resources

Text Books, Reference Books, and Other resources

1. Microsoft Office Excel 2007 step by step: Frye, PHI, MS Office: Sanjay Saxena, Vikas Publishing House, Mahoney, M. (2019).

2. Introduction to Data Exploration and Analysis with R, Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication.

3. SPSS for Windows Step by Step A Simple Guide and Reference, Darren George and Paul Malley.

4. https://bookdown.org/mikemahoney218/IDEAR/ Phillips, N.D. (2018). YaRrr, The Pirate's Guide to R. https://bookdown.org/ndphillips/YaRrr/

Suggested equivalent online courses:

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 Marks University Exam (UE):60 Marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	40

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External Assessment :	**Section(A)** : Very Short Questions	
University Exam Section	**Section (B) :** Short Questions	60
Time : 03.00 Hours	**Section (C) :**Long Questions	
Any remarks/ suggestions:		

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3. Financial Institutions & Markets

Theory Paper 3

Part A Introduction			
Program: PG II year	**Class: M. A. (CBCS)**	**Year: I Semester: II**	**Session: 2025-26**
Subject: Economics			
1	**Course Code**		
2	**Course Title**	**Financial Institutions & Markets**	
3	**Course Type (Core Course/ Discipline Specific Elective)**	**Core - CC -23**	
4	**Pre-requisite (if any)**	To study this course, a student must have had this subject in Degree. Open for all.	
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, the students will be able to:** **On successful completion of this course, the students will be able to:** **CLO 1** Understand the fundamental structure and functions of the Indian Financial System. **CLO 2** Explain the characteristics and prerequisites for a well-functioning financial system. **CLO - 3** Identify and analyze the various players within the Indian Financial System. **CLO 4** Comprehend the evolution and different segments of Indian Financial Markets. **CLO 5** Analyze the role and importance of financial markets in the economy. **CLO 6** Gain in-depth knowledge of the Indian Money Market. **CLO 7** Assess the impact of technological developments on Indian Financial Markets. **CLO 8** Gain knowledge of the structure and functioning of Foreign Exchange Markets.	
6	**Credit Value**	**5**	
7	**Total Marks**	Max. Marks: 40 + 60	Min. Passing Marks: 35

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Part B- Content of the Course		
Total No. of Lectures-Tutorials-Practical (in hours per week): **L-T-P: 50**		
Unit	**Topics**	**No. of Lectures**
I	**Indian Financial System and major Institutions:** Structure of Indian Financial System: An overview of the Indian financial system, Introduction of financial system,FunctionsoftheFinancialSystem,Structure and Characteristics of Financial system, Prerequisites of a FinancialSystem,Players intheFinancialSystem, This is the foundational text for ancient Indian economics and statecraft. It provides details on currency, taxation, state finance, interest rates, trade, and even early forms of administrative regulation. Essential for understanding the economic thought of ancient India. Major reforms in the last decade: Payment banks, monetary policy and restructuring, Regulatory Institutions in India: RBI, SEBI, IRDA, PFRDA. Describe Hundis as indigenous credit instruments used for remittance and trade finance across vast distances. This highlights the concept of credit, transfer of funds, and reduction of risk, which are core functions of a financial system. This can be an "Indian Knowledge System" equivalent of a modern financial instrument. Commercial Banking: Role of Banks, corporate banking, Core banking solution (CBS), Arthashastra acknowledges the concept of interest (vriddhi) and even discusses different rates for various types of loans and borrowers, showing an early understanding of the time value of money and risk. **Non –Banking Finance Companies:** NBFCs Introduction and its types; Services Provided by NBFCs, comparison between Banks and NBFCs, Growthof NBFCin India. **Unit Activity** : ➢ **Structure Diagram Creation:** Draw a hierarchical diagram illustrating the structure of the Indian Financial System (e.g., Regulators at the top, then Financial Institutions and Markets, with sub-categories under each). **Unit Activity** ➢ Create a chart illustrating the regulatory framework for NBFCs in India, primarily focusing on the role of the RBI. Include different categories of NBFCs and any variations in their regulation.	**08**

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II	**Introduction of Financial Markets & Products :** Evolution of the Financial Markets, Segments of Financial Markets, Types of Financial Products- Types of Shares, Bonds, Mutual Fund, Insurance etc Stages in the Development of Financial Products, Role of Financial markets, Market Efficiency. **Unit Activity** ➢ **Market Segmentation Chart:** Develop a visual chart illustrating the different segments of financial markets (e.g., Money Market vs. Capital Market, Primary vs. Secondary). Under each segment, list examples of relevant instruments and participants **Foreign Exchange Markets**: Introduction to Foreign Exchange Markets, Structure of Foreign Exchange Markets, Types of transactions and settlement. **Unit Activity** ➢ Create a detailed mind map starting with "Foreign Exchange Markets." Branch out to "Introduction,""Structure,""Types of Transactions," and "Settlement." Within each branch, add key concepts, participants, and examples	10
III	**Money Market:** Introduction to Money Market, Characteristics and functions, Development of moneymarketinIndia: The **Hundi system** served as a vital instrument for short-term credit, remittances, and exchange, enabling merchants to access funds and settle transactions across vast distances without physical movement of cash. Money Market instruments-T-bills, Commercial Papers, Certificates of deposits , call money markets, Repo-purchase and factors affecting their growth: **Focus on Commercial Papers/short-term instruments):**"The concept of instruments for short-term borrowing and lending is not entirely new to India. The **Hundi**, in its various forms (e.g., *Darshani Hundi* for demand payments, *Muddati Hundi* for time-bound payments), acted as a primitive form of commercial paper, allowing merchants and even rulers to raise short-term finance against future obligations. These instruments were a crucial component of India's pre-modern 'money market,' facilitating transactions, providing liquidity, and underpinning the extensive trade networks that characterized ancient and medieval Indian economies."Role of RBI in the development of money market,	10

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	Money market and its linkage with Monetary Policy. **Unit Activity** ➢ For each function of the money market (e.g., providing liquidity, facilitating trade finance, implementing monetary policy), find a real-world example or a hypothetical scenario illustrating how that function operates in India.	
IV	**Capital Market:** When discussing the *functions* of a capital market (e.g., capital formation, resource allocation, price discovery, wealth creation, risk sharing), briefly introduce how ancient Indian texts conceptualized wealth, economic activity, and the importance of ethical conduct in accumulating and managing resources. "While modern capital markets are a relatively recent phenomenon, the underlying principles of wealth creation, investment, and resource allocation have been contemplated in Indian thought for millennia. Ancient texts like the *Arthashastra* discuss the importance of capital accumulation for the state and individuals, and the *Dharmashastras* lay down ethical guidelines for economic transactions, including lending and borrowing, emphasizing fairness and the rejection of usury." Introduction to Capital Market, Characteristics and functions, Development of Capital market in India, Primary and Secondary Capital markets, Role of SEBI in regulation of the Capital Markets, Reforms in the Capital Markets, Capital Market instruments, Classification of Stock Markets, IPO, Stock Exchanges, etc **Unit Activity** ➢ Construct a detailed mind map starting with "Indian Capital Market." Branch out to "Characteristics,""Functions,""Development,""Primary Market,""Secondary Market,""Role of SEBI,""Reforms," and "Instruments." Populate each branch with specific details and examples	10
V	**Technology and the Markets and Other Fin-Tech Innovations** Technological developments in financial markets; both money and capital markets specially after post reform period: Ancient India, preceding modern Fin-Tech, developed key "technologies" crucial for commerce. The **decimal system and zero** revolutionized complex calculations and accounting for trade and treasuries. Additionally, the **Bahi-khata system** (early double-entry bookkeeping) and the **Hundi system** for payments and	10

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credit were indigenous financial innovations. These advancements demonstrate a long-standing Indian tradition of creating efficient systems to manage economic flows, laying groundwork for today's financial market technologies. Impact of Technology on the Market, On-Line Trading,Clearing&Settlementsystem,TechnologyandpaymentSystem,Technologyandglobalmarket.RoleofE-Commerce inthe developmentof FinancialMarkets.

Unit Activity

- If available, use online trading platforms (even demo accounts) to understand the mechanics of online order placement, execution, and market data access. [1] Focus on how technology facilitates this process

Keywords/Tags: Financial Institutions, Financial Markets, Stock exchange, SEBI, Capital market, Money Market

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Bhole,L.M.(1999),FinancialInstitutionsandMarkets,TataMcGrawHill CompanyLtd.NewDelhi.
2. Bhole,L.M.(2000),IndianFinancialSystem,ChughPublications,Allahabad.
3. Johnson,H.J.(1993),FinancialInstitutionsandMarkets,McGrawHill,NewYork.
4. Machiraju,M.R.(1999),IndianFinancialSystems,VikasPublishingHouse,NewDelhi.
5. Ohlson,J.A.(1987),TheTheoryofFinancialMarketsandInstitutions,NorthHolland,Amsterdam.
6. Prasad,K.N.(2001),DevelopmentofIndia'sFinancialSystem,Sarup&Sons,NewDelhi.
7. Mith,P.F.(1978),MoneyandFinancialIntermediation:TheTheoryandStructureofFinancialSystem,PrenticeHall, Englewood-Cliffs, NewJersey.
8. Chandra,P.(1997),FinancialMarkets,(4thEdition),TataMcGrawHill,NewDelhi.
9. Machiraju,H.R.(1997),InternationalFinancialMarketsinIndia,WheelerPublishing,Allahbad.
10. Fenstermaker,J.V.(1969),ReadingsinFinancialMarketsandInstitutions,Appleton,NewYork.
11. Gupta,S.B.(1983),MonetaryEconomics,S.Chand&Company,NewDelhi.
12. Bhatt,R.S.(1996),UnitTrustofIndiaandMutualFunds:AStudy,UTIInstituteofCapitalMarkets,Mumbai.
13 Sahadevan,K.G.andM.T.Thiripalraju(1997),Mutual Funds, PrenticeHallofIndia, NewDelhi.
14. Goss,B.A.andB.S.Yamey(1978),TheEconomicsof FuturesTrading,Macmillan,London.
15. Gupta,L.C.(Ed.)(1999),India'sFinancialMarketsandInstitutions,SocietyforCapitalResearchandDevelopment,Delhi.
16. Crocker,A.(1982),InternationalMoney;IssuesandAnalysis,TheEnglishLanguage BookSociety,Nelson, London.

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Suggested equivalent online courses: 1. Capital Markets Professional Certificate by NISM 2. Introduction to Capital Markets by Corporate Finance Institute (CFI): 3. Swayam (Government of India Platform): 4. IIMBx: Introduction to Banking and Financial Markets - I by Indian Institute of Management
General References for IKS in the Syllabus (To be added at the end of the syllabus as a "Suggested Readings on Indian Knowledge Systems"):

1. **Bhagavad Gita:** Concepts of diversity, different paths, and the importance of adapting means to ends.
2. **L.C. Jain, *Indigenous Banking in India* (1929):** Chapters on the Hundi system and its functions.
3. **T.V. Mahalingam, *Economic Life in Ancient India* (1940s):** Discusses trade and financial practices.
4. Kangle, R. P. (Trans.). (1960). *The Kautiliya Arthasastra* (Parts I, II, III). University of Bombay. (Alternatively, L. N. Rangarajan's translation is also widely cited).
5. **S. Ambirajan, *Classical Political Economy and British Policy in India* (1978):** Provides context on indigenous financial instruments during British rule.
6. **Various academic papers on "Hundi system" or "Indigenous Banking in India"**: Can be found in economic history journals.
7. **Kautilya's Arthashastra:** Specifically sections on 'Treasury and Sources of Revenue' (Book II, Chapters 6-12) and 'Commerce' (Book IV, Chapters 1-2).
8. **R.P. Kangle, *The Kautilya Arthashastra* (Translation with critical study):** For detailed understanding of Kautilya's economic principles.
9. Maity, S. K. (1970). *Early Indian Coins and Currency Systems*. Munshiram Manoharlal Publishers. (While focused on coins, it discusses their economic role).
10. Prakash, Om. (1987). *The Dutch East India Company and the Economy of Bengal, 1630-1720*. Princeton University Press. (While later, it touches upon traditional banking practices like Hundis in the context of trade).
11. **Singh, Sahana.** (2017). *The Educational Heritage of Ancient India: How an Ecosystem of Learning Was Laid to Waste.* Routledge. (Excellent for understanding the broader IKS context).
12. **Kak, Subhash C.** (Various works). A prominent scholar on ancient Indian science, astronomy, and mathematics. Look for his books and articles that provide insights into broader IKS.
13. **Kapoor, Kapil (Editor).** (Various volumes). *Indian Knowledge Systems: Vol. 1 & 2.* D.K. Printworld. (A comprehensive collection of essays by various scholars, some might touch upon economic thought).
14. **Mishra, R.S.** (2009). *Indian Financial System.* S. Chand Publishing. (While modern, some editions might have introductory chapters on historical context).
15. **Dharampal.** (1992). *Indian Science and Technology in the Eighteenth Century: Some Contemporary European Accounts.* Biblia Impex Private Limited. (For understanding indigenous knowledge before colonial disruption).
16. **Ministry of Education, Government of India.** *National Education Policy (NEP) 2020.*

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(Refer to sections on IKS integration, as it provides a contemporary policy perspective).

17. **Kautilya's Arthashastra:** For references to systematic record-keeping, treasury management, and accounting principles. (e.g., Book II, Chapter 7, "Examination of the Accounts").
18. **"History of Accounting in India: From 'Bahi-Khata' to Modern AI" (Suvit.io article):** Discusses the Bahi-khata system as a precursor to double-entry bookkeeping.
19. **L.C. Jain, *Indigenous Banking in India* (1929):** For detailed insights into the mechanics and reach of the Hundi system.
20. **Academic works on the history of Indian mathematics and science:** For the impact of the decimal system and zero on computational abilities relevant to commerce. (e.g., studies on Aryabhata, Brahmagupta)

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:
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Any remarks/ suggestions:

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Theory Paper

4. Statistics for Economics

Part A Introduction

Program: PG II year	**Class :MA(Economics) Semester - II**	**Year: Ist Year**	**Session: 2025-26**

Subject: Economics

1	**Course Code**	**Eco - 103**
2	**Course Title**	**Statistics for Economics(CC - 24)**
3	**Course Type (Core Course/ Discipline Specific Elective/)**	**Core Course**
4	**Pre-requisite (if any)**	To study this course, a student must have had this subject in Degree. Open for all
5	**Course Learning outcomes (CLO)**	**On successful completion of this course, thestudents will be able to:** **CLO 1.** To summarize and interpret datasets using descriptive statistics (arithmetic/geometric mean, median, quartiles, dispersion, skewness), building on foundational concepts to assess variability and distributional symmetry. **CLO 2.** To model real-world economic phenomena with probability distributions (Binomial, Poisson, Normal), leveraging PDFs, CDFs, and measures like expectation/variance to quantify uncertainty. **CLO 3.** To construct and refine index numbers (price, quantity, cost-of-living) for tracking economic trends, incorporating techniques like base shifting and deflation to adjust for inflation and structural changes. **CLO 4.** To analyze relationships between economic variables using correlation (Pearson, Spearman) and predict outcomes through regression models, extending insights from data interpretation to forecast trends. **CLO 5** To critically evaluate the utility and limitations of mathematical/statistical tools in economics, integrating knowledge from modeling, analysis, and prediction to inform ethical and

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		practical decision-making.	
6	**Credit Value**	5	
7	**Total Marks**	Max. Marks: 40 + 60	Min. Passing Marks:35

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week):L-T-P: 50

Unit	**Topics**	**No. of Lectures** (1 Hour Each)
Unit 1	**Understanding the Data - Data Presentation:** Definition, scope and uses of Statistics in Economics; Classification of data: Quantitative and Qualitative; Attributes, Variables, Scales of measurement: Nominal, Ordinal, Interval and Ratio; Presentations: Tabular and Graphical presentation, such as Bar Diagram, Line Diagram, Pie Chart, Histogram, Ogive etc. **Unit Activity:**Using 5 Data Sets from RBI, plot appropriate graphs on Excel.	6
Unit 2	**Frequency Distribution, Measures of Central Tendencies, Quartile, Dispersion and Skewness** Distribution, Frequency Distribution,Mathematical Average – Mean (Arithmetic Mean, Geometric Mean); Positional Averages – Median and Mode; Quartile. Measures of dispersion– Range, Inter-Quartile range, Quartile deviation, Mean deviation, Variance and Standard deviation; Skewness. **Unit Activity:** Using a dataset from RBI's website computethe Measures of dispersion of at least 5 variables.	12
Unit 3	**Index Numbers** Concept, types, application and problems in construction of Index numbers, The chain index numbers, Base shifting and deflating the index numbers, cost of living index numbers. **Unit Activity:** India's Industrial Production Index (IIP) uses 2011-12 as the base year. The government wants to	6

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	shift the base to 2017. Rebase the index to 2017.Convert the 2010–2023 series to the 2017 base.	
Unit 4	**Correlation and Regression** **Correlation Analysis:** Karl Pearson coefficient of correlation, Spearman's rank correlation, and concept of probable Error. **Regression Analysis:** Concept, Regression lines, regression coefficients, equations and prediction. **Unit Activity:** Using the appropriate variables from RBI dataset, find the any 3 pairs of correlated variables and interpret the results.	**12**
Unit 5	**Probability and Probability Distributions** Probability Theory: Probability concepts; Axiomatic probability: laws of probability, conditional probability and independence; Random variable; Expectation; Discrete and continuous probability distributions, CDF and PDF of Binomial, Poisson and Normal distributions. **IKS: Probability in Ancient India(Raju, C. (2011).)** **Unit Activity:**Collect a sample of 7 data points on the marks obtained in class 12^{th} from your class, and make a sampling distribution of the sample means obtained. And check how many z scores away was your sample from the mean.	**14**

Keywords/Tags: Model, Sets, Functions, Descriptive Statistics, Mean, Median, Mode, Index Numbers, Correlation, Regression, Skewness, Standard Deviation, Probability Distribution, Theoretical Probability.

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Chiang, A. C. "Fundamental Methods of Mathematical Economics." Mc Graw-Hill, New York, 1984.
2. Gupta, S.C. and Kapoor, V.K. (1997) Fundamentals of Mathematical Statistics. Sultan Chand and Sons, New Delhi, 11.23-12.23.
3. Gupta, S. P. "Statistical Methods," Sultan Chand and Sons, New Delhi, 2000.
4. Raju, C. (2011). Probability in Ancient India. In *Elsevier eBooks* (pp. 11751195). https://doi.org/10.1016/b978-0-444-51862-0.50037-x

Suggested equivalent online courses:

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Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks : 100

Continuous Comprehensive Evaluation (CCE) : 40 Marks University Exam (UE):60 Marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	40
External Assessment : University Exam Section Time : 03.00 Hours	**Section(A)** : Very Short Questions **Section (B) :** Short Questions **Section (C) :**Long Questions	60

Any remarks/ suggestions:

(CBOS)

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	history. Austrian School and its Economist thoughts in brief namely Carl Menger, Eugen Von Bohm-Bawerk, and Friedrich Von Wieser. Lausanne School of Thoughts and its Economist. Leon Walras, Vilfredo Pareto, Henry Ludwell Moore. Cambridge school of thoughts and its economist namely Alfred Marshall, A.C Pigou, Francis Edgeworth, John Maynard Keynes etc. American School of thoughts and its Economist namely J.B Clark and Irving Fisher. Keynesian and Macroeconomics thoughts; **Unit Activity: Write a Case talking about Amratya Sen's Contribution to Economy.**	

Keywords/Tags: History of Economic Thought, Ancient Economic Ideas, Greek Philosophers, Mercantilism, Physiocracy, Classical Economics, Neoclassical Economics, Austrian School, Keynesian Economics, Marxism vs Communism, Medieval Economic Thought, Cambridge School, Islamic Economic Scholars.

Part C-Learning Resources

Text Books, Reference Books, and Other resources

1. Loganathan, V. 1998. *History of Economic Thought*. New Delhi: S. Chand and Company.
2. Sankaran, S. 2000. *History of Economic Thought*. Chennai: Margham Publications. *Self-Instructional Material*
3. Coleman, Janet. 2000. *A History of Political Thought*. New Delhi: Wiley-Blackwell.
4. Jha, Shefali. 2010. *Western Political Thought: From Plato to Marx*. New Delhi:Pearson Education India.
5. Dasgupta, A. K. (2015). Kautilya's Arthasastra: Economics and Polity. In *A history of Indian economic thought*.

Suggested equivalent online courses:

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): 40 Marks University Exam (UE): 60 Marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	40
External Assessment : University Exam Section Time : 03.00 Hours	**Section(A)** : Very Short Questions **Section (B) :** Short Questions **Section (C)** : Long Questions	60

Any remarks/ suggestions:

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