



**BACHELOR OF SCIENCE
(ECONOMICS)**

Syllabus with effect from the Academic Year 2026-27

B.Sc. (Economics) Semester - III

Course Code	US03MAECO01	Title of the Course	Basics of Micro Economic Theories
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To be able to distinguish between the methodology and analysis of micro-economics and macro-economics 2. To interpret and compare the theories of demand 3. To examine the theories of production and distribution
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Course Content		
Unit	Description	Weightage (%)
1.	Micro and Macro Economics: 1.1 Static and dynamic Analysis 1.2 Methodology of Economics – Deductive and Inductive Methods 1.3 Equilibrium Analysis- Meaning and Kinds of Equilibrium – Stable, Unstable and Neutral	25 %
2.	Demand Analysis: 2.1 Utility Approach-Diminishing Marginal Utility and Equi- marginal utility, Indifference curve approach –characteristics 2.2 Consumer's equilibrium, Hicks and Slutsky Theorems 2.3 Inferior and Giffen Goods 2.4 Price Elasticity of demand –Percentage method, Total outlay method, Point method and Arc method, 2.5 Consumer's surplus – Marshall and Hicks	25 %
3.	Theory of Production: 3.1 Law of Variable proportions 3.2 Iso-quants- characteristics 3.3 Producer's equilibrium 3.4 Laws of Returns – The law of diminishing returns, the law of constant return, the law of increasing returns 3.5 Cobb- Douglas Production function -properties of the function 3.6 Constant Elasticity of Substitution production function – Properties and limitations of the function	25 %
4.	General Equilibrium and Market Structure: 4.1 Short-run and Long-run cost 4.2 Relationship between marginal cost, average total cost, average variable cost and average fixed cost in short-run 4.3 U and L shapes of long-run average cost curves 4.4 Equilibrium analysis – Total cost and total revenue approach 4.5 Equilibrium analysis – marginal cost and marginal revenue approach 4.6 Introduction to different markets	25 %



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Teaching-Learning Methodology	The course would be taught/learnt through various means like lectures, discussions, writing assignments, seminars presentations, browsing online-resources relevant to the content, participating in co-curricular, extra-curricular activities and self-learning.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Evaluation	50%
3.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Differentiate between economic methodology and analysis of micro-economics and macro-economics.
2.	Evaluate equilibrium analysis of demand theories.
3.	Analyze consumer choice models using demand analysis
4.	Estimate optimum production scenario considering the costs of production.
5.	Compare various methods of assessing returns to factors of production.

Suggested References:	
Sr. No.	References
1	Ahuja, H. L. Advanced economic theory-Microeconomic Analysis. New Delhi: S. Chand & Co.
2	Jhingan M.L.; Advanced Economic Theory, Vrinda Publications, Delhi
3	Deweet K.K., Modern economic theory, S.Chand and Company, New Delhi.
4	Hirshleifr J. and Glazer A., Price theory and applications, Prentice Hall, New Delhi.
5	Koutsoyiannis A., Modern Microeconomics, Macmillan press, London.
6	Lipsey and Chrystal, Economics, Oxford University Press, New Delhi.
7	Prasad K.N., Lectures on micro-economic theory, Himalaya publishing house.
8	Sen Anindya., Microeconomics-Theory and applications, Oxford Uni. press, Delhi.
9	Seth M.L., Principles of Economics (Micro and Macroeconomics) Lakshmi Narain Agrawal, Agra.
10	Stigler., Theory of price, Prentice hall, New Delhi.
11	Stonier A and Hague D., A Textbook of Economic theory, Longman group, London.
12	Sundharam K.P.M. and Sundharam E.N., Economic Analysis, S. Chand and sons, Delhi.
13	Samuelson, Economics, Tata McGraw Hill, New Delhi



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B.Sc. (Economics) Semester - III

Course Code	US03MAECO02	Title of the Course	Basics of Macro Economic Theories
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To analyze various aspects of money supply in an economy 2. To interpret and compare the classical, Keynesian and Neo-classical Quantity theories of Money
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Course Content		
Unit	Description	Weightage (%)
1.	Supply of Money: 1.1 Financial intermediation — a mechanistic model of bank deposit determination; A behavioral model of money supply determination, a demand determined money supply process; 1.2 RBI approach to money supply; High powered money and money multiplier; budget deficits and money supply; 1.3 Money supply and open economy; control of money supply.	25%
2.	The Quantity theory of Money (QTM)-I: 2.1 Classical theory -Equation of Exchange 2.2 The Cambridge approach of QTM 2.3 Comparison of Classical and Cambridge approach of QTM 2.4 Superiority of Cambridge version	25%
3.	The Quantity theory of Money-II: 3.1 Keynesian approach of QTM 3.2 Income theory of money and Liquidity theory of money 3.3 Post Keynesian theories of QTM- Friedman & Don Patinkin 3.4 Friedman's Restatement of QTM 3.5 Modigliani's approach of QTM	25%
4.	The Quantity theory of Money-III: 4.1 Neo-Classical School: Rational expectations 4.2 Leijonhufvud on Keynesian economics and economics of Keynes-Recent developments 4.3 The Asset demand for money: Keynesian and Classical approaches 4.4 Neutrality of money-Classical, Keynesian and post-Keynesian views 4.5 Conditions of neutrality- Theory of money and prices	25%

Teaching-Learning Methodology	The course would be taught/learnt through various means like lectures, discussions, writing assignments, seminars presentations, browsing online-resources relevant to the content, participating in co-curricular, extra-curricular activities and self-learning.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Evaluation	50%
3.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Assess the supply of money in an economy
2.	Assess various quantity theories of money
3.	Evaluate various quantity theories of money

Suggested References:	
Sr. No.	References
1	Ackley, G (1978). Macroeconomics: Theory and Policy, MacMillan, New York
2	Dornbusch, R. and F. Stanley (1997). Macroeconomics, McGraw-Hill Inc, New York.
3	Ghosh, B.N., and Rama Ghosh (1993). Modern Macroeconomics: Theory and Policy, Himalaya Publishing.
4	Gupta, G.S. (2001). Macroeconomics: Theory and Applications, Tata McGraw-Hill publishing Company Ltd., New Delhi.
5	Hall, R.E. and J.B. Taylor (1986). Macroeconomics, McGraw-Hill Inc. New York.
6	Jha, R. (1991). Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd. New Delhi.
7	Leijonhufvud, A. (1968). On Keynesian Economics and Economics of Keynes, Oxford University Press, London.
8	Mankiw, N.G. and D. Romer (Eds.) (1991). New Keynesian Economics, 2 Vols. MIT Press, Cambridge, Massachuttes, USA.
9	Mueller, M.G. (1966). Reading in Macroeconomics, Holt Rinehart & Winston, N.Y.



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B.Sc. (Economics) Semester - III

Course Code	US03MAECO03	Title of the Course	Applications of Mathematics in Economic Analysis
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. Formulate and solve foundational microeconomic and macroeconomic models using algebraic formulations, and linear programming techniques. 2. Apply matrix algebra methods, including matrix inversion to systematically resolve multi-variable simultaneous economic equations. 3. Examine marginal economic relationships and single-variable optimization parameters using single-variable (normal) calculus to evaluate revenue, cost, and price elasticity. 4. Evaluate multi-variable economic impacts and constrained optimization scenarios by utilizing partial and total differentiation techniques for income, and cross-price elasticity.
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Course Content		
Unit	Description	Weightage (%)
1.	Economic Models and Linear Programming: 1.1 Economic Model – Income determination model, market models – one commodity & two commodity models 1.2 Linear programming methods for solving economic problems	25%
2.	Use of Matrix Analysis in Economics: 2.1 Solving simultaneous equations using inverse method 2.2 Solving simultaneous equations using Cramer's Rule 2.3 Leontief Input- Output Analysis	25%
3.	Use of Normal Differentiation in Economic Analysis: 3.1 Establishment of relationship between AR & MR; AC & MC; AR, MR & Elasticity; 3.2 Optimization of the function 3.3 Estimation of Elasticity & Marginal Value etc.	25%
4.	Use of Partial and Total Differentiation in Economic Analysis: 4.1 Cross elasticity, Income elasticity using partial differentiation 4.2 Partial and total effect estimation 4.3 Optimization of the function	25%

Teaching-Learning Methodology	The course would be taught/learnt through various means like lectures, discussions, writing assignments, seminars presentations, browsing online-resources relevant to the content, participating in co-curricular, extra-curricular activities and self-learning.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Evaluation	50%
3.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Solve linear programming problems and market models mathematically to determine optimal production targets and market-clearing equilibrium points.
2.	Compute solutions for simultaneous equations by applying matrix inversion techniques and Cramer's Rule.
3.	Quantify inter-industry requirements and economic linkages and calculating final demand outputs using Leontief models.
4.	Derive marginal functions (MR, MC) and single-variable optimization points using normal differentiation to determine minimum costs.
5.	Calculate multi-variable metrics—including cross-price and income elasticities—by applying partial and total differentiation.

Suggested References:	
Sr. No.	References
1	Ching A C; Fundamental Methods of Mathematical Economics, Mcgraw Hills, New York.
2	Gupta S C; Fundamental of Applied Statistics. S. Chand & Sons, New Delhi.
3	Grewal P S; Numerical Methods of Statistical Analysis, S P Pvt. Ltd., New Delhi.
4	Bose D.; An Introduction to Mathematical Economics, H P H. Bombay, Delhi.
5	Gupta C.B.; An Introduction to Statistical Methods, Delhi.
6	Dave M.B & Dr. Pandya K, Quantitative Methods of Economics, Popular, Surat (Gujarati)
7	Patel R.K. & Patel L.B.; Business Statistic, C. Jamanadas Co. Ahmedabad.
8	Patel Balubhai; Dhandhakiya Ankadashastra, University Granthnirman Board, Ahmedabad.
9	Zala M.L.; Arthshastrama Ganitshastra, Purbiti Prakashan, Vallabh Vidyanagar.
10.	Jaiswal M.C.; Arthvishayak Ankadashastra, University Granthnirman Board, Ahmedabad.



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Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	US03MDEST01	Technical Analysis for Security Market	4-0-0	120	04

• Course Learning Outcomes (CLOs)

On completion of this course, students will be able to:

CLO1: Understand the structure of stock markets, including market participants, IPOs, trading, and market indices.

CLO2: Explain basic technical analysis tools such as charts, candlestick patterns, support, resistance, and volume.

CLO3: Apply technical indicators like moving averages and Fibonacci retracements for market analysis.

CLO4: Analyze financial statements and evaluate stock value using fundamental analysis techniques.

CLO5: Understand currency, commodity, and government securities markets along with basic risk management and trading psychology.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	Introduction to Stock Markets - Savings, Investment, Return on Assets, and Structure of Financial Markets in India: Importance of Savings. Savings v/s Investments, Return on Asset, Regulators & Different types of Financial Market Participants, Financial Market Intermediaries in India - IPO, Stock Trading, Market Indices, Trading Systems, and Corporate Actions Impact: Initial Public Offering (IPO), Basics of Stock Trading, Stock Market Indices, Trading Terminal, Impact of Key Event & Corporate actions on Stock Market	CL PBL ICT EL	1
II	Technical Analysis Basics of Technical Analysis: Charts, Price Action, and Market Patterns: introduction, Characteristics, Price Action, Chart & its types, Candlestick Patterns, Support & Resistance	CL PBL ICT EL	2 3



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	Technical Analysis Tools: Volumes, Moving Averages, Indicators, The Fibonacci Retracements		
III	Fundamental Analysis - Basics of Fundamental Analysis: Intrinsic Value and Financial Statements: introduction & Foundation, Intrinsic value of Stock, Read & Understand: Balance Sheet, P&L Statement, - Cash Flow Statement, DCF Valuation, and Financial Ratio Analysis: Read & Understand: Cash Flow Statement, Discounted Cash Flow (DCF), Financial Ratios	CL CBL ICT EL	4
IV	Currency, Commodity, and Government Securities Risk Management and Trading Psychology - Foreign Exchange Market and Currency Trading Fundamentals: introduction, Reference Rate, Interest Rate Parity, INR Pair with different Currencies - Commodity Basics: Introduction, MCX & NCDEX, Different Commodity trading like Gold, Silver, Crude oil etc. - Government Securities: Introduction, G-SEC, Bonds & T-Bills, Calculation of yield, State Development Loans (SDLs), Risk Assessment & Taxation - Risk Management: Introduction, Define: Risk & Risk Management, Application of Variance & Covariance, Variance & Covariance Matrix, Correlation & Portfolio Variance in Risk Management - Trading Psychology: Introduction, Understanding of Psychology, Importance of Trading Psychology, Fear v/s Greed	CL PBL	5

• Learning Pedagogies/Methods

- Classroom Lecture (CL)
- Case-Based Learning (CBL)
- Problem-Based Learning (PBL)
- ICT-Enabled Learning through Digital Resources/ Virtual Labs/Webinars (ICT EL)

• Assessment Methodologies

(A) Internal Assessment

a. Internal Formative assessment

- MCQ and Objective question Quiz:** Students select or give the correct answer from the list of options four /none for a given questions.



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- ii. **Assignment:** A practical task or setup questions given to measure a student's knowledge, skill and ability in subject or field.
- iii. **Seminar:** A student-led academic activity designed to evaluate student's ability to research, understand, and present a specific topic.
- iv. **Group Discussion:** An interactive method to assess a student's personality and inter-personal skills in team setting. It typically involves 5 to 15 participants discussing a topic for 15 to 30 minutes in presence of an observer.

b. Internal Summative Assessment

- i. **Mid-term tests**
A test conducted roughly halfway through an academic term or semester.
- ii. **Laboratory performance**
Students demonstrate their laboratory hands-on performance skills, knowledge and ability to apply concepts in subjects.
- iii. **Viva-voce**
An oral examination conducted to evaluate a student's in-depth knowledge, understanding, and critical thinking regarding a subject or project.

(B) Weightage of Learning Efforts for External Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	1	30	4	5	3	12
II	2, 3	30	4	5	4	13
III	4	30	4	5	4	13
IV	5	30	3	5	4	12
		120	15	20	15	50

• Assessment and Evaluation

Sr. No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	FA: Seminars, Assignments, Quizzes, Group Discussion	25
		SA: Mid Term Test	25
2	End-Semester Examination	Written Exam	50



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(C) CLOs – PLOs Matrix

CLO	PLO										
	1	2	3	4	5	6	7	8	9	10	11
CLO1	2	1	1	1	1	2	1	2	2	2	1
CLO2	2	2	1	2	1	3	1	1	1	2	1
CLO3	2	3	2	2	1	3	1	1	1	2	1
CLO4	3	2	3	2	2	3	1	1	2	3	2
CLO5	3	2	2	2	1	3	2	1	3	2	2

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-

• Suggested Learning Materials Books:

Sr. No.	Title	Author(s)	Edition/Year	Publisher
1	Securities Market Understanding from Investors Perspective	Securities and Exchange Board of India BSE Ltd., National Securities Depository Limited National Stock Exchange of India Ltd., Central Depository Services (India) Limited Metropolitan Stock Exchange of India Limited	2020	SEBI



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2	Financial Education Booklet	SEBI	2020	Securities and Exchange Board of India (SEBI) SEBI BHAVAN
3	Securities Markets Foundation	National Institute of Securities Markets	2026	National Institute of Securities Markets

- **Online Resources (Open Source)**

Sr. No.	Description of Resource(s)	Weblink
1	Zerodha	https://zerodha.com/varsity/modules/
2	Investopedia	https://www.investopedia.com/terms/t/trading-psychology.asp
	National Institute For Securities Markets (NISM)	https://www.nism.ac.in/



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B.Sc. (Economics) Semester – III

ABILITY ENHANCEMENT COURSE

Course Code	UT03AEENG01	Title of the Course	Functional Grammar and Composition
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	- To enhance student's understanding of functional grammar in academic and scientific writing. - To develop effective writing skills for various forms of composition, including essays, reports, and research papers. - To promote clarity and coherence in communication, particularly in scientific contexts.
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Course Content		
Unit	Description	Weightage (%)
1.	Functional Grammar - Introduction to Functional Grammar - Sentence Structure - Tenses and Aspect - Punctuation and Cohesion - Practical Application: Writing exercises focused on grammar skill	50%
2.	Composition Skills - Writing Structure: Understanding the components of a well-structured paragraph and topic sentences - Essay Writing - Technical Reports: Components and structure of technical reports; clarity and precision in scientific writing - Research Papers: Understanding the format and style of research papers; citing sources and avoiding plagiarism - Final Assessment: Review of key concepts	50%

Teaching-Learning Methodology	Using Audio-Video material Interactive method Group work and pair work
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Evaluation	50%
3.	University Examination	50%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Demonstrate proficiency in functional grammar and effective use of various sentence structures and punctuation in writing.
2.	Compose well-structured technical reports and research papers, adhering to scientific writing conventions.
3.	Develop critical skills in peer review, providing and receiving constructive feedback to enhance writing quality.

Suggested References:	
1.	Bansal, R. K., & Kaur, S. (2014). English Grammar: A Practical Approach. New Delhi: Macmillan India.
2.	Rao, V. S. (2015). Academic Writing: A Handbook for International Students. New Delhi: PHI Learning.
3.	Murphy, R. (2019). English Grammar in Use: A Self-Study Reference and Practice Book for Intermediate Learners of English. Cambridge: Cambridge University Press.



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Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
DSC	US03SESAE01	Statistical Analysis Through MS Excel	0-4-0	60	02

• Course Learning Outcomes (CLOs)

On completion of this course, students will be able to:

CLO1: Construct informative statistical graphs and visualizations using Excel for effective presentation of data.

CLO2: Perform and interpret appropriate parametric and non-parametric statistical hypothesis tests using Excel.

CLO3: Conduct analysis of variance, post-hoc comparisons, and categorical data analysis for decision making.

CLO4: Develop and interpret simple and multiple linear regression models using Excel.

CLO5: Apply logistic regression and select appropriate statistical methods for analyzing real-world datasets using Excel.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	• Creating and Customizing Data Visualizations in Excel: Scatter Plots, Box Plots, Bar Charts with Error Bars, Axis Labels, Legends, and Chart Formatting	CBL	1
		PBL	2
		ICT EL	3
	• Heat Maps and Distribution Visualization in Excel: Conditional Formatting Heat Maps and Violin Plot Alternatives using Histograms/Box Plots		
	• Performing Parametric t-Tests in Excel: One-Sample, Independent Two-Sample, and Paired t-Tests		
	• One-Way ANOVA in Excel: Data Exploration, Assumption Checking, and ANOVA Analysis		
II	• Post-Hoc Comparison and in Excel: Multiple Mean Comparisons		
	• Categorical Data Analysis in Excel: Test of Proportion, and Chi-Square Test of Independence		
	• Non-Parametric Tests I: Wilcoxon Signed-Rank Test and Mann-Whitney U Test using Excel	CBL	2
		PBL	4
		ICT EL	5



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	• Non-Parametric Tests II: Kruskal-Wallis Test and Dunn's Multiple Comparison Procedure using Excel • Simple Linear Regression Analysis using Excel • Multiple Linear Regression Analysis and Interpretation using Excel • Logistic Regression Analysis using Excel (using Excel Add-ins or Solver-based Implementation)		
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- **Learning Pedagogies/Methods**

- (a) Case-Based Learning (CBL)
- (b) Problem-Based Learning (PBL)
- (c) ICT-Enabled Learning through Digital Resources/ Virtual Labs/Webinars (ICT EL)

- **Assessment Methodologies**

(A) Internal Assessment

a. Internal Formative assessment

- i. **Assignment:** A practical task or setup questions given to measure a student's knowledge, skill and ability in subject or field.
- ii. **Seminar:** A student-led academic activity designed to evaluate student's ability to research, understand, and present a specific topic.
- iii. **Group Discussion:** An interactive method to assess a student's personality and inter-personal skills in team setting. It typically involves 5 to 15 participants discussing a topic for 15 to 30 minutes in presence of an observer.

b. Internal Summative Assessment

- i. **Mid-term tests**
A test conducted roughly halfway through an academic term or semester.
- ii. **Laboratory performance**
Students demonstrate their laboratory hands-on performance skills, knowledge and ability to apply concepts in subjects.
- iii. **Viva-voce**
An oral examination conducted to evaluate a student's in-depth knowledge, understanding, and critical thinking regarding a subject or project.

- **Assessment and Evaluation**

Sr. No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	FA: Seminars, Assignments, Quizzes, Group Discussion	25
		SA: Mid Term Test	25



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(B) CLOs – PLOs Matrix

CLO	PLO										
	1	2	3	4	5	6	7	8	9	10	11
CLO1	2	3	2	3	-	2	-	-	-	3	-
CLO2	3	3	3	-	2	3	-	-	2	2	-
CLO3	3	2	3	-	2	3	-	-	3	2	-
CLO4	3	3	3	2	2	3	-	-	-	2	-
CLO5	3	3	3	2	2	3	1	-	2	2	2

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-

• Suggested Learning Materials Books:

Sr. No.	Title	Author(s)	Edition/Year	Publisher
1	Statistics for Managers Using Microsoft Excel	Levine, D. M., Stephan, D. F., & Szabat, K. A.	2020	Pearson
2	Basic Business Statistics: Concepts and Applications	Berenson, M. L., Levine, D. M., & Szabat, K. A..	2021	Pearson
3	Microsoft Excel Data Analysis and Business Modeling	Winston, W. L.	2019	Microsoft Press
4	Business Statistics in Practice	Bowerman, B. L., O'Connell, R. T., & Murphree, E. S.	2019	McGraw-Hill Education.
5	Statistics for Management and Economics	Keller, G.	2018	Cengage Learning.

• Online Resources (Open Source)

Sr. No.	Description of Resource(s)	Weblink
1	Microsoft Support – Data Analysis ToolPak	https://support.microsoft.com/excel
	Microsoft Excel Training	https://support.microsoft.com/training
	Microsoft Learn – Excel	https://learn.microsoft.com/microsoft-365/excel/



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Bachelor of Science Economics Semester-III

Course Type	Course Code	Course Title	Teaching-Learning Scheme	Total Notional Hours	Course credits
			L-P-T		
VAC	US03VABSC10	Introduction to Artificial Intelligence	2-0-0	60	02

• Course Learning Outcomes (CLOs)

On completion of this course, students will be able to:

CLO1: Explain the fundamental concepts, evolution, characteristics, and applications of Artificial Intelligence.

CLO2: Describe intelligent agents, knowledge representation methods, reasoning techniques, and search algorithms used in AI.

CLO3: Differentiate between Artificial Intelligence, Machine Learning, Deep Learning, and related intelligent technologies.

CLO4: Explain the working principles and applications of machine learning, neural networks, natural language processing, and computer vision.

CLO5: Discuss ethical, societal, and future challenges of Artificial Intelligence and evaluate its impact on real-world applications.

Unit	Course Content	Learning Pedagogies*	CLO(s)
I	Fundamentals of Artificial Intelligence	CL	1
	• Introduction to Artificial Intelligence: Definition of Artificial Intelligence, Goals and characteristics of AI, Evolution and history of AI, AI as an interdisciplinary field. • Types and Applications of Artificial Intelligence: Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), Artificial Super Intelligence (ASI), Tools used in AI Applications of AI in healthcare, education, agriculture, business, finance, manufacturing, and government • Intelligent Agents: Concept of intelligent agents, Components of an intelligent agent, Agent architecture, • Types of intelligent agents: Simple reflex agents, Model-based agents, Goal-based agents, Utility-based agents, Learning agents	PBL ICT EL	2



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	Knowledge Representation and Reasoning: Knowledge representation concepts, Logical representation, Rule-based representation, Semantic networks, Frames, Reasoning methods: Forward chaining, Backward chaining		
II	Machine Learning, Emerging AI Technologies and Ethical Issues • Introduction to Machine Learning: Definition and objectives, Relationship between AI, Machine Learning, and Deep Learning, Machine learning workflow • Types of Machine Learning: Supervised learning, Unsupervised learning, Semi-supervised learning, Reinforcement learning, Real-world applications • Neural Networks and Deep Learning: Biological inspiration, Artificial Neural Networks (ANN), Perceptron model, Introduction to Deep Learning, Applications of deep learning • Emerging AI Technologies: Natural Language Processing (NLP), Computer Vision, Expert Systems, Robotics and Intelligent Automation, Generative AI and Large Language Models (overview) • AI in Information Management: Data-driven decision making, AI for information retrieval, AI in healthcare information management, AI-based recommendation systems, Intelligent decision support systems	CL PBL ICT EL	3 4 5

• Learning Pedagogies/Methods

- (a) Classroom Lecture (CL)
- (b) Case-Based Learning (CBL)
- (c) Problem-Based Learning (PBL)
- (d) ICT-Enabled Learning through Digital Resources/ Virtual Labs/Webinars (ICT EL)

• Assessment Methodologies

(A) Internal Assessment

a. Internal Formative assessment

- i. **MCQ and Objective question Quiz:** Students select or give the correct answer from the list of options four /none for a given questions.
- ii. **Assignment:** A practical task or setup questions given to measure a student's knowledge, skill and ability in subject or field.
- iii. **Seminar:** A student-led academic activity designed to evaluate student's ability to research, understand, and present a specific topic.
- iv. **Group Discussion:** An interactive method to assess a student's personality and inter- personal skills in team setting. It typically involves 5 to 15 participants discussing a topic for 15 to 30 minutes in presence of an observer.

b. Internal Summative Assessment



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i. Mid-term tests

A test conducted roughly halfway through an academic term or semester.

(B) Weightage of Learning Efforts for Internal Assessment

Unit	Aligned CLOs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	1, 2	30	6	5	2	13
II	3,4,5	30	6	5	1	12
		60	12	10	3	25

• Assessment and Evaluation

Sr. No.	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	FA: Seminars, Assignments, Quizzes, Group Discussion	25
		SA: Mid Term Test	25
2	End-Semester Examination	Written Exam	50

(C) CLOs – PLOs Matrix

CLO	PLO										
	1	2	3	4	5	6	7	8	9	10	11
CLO1	3	2	-	-	2	1	-	-	-	1	2
CLO2	3	3	2	2	3	-	-	-	-	1	2
CLO3	3	3	-	2	3	-	-	-	-	1	3
CLO4	3	3	2	2	3	-	-	-	-	2	2
CLO5	1	2	2	2	2	3	2	3	2	3	3

CLO – PLO correlation	Value
Strong	3
Moderate	2
Low	1
No correlation	-



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- Suggested Learning Materials Books:**

Sr. No.	Title	Author(s)	Edition/Year	Publisher
1	Artificial Intelligence for Information Management: A Healthcare Perspective	S. Vigneshwari and A. Thirugnanam. Moumita Ghosh & Arunachalam Thirugnanam,	2021	Springer
2	Internet of Things (IoT): Concept and Applications	S. R. Mani Sekhar, G. M. Siddesh, A. Tiwari, and A. Anand	2020	Springer, Cham

- Online Resources (Open Source)**

Sr. No.	Description of Resource(s)	Weblink
1	This course introduces the key areas of AI, including machine learning, computer vision, and natural language processing.	https://www.udacity.com/course/ai-fundamentals--ud099