ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

Model Syllabus for 4-Year UG Honours in B.Com. (Computer Applications) as Major in consonance with Curriculum framework w.e.f. AY 2025-26

COURSE STRUCTURE

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
I	I	1	Business Organization and Management	4	4
		2	Fundamentals of Information Technology & Office Automation	3	3
			Fundamentals of Information Technology & Office Automation - Practical	2	1
	II	3	Financial Accounting I	4	4
		4	E-Commerce and Web Application and Development	3	3
			E-Commerce and Web Application and Development -Practical	2	1
II	III	5	Financial Accounting II	4	4
		6	Business Statistics	4	4
		7	Database Management System	3	3
			Database Management System-Practical	2	1
	IV	8	Advanced Accounting	4	4
		9	Cost and Management Accounting	4	4
		10	Data Science using Python	3	3
			Data Science using Python-Practical	2	1
III	V	11	Corporate Accounting	4	4
		12 A	Entrepreneurship & Start-Ups	4	4
		OR			
		12 B	Business Intelligence tools and Data Visualisation	3	3

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
			Business Intelligence tools and Data Visualisation-Practical	**2**	**1**
		13 A	Business Analytics Using Excel and Power BI	**3**	**3**
			Business Analytics Using Excel and Power BI-Practical	**2**	**1**
		OR			
		13 B	Accounting Information System	**3**	**3**
			Accounting Information System-Practical	**2**	**1**
	VI	**14 A**	Auditing	**4**	**4**
		OR			
		14 B	Financial Institutions and Markets	**4**	**4**
		15 A	Income Tax	**4**	**4**
		OR			
		15 B	Financial Planning	**4**	**4**
IV	**VII**	**16**	Accounting for Service Organizations	**4**	**4**
		17	Indian Accounting Standards	**4**	**4**
		18	Generative AI for the development of Objective oriented Programmes, Systems and Applications	**3**	**3**
			Generative AI for the development of Objective oriented Programmes, Systems and Applications-Practical	**2**	**1**
	VIII	**19**	Advanced Cost and Management Accounting	**4**	**4**
		20	Forensic Accounting	**4**	**4**
		21	Designing Web Applications using AI tools	**3**	**3**
			Designing Web Applications using AI tools-Practical	**2**	**1**

Note: In the III Year (during the V and VI Semesters), students are required to select a pair of electives from one of the **Two** specified domains. **For example: if set 'A' is chosen, courses 12 to 15 to be chosen as 12 A, 13 A, 14 A and 15**

A. To ensure in-depth understanding and skill development in the chosen domain, students must continue with the same domain electives in both the V and VI Semesters.

SEMESTER-I

COURSE 1: BUSINESS ORGANIZATION AND MANAGEMENT

Theory **Credits: 4** **4 hrs/week**

Course Objectives

This course is designed to:

- Acquire conceptual knowledge of business and the formation of various business organizations;
- Provide insights into mergers, acquisitions, CSR practices and quality management concepts ;
- Develop understanding of key management functions;
- Understand motivation and leadership theories; and
- Understand line and staff relationships and gain insights into the control process.

Course Outcomes (COs)

Upon successful completion of this course, students will be able to:

CO1: Identify and differentiate various forms of business organisations including P4 models and franchising systems.
CO2: Analyse the impact of business environment factors like mergers, acquisitions, and CSR on organisational sustainability.
CO3: Demonstrate knowledge of key managerial functions including planning, delegation, decision-making, and organisational structure.
CO4: Apply motivation and leadership theories to workplace scenarios and assess their implications on employee performance.
CO5: Develop foundational skills in business analysis using tools such as SWOT, TQM, and quality circles.

SYLLABUS

Unit I: Business: Forms of Business Organization - Sole Proprietorship, Partnership, Joint Stock Companies & Co-operatives and their Characteristics, relative merits and demerits, Difference between Private and Public Company, Concept of One Person Company, Public-Private- People-Partnership Model (P4), Franchising, Business Chains.

Unit II: Business Environment:
Mergers and Acquisitions- Business Takeovers- Corporate Social Responsibility (CSR)- examples with reference to AP state, Concept of Quality- Total Quality Management (TQM)- 6 Sigma. Kizen, Quality Circles.

Unit III: Management:
Functions of Management- planning- SWOT analysis – Short-term & Long-term Planning- Decision Making- Delegation of authority- Decentralisation- Departmentation.

Unit IV: Motivation:
Maslow's Need Hierarchy Theory- Theory X and Theory Y -McClelland's Need for Achievement Theory– Leadership concept- Styles of Leadership -Theories of leadership: Traits theory, Behavioural Leadership Theory, **Situational Leadership Theory**.

Unit V: Staffing
Line and staff relationship - Control: meaning and importance- process of control-control techniques- budgetary control.

Activities:

- Assignment on business organizations and modern business.
- Group Discussion on factors that influence plantlocation
- Seminars on different topics related to Business organization
- Case studies of successful corporate/business heroes.

Reference Books:

1. Gupta, C. B. (2014). *Business organisation*. Mayur Publication.
2. Singh, B. P., & Chhabra, T. N. (2014). *An introduction to business organisation & management*. Kitab Mahal.
3. Sherlekar, S. A., & Sherlekar, V. S. (2000). *Modern business organization & management: Systems approach*. Himalaya Publishing House.
4. Bhushan, Y. K. (Year Unknown). *Business organization*. Sultan Chand & Sons. *(Please insert the year if available.)*
5. Prakash, J. (Year Unknown). *Business organisation and management* (Hindi and English ed.). Kitab Mahal Publishers

SEMESTER-I

COURSE 2: Fundamentals of Information Technology & Office Automation

Theory **Credits: 3** **3 hrs/week**

Course Objectives:

1. **Understand foundational computing concepts** including number systems, evolution of computers, and architectural components.
2. **Explore basic computer organization and network fundamentals**, recognizing device functions, system types, and internet components.
3. **Demonstrate proficiency in word processing and presentation tools**, applying formatting techniques and design elements for professional outputs.
4. **Develop competency in spreadsheet operations**, employing formulas, charts, and data-handling techniques.
5. **Apply advanced data modeling and productivity features** to analyze and visualize data efficiently using modern tools.

Course Outcomes:

Learners will be able to:

1. **Convert between binary, decimal, octal, and hexadecimal systems**, and explain computer evolution and generations with examples.
2. Learners will demonstrate **basic blocks of a computer and fundamental networking knowledge.**
3. Create professional-level documents and **design visually appealing presentations** using word processing software and presentation software.
4. Manipulate data within spreadsheets, apply formulas, and **generate accurate summaries and visualizations.**
5. Apply data modelling techniques to **analyze, organize, and represent data effectively** in various scenarios.

Unit-I Number Systems, Evolution , Block Diagram and Generations

Number Systems: Binary, Decimal, Octal, Hexadecimal; conversions between number systems.

Evolution of Computers: History from early mechanical devices to modern-day systems.

Block Diagram of a Computer: Input Unit, Central Processing Unit, Memory Unit, Output Unit.

Generations of Computers: First to Fifth Generation – Technologies, Characteristics, Examples.

Unit-II Basic Organization and Network Fundamentals

Computer Organization: Functional components: Input/Output devices, Storage types, Memory Hierarchy.

Types of Computers: Micro, Mini, Mainframe, and Supercomputers.

Networking Fundamentals: Definition, Need for Networks, **Key Components:** Nodes, Links, Protocols, Networking Devices. **Types of Computer Networks** : LAN, WAN, MAN.

Network Topologies: Bus. Ring, Star, Mesh..

Internet Basics: History, IP Address, URL, WWW, Web browsers, Search engines, E-mail, Internet Security.

Unit-III Word Processing and Presentations

Word Processing Basics: Definition, Using Microsoft Word / Google Docs. Templates for resumes, letters, reports. **Basic text editing and formatting -** Typing and editing text, Font styles, sizes, colors, and effects, Paragraph alignment, indentation, and spacing, Bullets, numbering, and text highlighting, Templates for resumes, letters and reports. **Working with Tables and Graphics -** Inserting and formatting tables, Adding images, shapes, icons, and SmartArt, Text wrapping and positioning graphics.

Document Layout and Design - Page setup, Headers, footers, and page numbering, Section breaks and columns, Applying themes and styles. **Advanced Features -** Spell check and grammar tools, Thesaurus, and Mail merge. **References and Citations** Footnotes, endnotes, and captions, Bibliography and citation tools, Table of contents and index creation.

Presentation Tools: Using PowerPoint/Google Slides – Creating, Saving and Opening presentations, Adding, deleting, and rearranging slides, Slide layouts and design themes, Using templates and master slides, Slide sorter and outline view, Applying transitions and Animations, Design and Layout.

Applications: Creating resumes, Reports, Brochures, and Presentations.

Unit-IV Spread sheet Basics

Spreadsheet Concepts: Understanding rows, columns, cells in tools like MS Excel/Google Sheets, Workbook, Worksheet, **Cell referencing**- Relative, Absolute, Mixed.

Functions and Formulae: Mathematical, Statistical, Logical, Text, Date and Time, Financial.

Lookup and Reference : VLOOKUP, HLOOKUP, XLOOKUP, INDEX, MATCH

Visual representations: Creating a chart, common chart types, Column Chart, Bar Chart, Line Chart, Pie Chart, Scatter Chart, Histogram.

Data Handling: Sorting data, Filtering data, Grouping Data, **Conditional formatting:** Data Bars, Color Scales, Icon Sets, Custom Formulas.

Unit-V Data Modelling

Data Analysis Tools: Pivot Tables and Pivot Charts, Data Validation (Drop-downs, Input Messages, Error Alerts), **What-If Analysis**: Goal Seek, Scenario Manager, Data Tables

Charts and Dashboards: Creating Interactive Dashboards, Using slicers with Pivot Tables ,Combo Charts and Sparklines.

Productivity Tips: Using Named Ranges, Freeze Panes, Split View.

Text Books:

1. **Thareja, R.** (Second Edition). *Fundamentals of Computers*. Oxford University Press.
2. **Rajaraman, V.** (n.d.). *Fundamentals of Computers*. PHI Learning.
3. **Norton, P.** (2017). *Introduction to Computers* (7th ed.). McGraw Hill Education.
4. **Nordell, R., Stewart, K., Easton, A., Graves, P. R., & Triad Interactive, Inc.** (2022). *Microsoft Office 365: In Practice* (1st ed.). New York: McGraw Hill Education.

References Books:

1. **Alexander, M., & Kusleika, R.** (2022). *Microsoft Excel 365 Bible* (2nd ed.). Wiley.
2. **Lowe, D.** (2021). *Networking All-in-One For Dummies* (8th ed.). Wiley.
3. **Microsoft Official Docs and Training**: https://learn.microsoft.com
4. **Google Workspace Learning Center**: https://support.google.com/a/users/

Activities:

Unit 1: Number Systems & Computer Evolution

Outcome: At the End of the Course, The Students will be able to **explain different number systems**, the historical evolution of computers, and identify key components in a block diagram.

Activity: Create a digital poster or infographic comparing number systems (binary, decimal, octal, hexadecimal) and illustrating the timeline of computer generations with key innovations.

Evaluation Method: Rubric-based assessment of the poster presentation on a 10-point scale focusing on:

- Accuracy of number system conversions
- Correct identification of block diagram components
- Visual organization and creativity

Unit 2: Computer Architecture & Networking Basics

Outcome: Learners will demonstrate **basic blocks of a computer and fundamental networking knowledge.**

Activity: Design a concept map showing the internal architecture of a computer and types of networks (LAN, WAN, MAN), including devices and topologies.

Evaluation Method: Checklist-based peer review and instructor validation:

- Completeness of the map
- Correctness of networking concepts
- Use of appropriate terminology
- Logical flow and structure of the map

Unit 3: Word Processing & Presentation Design

Outcome: Learners will create professional-level documents and **design visually appealing presentations** using word processing software and presentation software.

Activity: Prepare a formal report (e.g., project proposal) in a word processor and present it using a slide deck with transitions, embedded media, and design elements.

Evaluation Method: Performance-based evaluation using a 10-point scoring scale:

- Formatting and structure of the document
- Presentation aesthetics and clarity
- Communication skills during presentation

Unit 4: Spreadsheet Analysis & Visualization

Outcome: Learners will manipulate data within spreadsheets, apply formulas, and **generate accurate summaries and visualizations.**

Activity: Analyze a dataset (e.g., student scores or sales data) using spreadsheet software. Apply formulas (SUM, AVERAGE, IF, VLOOKUP) and create relevant charts.

Evaluation Method: Practical test with a rubric:

- Correct use of formulas
- Accuracy of data summaries

Unit 5: Data Analysis and Visualization:

Outcome: Learners will apply data modelling techniques to **analyze, organize, and represent data effectively** in various scenarios.

Activity: Prepare an interactive dashboard for a given data set using EXCEL.

Evaluation Method: Evaluation of the dashboard on a 10-point scoring scale:

- Presentation aesthetics and clarity
- Interactiveness
- Communication skills during presentation

SEMESTER-I

COURSE 2: Fundamentals of Information Technology & Office Automation

Practical **Credits: 1** **2 hrs/week**

List of Experiments:

1. Demonstration of Assembling and Dessembling of Computer Systems.
2. Identify and prepare notes on the type of Network topology of your institution.
3. Prepare your resume in Word by using the Resume template.
4. Using Word, write a letter to your higher official seeking 10-days leave.
5. Create a multi-page academic report and format it using headers and footers. The header will include the document title and author name, while the footer will contain page numbers and the date.
6. Prepare a formal invitation letter and use Mail Merge to personalize it for a list of recipients.
7. Prepare a report that includes: A table summarizing sales data, A graphic (image or chart) illustrating product performance with the proper formatting and alignment of both elements
8. Prepare a document and add Citations, Footnotes, and Bibliography in Word.
9. Create a PowerPoint Presentation on the Role of AI in Business Decision-Making.
10. Using a spreadsheet, prepare your class Time Table.
11. Using a Spreadsheet, calculate the Gross and Net salary of employees(Min 5) considering all the allowances.
12. Generate the class-wise and subject-wise results for a class of 20 students. Also generate the highest and lowest marks in each subject.
13. Using IF, AND, OR, and IFERROR to Automate Grade Evaluation.
    a. Create a table of student scores in different subjects.
    b. Use IF to assign grades (A/B/C/Fail).
    c. Use IFERROR to handle missing scores or invalid data.
14. Consider the problem of preparing a stationary order for the month of March. The item description, quantity and cost per item are available. The total cost per item is to be calculated and the final cost per item involves a sales tax of 2% over the total cost. The gross total and the net total are to be displayed.

Sl. No.	Description	Quantity	Cost Per Item
1	Notepad	202	2.85
2	Writing Pad	86	3.95
3	Ball point pen (Blue)	520	2.50
4	Cello-tape	75	2.95
5	A4 Refill pad	90	5.95
6	Pencils	603	0.50
7	Crayons	80	3.85
8	Stapler	30	9.95

9	Hole punch	25	14.95
10	Ring Binder	45	10.95

15. You are given the order details of a company in the below table.

Order Id	Product	Unit price	Quantity	Discount	Revenue	Tax (2% for each order)	Net Income
11250	A	8	10	0%	?	?	?
11251	B	20.8	1	0%	?	?	?
11252	C	7.7	16	25%	?	?	?
11253	D	15.6	50	0%	?	?	?
11254	E	39.4	15	25%	?	?	?
				Total	?		?

a. Calculate the revenue and tax on the revenue for each product.

b. Calculate the net income of each product.

c. Calculate the total revenue of all products.

d. Calculate the total net income of all products.

16. Create an Excel sheet with the following fields in the Sales table.

i)Month ii) Item iii) Quantity iv) Price v) Commission

Use Data Validation criteria for:

a) Quantity and Price should be whole numbers

b) Commission @3.5% of Price should be allowed only two decimals.

c) Price should accept 5000 and above values only.

17. Consider the problem of finding the total and average marks of five subject marks for five students. Calculate the Maximum mark, minimum mark, mean, median, Standard deviation and Variance for each subject.

Roll. No.	Name	Accounting	Income Tax	Business Law	Total	Average
100	Ramesh	85	75	60	?	?
101	Mahesh	100	78	85	?	?
102	Suresh	65	72	70	?	?
103	Ravi	90	80	85	?	?
104	Raju	80	76	90	?	?

18. The following are the details of Expenditure. Draw a Pie diagram with appropriate Formatting options, including Percentages and chart headings.

Product	Sales
Food	10000
Rent	5000
Clothing	1000
Fee	4000

19. The following are the marks obtained by the students of B. Com. In three subjects.

Roll. No.	Name	Accounts	IT	Economics
2001	Ramesh	65	85	75
2009	Mahesh	88	75	60
2004	Suresh	67	84	35
2002	Ravi	42	85	74
2007	Raju	88	89	90

1. Sort the above table on Roll. No.
2. Using Conditional formatting List out students who scored
    a. Less than 55 in Accounts
    b. More than 75 in IT
    c. Between 60 and 75 in Economics.

20. Prepare Pivot Table for the given data:

Department	Employee Name	Salary
HR	Ramesh	20,000
Finance	Mahesh	18,500
IT	Suresh	17,500
HR	Ravi	13,000
Finance	Raju	15,000
IT	Balu	10,000

21. Employee Database Search Using VLOOKUP, HLOOKUP, XLOOKUP, INDEX, and MATCH

a. Create a database of

employees (Name, ID, Department, Salary).

b. Implement VLOOKUP to search by employee ID.
c. Use HLOOKUP to extract department heads by role.
d. Apply XLOOKUP for more flexible searches.
e. Use INDEX + MATCH as an alternative to VLOOKUP.

22. Sales Report Analysis Using Pivot Tables and Charts

a. Use a dataset of product sales (Product, Region, Date, Quantity, Revenue).
b. Create Pivot Tables to summarize data by region/product.
c. Insert Pivot Charts for visual analysis (e.g., bar, line).
d. Add slicers to make the dashboard interactive.

23. Designing a Data Entry Form with Drop-downs and Input Rules

e. Create a student registration form.
f. Add drop-down lists for course selection using Data Validation.
g. Add input messages to guide users.
h. Add error alerts for wrong entries.

24. Monthly Budget Planning using Goal Seek and Scenario Manager

i. Create a simple personal budget (income, expenses, savings).
j. Use Goal Seek to determine income needed to save a desired amount.
k. Use Scenario Manager to compare different budgeting scenarios (best/ worst/ realistic case).
l. Create a one-variable Data Table to analyze how different expenses affect savings.

25. Consider the monthly sales report

Month	**Region**	**Product**	**Units Sold**	**Unit Price (₹)**	**Total Sales (₹)**
Jan-25	North	Laptop	120	50,000	60,00,000
Jan-25	South	Tablet	80	30,000	24,00,000
Feb-25	North	Laptop	150	50,000	75,00,000
Feb-25	South	Tablet	90	30,000	27,00,000
Mar-25	North	Laptop	100	50,000	50,00,000
Mar-25	South	Tablet	110	30,000	33,00,000

1. Create PivotTables
2. Add Slicers
3. Create Combo Chart
4. Insert Sparklines
5. Assemble Dashboard

Note : The list of experiments is not limited to those mentioned above. A comprehensive set of programming or software tool-based exercises may be developed by the respective faculty members.

SEMESTER-II

COURSE 3: FINANCIAL ACCOUNTING I

Theory **Credits: 4** **4 hrs/week**

Course Objectives
This course is designed to:

- Understand and explain the foundational principles, concepts, and process of accounting, including classification and rules of debit and credit;
- Record and process business transactions through journals, ledgers, subsidiary books, and correct errors through rectification entries;
- Apply and compare different methods of depreciation and amortisation to account for asset value reduction;
- Identify and distinguish between provisions and reserves and apply their treatment in final accounts with suitable adjustments; and
- Prepare accurate final accounts (Trading, Profit & Loss, and Balance Sheet) incorporating necessary adjustments.

Course Outcomes (COs)

Upon successful completion of this course, students will be able: to
CO1: Understand the basic concepts of financial accounting;
CO2: Analyse the accounting process;
CO3: Enable the students to understand the various methods of depreciation and its calculation;
CO4: Examine the impact of provisions and reserves on profitability of business;
CO4: Workout with final accounts and assess the financial position of the concern.

SYLLABUS

Unit – I: Introduction
Meaning– Definitions -Objectives – Functions – Bookkeeping and Accounting – Branches of Accounting - Advantages and Limitations –GAAP- Accounting Concepts and Conventions – Accounting Cycle- Double Entry Accounting System- Classification of Accounts - Debit and Credit Rules. (Theory)

Unit – II: Accounting Process
Journal –Ledger – Subsidiary Books- Single, Double and three Column Cash Book-Preparation of Trial Balance- Rectification of Errors (Including Problems)

Unit – III: Depreciation & Amortisation
Meaning and Causes of Depreciation & Amortisation – Depreciation Vs Amortisation-Methods of Depreciation: Straight Line – Written Down Value – Annuity and Depletion Method (Including Problems).

Unit – IV: Provisions and Reserves
Provisions and Reserves – Meaning – Objectives – Types of Provisions and Reserves – Differences between Provisions and Reserves – Accounting Treatment – Journal Entries – Adjustment in Final Accounts – Impact on Profit – (Including Problems).

Unit – V: **Final Accounts**
Preparation of Trading Account, Profit & Loss Account and Balance Sheet with adjustments (Including Problems)

Activities

- Quiz on accounting principles, concepts, and classification of accounts.
- Assignment on classification of accounts and journal entries.
- Group activity: calculation of problems on depreciation using different methods.
- Comparative presentation of Depreciation and Amortisation.
- Field-based report: Collect and analyse final accounts of a local business.

References:

1. Ranganatham, G., & Venkataramanaiah, M. (2019). *Financial accounting*. New Delhi: S. Chand Publications.
2. Jain, S. P., & Narang, K. L. (n.d.). *Accountancy*. Ludhiana: Kalyani Publishers.
3. Arulanandam, M. A. (n.d.). *Advanced accountancy*. Mumbai: Himalaya Publishing House.
4. Goyal, V. K. (n.d.). *Financial accounting*. New Delhi: Excel Books.
5. Tulsian, P. C. (n.d.). *Accountancy–I*. New Delhi: Tata McGraw Hill Publishing Co.

SEMESTER-II

COURSE 4: E-COMMERCE AND WEB APPLICATION DEVELOPMENT

Theory **Credits: 3** **3 hrs/week**

Course Objectives:

1. Understand the evolution, types, and models of e-commerce, including technical, legal, and ethical frameworks. Explore web design technologies and content management systems relevant to e-commerce platforms.

2. Apply online marketing principles, SEO techniques, and e-payment systems with attention to logistics and risk management.
3. Design interactive and responsive websites using HTML5, CSS3, and client-side scripting with JavaScript.
4. Develop and customize CMS-based interfaces using the Bootstrap framework and responsive design principles.

Course Outcomes:

Learners will be able to:

1. Describe e-commerce models, revenue strategies, and legal considerations including cyber laws and data privacy.
2. Implement basic web structures using HTML5 and apply web design principles suitable for digital commerce.
3. Create and style dynamic websites using CSS for layout, animation, and visual enhancements.
4. Write client-side scripts using JavaScript to enable interactivity, form validation, and event handling.
5. Build responsive e-commerce front-ends using the Bootstrap framework, incorporating reusable UI components and custom styling.

UNIT-I

Introduction to E-Commerce: Definition, scope, and evolution, Benefits and limitations
Types of E-Commerce: B2B, B2C, C2C, C2B, G2C models
E-Commerce Business Models: Revenue models (advertising, subscription, etc.)
Infrastructure for E-Commerce : Internet, intranet, Extranet
Payment gateways and digital wallets Legal and Ethical Issues: Cyber laws and data privacy,Intellectual property, taxation, and security.
Case study : Study of successful e-businesses

UNIT-II

Technology in E-Commerce: Essentials of web design for business - Content management systems (WordPress, Shopify, BootStrap)
Online Marketing & SEO: Digital marketing channels, Search engine optimization basics.
Digital Payment Systems: Credit/Debit Cards, Net Banking, Mobile Wallets, UPI, Electronic Fund Transfer (EFT) , Payment Gateways – Blockchain and Cryptocurrencies, Artificial Intelligence and E-Commerce, Future of E-Commerce.
Web Designing: Web designing Principles, Introduction to HTML5, HTML Document Structure, Formatting Elements (text and block formatting), Lists, Images, Links and Navigation (External and internal links), Tables, Inlineframes, HTML Forms. Embedding multimedia objects.

UNIT III : Cascading Style Sheets

CSS Basics: CSS Rule, Applying CSS Rules (Selectors), Embedding CSS code in HTML page Inline,internal,external style sheets.
CSS Properties: Font, Color, Types of CSS Color values, Background, CSS Box Model, Display properties, Styling Pseudo Elements, Positioning properties, Layering, Styling Lists and tables.

UNIT IV: Client Side Scripting using JAVA SCRIPT

Javascript Basics: Datatypes, Variables, Operators, Control Statements, Functions.
Builtin Objects: Arrays, String, Date, Window, Document, RegEx.

Document Object Modelling: Introduction to DOM, Form Validation using Java Script, Event Handling: Mouse events, form submission events, load and unload events, keyboard events – focus and blur events.

UNIT V : BOOTSTRAP FRAMEWORK for designing CMS

Responsive Webdesign: Grid System, Breakpoints, Containers, Utilities.
Introduction to BOOT STRAP FRAME WORK: Benefits, Setup Bootstrap Project.
BootStrap Components: Navigation, Creating navigation bars (.navbar), Dropdowns, and Responsive togglers. Buttons-Styling buttons with various classes for size, color, and state. Forms-Styling form elements like inputs, labels, and client side validation. Carousels-Creating image sliders. Alerts: Displaying informative messages
Customization: Overriding Bootstrap's default styles using custom CSS

TEXT BOOKS & REFERENCE BOOKS

1. Whiteley, D., 2000. *E-commerce: Strategy, technologies and applications*. McGraw-Hill Education.
2. Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborrah Turban. *Electronic Commerce: Concepts, Models, Strategies*. Pearson Education, 2002.
3. Robbins, Jennifer Niederst. *Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics*. 5th ed., O'Reilly Media, 2018.
4. Kogent Learning Solutions Inc. *Web Technologies Black Book*. Dreamtech Press, 2009.
5. Diwan, Amit. *Ultimate Bootstrap for Responsive Web Design*. Orange Education Pvt. Ltd., 2024. ISBN: 9789348107251.
6. Hussain, Frahaan, and Kameron Hussain. *Mastering Bootstrap 5: From Basics to Expert Projects*. Sonar Publishing, 2023. ISBN: B0CPW9PRVT.

E-Resources

1. NPTEL / SWAYAM Online Lectures ::Course: E-Business (NPTEL)
2. https://www.tutorialspoint.com/e_commerce/index.htm
3. https://www.w3schools.com/bootstrap5/
4. https://www.w3schools.com/ (HTML-CSS- JAVASCRIPT)
5. https://developer.mozilla.org/en-US/docs/Learn/CSS
6. https://www.freecodecamp.org/learn/2022/responsive-web-design/
7. https://developer.mozilla.org/en-US/docs/Learn/HTML
8. https://www.freecodecamp.org/learn/2022/responsive-web-design/

ACTIVITIES

UNIT 1 – Introduction to E-Commerce

Activity 1: Case Study – Amazon's Growth Story
Scenario:
Students analyze how Amazon evolved from an online bookstore to a global e-commerce leader.
Task: Identify Amazon's e-commerce model (B2C) and revenue models, List benefits and limitations faced during its evolution.
Expected Outcome: Students will understand the evolution of e-commerce and business

models.
Evaluation: Accuracy of model identification, Depth of analysis, Quality of presentation.
Activity 2: Case Study – Paytm and Digital Payments in India
Scenario:
Examine Paytm's role in enabling digital wallets and online transactions in India.
Task: Explain how Paytm works as a payment gateway, Discuss challenges faced related to cyber laws, taxation, and data privacy.
Expected Outcome: Students will relate theory with Indian e-payment ecosystems.
Evaluation: Correct explanation of payment gateway functions, Identification of legal/ethical issues.

UNIT 2 – Technology in E-Commerce
Activity 1: Case Study – Shopify Websites
Scenario:
Students explore Shopify-based small business sites.
Task: Analyze features of a Shopify store (design, responsiveness, content), Suggest 3 improvements for better customer experience.
Expected Outcome:
Students will understand CMS tools and good design practices.
Evaluation: Relevance of suggested improvements, Clarity of analysis.

UNIT 3 – CSS
Activity 1: Case Study – Homepage Redesign (FLIPKART)
Scenario:
Flipkart wants to revamp its homepage with modern CSS techniques.
Task: Suggest CSS improvements (color scheme, box model usage), Implement one of these changes in a sample HTML page.
Expected Outcome: Students will apply CSS properties for real-world UI improvement.
Evaluation: Creativity of suggestions, Correctness of CSS code.

Activity 2: Case Study – Netflix Interface Styling
Scenario: Analyze Netflix's web interface for user experience.
Task: Identify 5 CSS techniques used (hover effects, transitions, grids). Replicate one effect in a simple web page.
Expected Outcome: Students will recognize modern CSS practices.
Evaluation: Correct identification of techniques, Working replication of an effect.

Unit 4 – Client-Side Scripting
Case Study 1: Form Validation in IRCTC Booking Portal
Scenario: IRCTC uses JavaScript to validate passenger details (e.g., correct email format, age range, date picker) before allowing ticket booking.
Activity: Study how form validation prevents incorrect inputs during online train booking, Implement a simple form (name, email, age, travel date) and add JavaScript validation for each field.
Outcome: Students will be able to write JavaScript for real-world form validation.
Evaluation: Accuracy of validation logic, Correct handling of invalid inputs, Code structure and usability.

Case Study 2: Client-Side Cart Updates in BigBasket
Scenario: BigBasket updates cart totals instantly when the user changes product quantity without reloading the page.
Activity: Discuss how JavaScript DOM manipulation is used for updating totals. Create a simple product list with quantities and update total cost dynamically using JavaScript.
Outcome: Students will understand how JavaScript modifies the DOM in real-time.
Evaluation: Functionality of dynamic updates, Correctness of calculations, Neat interface

UNIT 5 – Bootstrap
Activity 1:
Case Study: Responsive Website for a Start-up
Scenario: A local bakery wants a responsive site using Bootstrap.
Task: Design a layout using Bootstrap grid, navbar, and carousel, Ensure the design adjusts for mobile and desktop.
Expected Outcome: Students will learn to create responsive layouts.
Evaluation: Correct application of Bootstrap components, Responsiveness.
Activity 2:
Case Study: Zomato UI Components
Scenario: Study Zomato's website UI elements.
Task: Identify Bootstrap-like components (cards, modals, navigation), Recreate one of these components using Bootstrap in a sample page.
Expected Outcome: Students will apply Bootstrap UI concepts.
Evaluation: Correct recreation of components, Visual similarity and functionality.

SEMESTER-II

COURSE 4: E-COMMERCE AND WEB APPLICATION DEVELOPMENT

Practical **Credits: 1** **2 hrs/week**

List of Experiments:
1. Create a simple HTML page with:Headings, paragraphs, bold/italic text
2. Create a music promotion webpage (include audio and video files in your html page)
3. Create an online registration form

4. Create Grocery Lists for an E-commerce Website (OL: Top 5 fruits in demand, UL: 5 vegetables, DL: Terms – Fruits, Vegetables, Beverages (with definitions))
5. Create a Blog Article with Text Formatting (sample tasks: Bold the title; Italicize author name; Highlight key points, Use subscript/superscript for scientific terms. highligth the important lines etc)
6. Create a static product gallery page that displays 4 product images in a grid layout (using HTML tables)
7. Create an interactive map using <map> and <area> tags where clicking on different areas navigates to different pages.
8. Demonstrate the usage of hyper links : intra hyperlinks, external and internal hyperlinks
9. Create a table with columns: Bus No, Route, Departure Time, Arrival Time for 5 buses.
10. Demonstrate the usage of iframes.
11. Demonstrate Layout Design Using CSS Box Model.
12. Demonstrate linking an external CSS file to style a multi-page college website.
13. Demonstrate Styling Text, Colors, and Backgrounds.
14. Demonstrate CSS animation on page elements(text,images etc)
15. Create a webpage to Design an image gallery page for an art exhibition.(Apply transitions and transforms for interactive effects like scale transform when an image is hovered- Rotate an image slightly when clicked- Smooth transitions for hover effects)
16. Create webpages demonstrating the usage of CSS Animations and transitions and transforms on images and text
17. Write a script to take two numbers as input and display their sum, difference, and product using a function.
18. Validate a registration form (check for empty fields, valid email, and password length).
19. Create a webpage that changes background color when a button is clicked and displays an alert when the page is loaded.
20. Create a web page with a list and buttons to Add, Remove, and Highlight list items dynamically using JavaScript DOM methods.
21. Display a live digital clock on a web page using JavaScript (updates every second).
22. Write a JavaScript program that greets the user with "Good Morning", "Good Afternoon", or "Good Evening" based on the current system time.
23. Create a product showcase slideshow for an e-commerce homepage using JAVA SCRIPT (Use onclick events for "Next" and "Previous" buttons to navigate).
24. Create a small price calculator for an e-commerce page to calculate the final price of a product after applying a discount/offers.
25. Create a navigation menu with hover effects for a website using CSS The top of the page should have a navigation bar with links:
    - Home
    - Products
    - Deals
    - About
    - Contact

    On hovering over these links, the color and background should change smoothly.

26. Create a featured products carousel for an online store homepage using Bootstrap.
27. Develop a responsive web-based virtual calculator interface using Bootstrap (Hint: Use Bootstrap Grid System and Components to create a calculator interface. Apply Bootstrap utilities for alignment, spacing, and button styling. Add basic functionality using JavaScript)
28. Mini Project: Build a single-page responsive portfolio combining HTML5, CSS, JavaScript, and Bootstrap:

- Sections: Home, About, Projects, Contact
- Responsive layout
- Bootstrap components (navbar, carousel, buttons)

Note : The list of experiments is not limited to those mentioned above. A comprehensive set of programming or software tool-based exercises may be developed by the respective faculty members.

SEMESTER-III

COURSE 5: FINANCIAL ACCOUNTING II

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Understand consignment accounts.
- Evaluate different methods of joint ventures accounting.
- Familiarise with the preparation of accounts in non-profit organizations.
- Acquaint with preparation of partnership deed and treatment of various accounts.

- Give practical insights on partnership accounts which; admission, retirement, death and dissolution.

Course Outcomes(COs):
Upon successful completion of this course, students will be able to:
CO1: Analyse the various accounts related to consignment business.
CO2: Prepare accounts of joint ventures under different methods.
CO3: Understand the preparation of receipts and payment, income and expenditure accounts;
CO4: To explore the essence of partnership deed and preparation of accounts in partnership;
CO5: Apply accounting procedures for partner's death, firm dissolution, and insolvency, including the Garner v. Murray Rule.

SYLLABUS

Unit I: Bills of Exchange

Meaning of Bill – Features of Bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the Books of Drawer and Drawee (Including Problems).

Unit-II: Consignment Accounts

Consignment - Features - Proforma Invoice - Account Sales – Del-credere Commission - Accounting Treatment in the Books of Consigner and Consignee - Valuation of Closing Stock - Normal and Abnormal Losses (including Problems).

Unit-III: Joint Venture Accounts

Joint Venture - Features - Difference between Joint-Venture and Consignment – Accounting Procedure – Methods of Keeping Records–One Vendor Keeps the Accounts and Separate Set off Books Methods (including Problems).

Unit IV: Partnership Accounts-I

Meaning – Partnership Deed - Fixed and Fluctuating Capitals Accounting Treatment of Goodwill – Admission, Retirement (including problems).

Unit V: Partnership Accounts-II:

Death of a Partner - Dissolution of a Partnership Firm – Application of Garner v/s Murray Rule in India – Insolvency of Partners (including problems)

Activities:

- Visit a local consignment agency to collect and analyze real samples of proforma invoices and account sales statements.
- Prepare a comparative chart highlighting key differences between consignment and joint venture transactions, roles, and accounting procedures.

- Draft Receipts & Payments Account and Income & Expenditure Account using simulated or real data from a non-profit organization.
- Conduct interviews or field interaction with office bearers of a local non-profit organization to understand their accounting practices and compliance with Sec 8.
- Group activity to draft a model partnership deed, including clauses on profit sharing, admission, retirement, and treatment of goodwill.

References:

1. Ranganatham, G., & Venkata Ramanaiah, M. (2019). *Financial accounting*. New Delhi: S. Chand Publications.
2. Gupta, R. L., & Gupta, V. K. (2022). *Principles and practice of accounting* (18th ed.). New Delhi: Sultan Chand & Sons.
3. Reddy, T. S., & Murthy, A. (2022). *Financial accounting* (Revised ed.). Chennai: Margham Publications.
4. Jain, S. P., & Narang, K. L. (2023). *Advanced accountancy – Vol. I* (Latest ed.). Ludhiana: Kalyani Publishers.
5. Maheshwari, S. N., & Maheshwari, S. K. (2021). *Introduction to accountancy* (12th ed.). New Delhi: Vikas Publishing House.

SEMESTER-III

COURSE 6: BUSINESS STATISTICS

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Understand and be able to collect and present data in the most refined and relevant manner pertaining to the research

- Enable students to understand, different measures of central tendency.
- Develop the ability to compute and interpret various measures of dispersion. Compute skewness
- Establish the relationship between two variables by using measures of relations

Course Outcomes (COs)

Upon successful completion of this course, students will be able to:

CO1: Understand the basic concepts and significance of statistics, and present data using classification, tabulation, and graphical methods.

CO2: Compute and interpret various measures of central tendency to analyze datasets effectively.

CO3: Apply measures of dispersion to evaluate variability and consistency in data.

CO4: Analyze data distribution using skewness measures and interpret asymmetry in datasets.

CO5: Evaluate relationships between variables using correlation techniques like Pearson's and Spearman's methods.

SYLLABUS

Unit I: Introduction to Statistics

Definition, Importance, Characteristics, and Limitations of Statistics – Classification and Tabulation of Data – Construction of Frequency Distribution Tables – Diagrammatic and Graphical Representation of Data (Bar Diagrams, Pie Charts, Histogram, Frequency Polygon, Ogive curves) – (Including problems)

Unit II: Measures of Central Tendency

Types of Averages – Characteristics of an Ideal Average – Computation and Application of Mean, Median, Mode – Median-based Averages – Geometric Mean – Harmonic Mean – (Including problems)

Unit III: Measures of Dispersion

Concept and Properties of Dispersion – Absolute vs. Relative Measures – Types: Range, Quartile Deviation (Semi-Interquartile Range), Mean Deviation, Standard Deviation – Coefficient of Variation(Including problems)

Unit IV: Skewness

Meaning and Importance of Skewness – Absolute and Relative Measures – Karl Pearson's, Bowley's, and Kelly's Coefficients of Skewness (Including problems)

Unit V: Measures of Relation

Correlation: Concept, Need, and Uses – Types of Correlation – Karl Pearson's Correlation Coefficient – Interpretation using Probable Error – Spearman's Rank Correlation – (Including problems)

Activities:

- Organize student-led seminars and quizzes on statistical concepts.
- Collect and interpret demographic and economic statistics of local areas (village/town/district).

- Participate in government-led statistical experiments (e.g., crop-cutting surveys).
- Practice statistical functions and data visualization using MS Excel.
- Prepare questionnaires and conduct sample surveys.

References :

1. Reddy, C. R. (1994). *Business statistics*. Deep & Deep Publications.
2. Gupta, S. P. (1992). *Statistical methods*. Sultan Chand & Sons.
3. Kapoor, V. K. (2018.). *Statistics: Problems and solutions*. Sultan Chand & Sons.
4. Elhance, D. N. (2017). *Fundamentals of statistics*. [Sultan Chand & Sons].
5. Vittal, P. R. (2018). *Business statistics*. Margham Publications.

SEMESTER-III

COURSE 7: DATABASE MANAGEMENT SYSTEM

Theory **Credits: 3** **3 hrs/week**

Course Objectives:

1. Understand the fundamental concepts of data, databases, and the architecture of Database Management Systems (DBMS). Analyze and design database schemas using Entity-Relationship (E-R) and Extended E-R models.

2. Apply relational database principles, including normalization and integrity constraints, to ensure efficient schema design.
3. Develop SQL queries for data definition, manipulation, and control, including advanced operations like joins and nested queries.
4. Implement PL/SQL programming constructs and manage database transactions with a focus on ACID properties.

Course Outcomes:

The Learners will be able to:

1. Differentiate between file systems and DBMS, and explain the evolution, architecture, and components of modern database systems.
2. Design conceptual data models using E-R and Extended E-R diagrams, including specialization, generalization, and aggregation.
3. Normalize relational schemas up to BCNF and apply relational algebra operations to query and manipulate data.
4. Write efficient SQL queries using DDL, DML, DCL, and TCL commands, and utilize functions, joins, and views for data analysis.
5. Develop PL/SQL blocks with control structures, procedures, and triggers, and manage transactions ensuring atomicity, consistency, isolation, and durability.

Unit-I: Overview of Database Management System

Introduction: Data, Information, Database, Database Management System, Database System Applications, File Systems versus DBMS, Advantages of DBMS.

Evolution of Database Systems, Data Models, Data Abstraction, Database Architecture, Centralized and Client/Server Architectures for DBMSs, Database Users, Database Administrator, Components of DBMS, DBMS Vendors.

Unit-II: Database Design and the E-R Model

Overview of the Database Design Process, The Entity-Relationship Model : Entity Sets, Classification of Entity Sets, Attributes, Types of Attributes, Relationship, Relationship Set, Degree of a relationship set, Relationship Classification, Mapping cardinalities.

Extended Entity Relationship Model : Specialization, Generalization, Constraints, Attribute Inheritance and ISA relationship, Aggregation.

Case Study: Hospital Management System

Unit-III : Relational Database Design

Relational Model: Introduction to Relational Model, Concepts of Relation, Tuple, Attribute, Instance, Domain. Keys (Super key, Candidate Key, Primary Key, Foreign Key), Constraints (Domain constraints, Key constraints, Integrity constraints), selection, projection operations, Codd's rule set for relational databases.

Normalization: Purpose of Normalization/ Schema refinement, Functional dependencies, Normal Forms : 1NF, 2NF, 3NF and BCNF, Denormalization.

Case Study: College Student Enrollment System

Unit-IV : Introduction to SQL

Structured Query Language (SQL) : Overview of the SQL, Data types, Operators, Basic structure of SQL Query,
Commands: Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), Transaction Control Language (TCL).
Functions: Numeric, String, Date Functions. Set operators, Aggregate functions, Nested queries, Joins, GROUP By Clause, ORDER By Clause, views.

Case Study : Retail Store Database Management (Design and query a relational database for a retail store that manages products, customers, orders, and employees. Apply SQL concepts to extract insights, maintain data integrity, and support decision-making.)

Unit-V Advanced SQL and Transaction Management

PL/SQL: Structure of PL/SQL block, Control Structures, Procedures, Functions, Exception handling, Cursors, Triggers.

Transactions : Transaction concept, Simple transaction model, State diagram of a transaction, ACID properties: Atomicity, Consistency, Isolation, Durability.

Textbooks:

1. Database System Concepts, Avi Silberschatz, Henry F. Korth,S. Sudarshan, Seventh Edition, McGraw-Hill
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

Reference Books:

1. Fundamentals of Database Systems, Elmasri Navathe Pearson Education
2. An Introduction to Database systems, C.J. Date, A.Kannan, S.Swami Nadhan, Pearson

Activities:

Outcome: Describe the fundamentals of data, database systems, and the differences between file-based and database approaches. Compare and classify various DBMS architectures, data models, and their components, including the three-schema architecture.
Activity: Create a comparative presentation or infographic illustrating:

- File-based vs. DBMS approaches
- Types of DBMS architectures (1-tier, 2-tier, 3-tier)
- Data models and the three-schema architecture

Evaluation Method: Rubric-based assessment of the presentation covering clarity, accuracy, and depth of comparison. Include a short quiz to test conceptual understanding.
Outcome: Design conceptual data models using Entity-Relationship and Enhanced ER diagrams, applying generalization, specialization, and constraints.
Activity: Model a university or hospital database using ER and Enhanced ER diagrams that shows:

- Entity sets, relationships
- Generalization/specialization
- Participation and cardinality constraints

Evaluation Method: Diagram submission with peer review and instructor feedback. Use a checklist to assess completeness, correctness, and notation usage.
Outcome: Apply relational model concepts, including CODD rules, relational algebra, relational calculus, and normalization techniques.
Activity: Normalize a given unstructured dataset up to 3NF. Then, write relational algebra expressions for sample queries.
Evaluation Method: Written assignment graded on:

- Correctness of normalization steps
- Accuracy of relational algebra expressions
- Short-answer questions on CODD rules and relational calculus

Outcome: Construct and execute SQL queries for data definition, manipulation, aggregation, joining, and subqueries, including views and set operations.
Activity: Implement a mini-project (e.g., Library or Inventory DB) using SQL. Include:

- Table creation (DDL)
- Data manipulation (DML)
- Aggregation, joins, subqueries, views, and set operations

Evaluation Method: Lab-based practical test with query execution and output validation. Include a viva to explain logic and optimization.
Outcome: Develop PL/SQL programs incorporating control structures, procedures and functions to manage database behaviour effectively.
Activity: Build a PL/SQL-based payroll or student grading system using:

- Procedures and functions
- Control structures (IF, LOOP)
- Triggers for automated updates

Evaluation Method: Code review and demonstration. Evaluate based on:

- Syntax correctness
- Logical flow

SEMESTER-III

COURSE 7: DATABASE MANAGEMENT SYSTEM

Practical **Credits: 1** **2 hrs/week**

Experiment 1 : Database: Inventory Management
Table 1: Products
Structure:

Column Name	Data Type	Constraints
product_id	INT	PRIMARY KEY
product_name	VARCHAR(50)	NOT NULL
price	DECIMAL(10,2)	CHECK(price > 0)
stock_qty	INT	CHECK(stock_qty >= 0)

Sample Data:

product_id	product_name	price	stock_qty
1	Pen	10.00	100
2	Notebook	50.00	200
3	Stapler	120.00	50
4	Marker	25.00	80
5	File Folder	60.00	150

Table 2: Suppliers

Structure:

Column Name	Data Type	Constraints
supplier_id	INT	PRIMARY KEY
supplier_name	VARCHAR(50)	NOT NULL
contact_no	VARCHAR(20)	UNIQUE
product_id	INT	FOREIGN KEY REFERENCES Products(product_id)

Sample Data:

supplier_id	supplier_name	contact_no	product_id
101	StationeryMart	9876543210	1
102	PaperWorld	9876500000	2
103	OfficeSupplies	9876512345	3
104	MarkerHub	9876522222	4
105	FileDepot	9876533333	5

Section A: DDL (Data Definition Language)

1. Create a database called InventoryDB.
2. Create a table Products and table Suppliers with the specified columns and constraints:

Section B: DML (Data Manipulation Language)

4. Insert at least 5 rows into the Products table.
5. Insert at least 5 rows into the Suppliers table.
6. Update the stock quantity of product ‘Pen’ to 120.
7. Delete a supplier with a specific supplier_id.
8. Write a query to rename ‘Notebook’ to ‘NoteBook A4’

Section C: DQL (SELECT Queries)

9. Display all records from the Products table.
10. Display only product_name and price of all products.
11. List all products that have a stock quantity less than 100.
12. Show all products between 20 and 100 price range.
13. Find all suppliers whose contact number starts with '98765'.
14. Find the average price of products.
15. Display the total number of products in the inventory.
16. Show the maximum and minimum stock quantities.
17. Count how many suppliers supply each product.
18. Show all products where price > 50 AND stock_qty > 100.
19. Show all products where price < 20 OR stock_qty < 80.
20. Display suppliers whose supplier_name contains the word 'Mart'
21. List all suppliers along with the product they supply (use INNER JOIN).
22. Display suppliers whose name starts with 'S'.
23. Find products whose name has exactly 5 characters
24. Find suppliers who supply products costing more than 100.

Experiment 2 : ONLINE BOOKSTORE DB

An online book store wants to implement a BOOKSTORE DB for managing their online transactions by using the following tables.

Authors Table

Column Name	Data Type	Constraints
author_id	INTEGER	PRIMARY KEY
first_name	VARCHAR	NOT NULL
last_name	VARCHAR	NOT NULL
nationality	VARCHAR	NULL allowed

Books Table

Column Name	Data Type	Constraints
book_id	INTEGER	PRIMARY KEY
Title	VARCHAR	NOT NULL
author_id	INTEGER	FOREIGN KEY REFERENCES Authors
publication_year	INTEGER	
Price	DECIMAL	

Customers Table

Column Name	Data Type	Constraints
customer_id	INTEGER	PRIMARY KEY
first_name	VARCHAR	NOT NULL
last_name	VARCHAR	NOT NULL

Email	VARCHAR	UNIQUE, NOT NULL
Address	VARCHAR	NOT NULL

Orders Table

Column Name	Data Type	Constraints
order_id	INTEGER	PRIMARY KEY
customer_id	INTEGER	FOREIGN KEY REFERENCES Customers
book_id	INTEGER	FOREIGN KEY REFERENCES Books
order_date	DATE	NOT NULL
quantity	INTEGER	NOT NULL

SAMPLE DATA SET for BOOKSTORE DB

Authors Table

author_id	first_name	last_name	nationality
1	Jane	Austen	British
2	George	Orwell	British
3	Gabriel	Garcia Marquez	Colombian
4	Toni	Morrison	American
5	Mark	Twain	American
6	Harper	Lee	American
7	Fyodor	Dostoevsky	Russian

Books Table

book_id	Title	author_id	publication_year	price
101	Pride and Prejudice	1	1813	12.99
102	1984	2	1949	9.50
103	One Hundred Years of Solitude	3	1967	15.00
104	Beloved	4	1987	11.25
105	Animal Farm	2	1945	8.75
106	Adventures of Huckleberry Finn	5	1884	10.50
107	To Kill a Mockingbird	6	1960	14.00

Customers Table

customer_id	first_name	last_name	Email	address
201	Alice	Smith	alice.s@example.com	12 Oak St, London
202	Bob	Johnson	bob.j@example.com	45 Pine Ave, Oxford
203	Charlie	Brown	charlie.b@example.com	78 Maple Rd, Bristol

204	Diana	Prince	diana.p@example.com	34 Queen St, York
205	Edward	Norton	edward.n@example.com	22 River Ln, Leeds
206	Fiona	Hall	fiona.h@example.com	56 Lake Dr, Bath
207	Greg	Miller	greg.m@example.com	89 Park Ave, Glasgow

Orders Table

order_id	customer_id	book_id	order_date	Quantity
301	201	101	2025-07-20	1
302	202	102	2025-07-21	2
303	201	105	2025-07-22	1
304	203	103	2025-07-23	1
305	204	106	2025-07-24	1
306	205	107	2025-07-25	3
307	206	104	2025-07-26	2

Section A: DDL (Schema Design & Constraints)

1. Write SQL statements to create all 4 tables (Authors, Books, Customers, Orders) with:
    - Primary Keys
    - Foreign Keys
    - Appropriate data types
    - NOT NULL constraints where necessary.
2. Alter the Books table to add a constraint that price must be greater than 0.
3. Add a new column phone_number to the Customers table (VARCHAR(15)) and ensure it is unique.
4. Drop the phone_number column from the Customers table.

Section B: DML (Data Manipulation)

5. Insert at least 7 records for each table (use sample dataset above).
6. Update the price of the book titled *Animal Farm* by increasing it by 10%.
7. Delete all orders made before 2025-07-21.
8. Change the nationality of Gabriel Garcia Marquez to “Latino-American”.

Section C: SELECT Queries (Data Querying)

9. List all books published between 1900 and 2000.
10. Find all customers whose email contains “example.com”.
11. Retrieve books whose price is between 10 and 15 and published before 1950.
12. Show authors who are either ‘British’ or ‘American’.
13. Find books that have a price less than 10 or are published after 1980.
14. Display all orders placed after 2025-07-22.
15. List all books written by author with author_id = 2.

16. Find customers whose last name starts with B.
17. Show all books with a price NOT between 9 and 13.
18. Display books whose publication_year is in (1813, 1945, 1987).
19. Find authors whose nationality is NOT 'British'.
20. List customers whose address contains the word Park.
21. Show all books sorted by price in descending order.
22. List authors in alphabetical order by last_name.
23. Display orders sorted by order_date (latest first).

Use of Date Functions

24. Show all orders placed in July 2025.
25. Show all orders with an estimated delivery date (5 days after order date).
26. Show customers who placed an order on a weekend.
27. Calculate how many days have passed since the last order was placed.

Aggregate Functions (COUNT, SUM, AVG, MIN, MAX)

28. Count the total number of books in the database.
29. Find the average price of all books.
30. Show the highest-priced book.
31. Count how many orders each customer has placed.
32. Calculate the total sales (price × quantity) for each customer.

GROUP BY and HAVING

33. Count how many books are written by each author.
34. Group orders by customer_id and display total quantity ordered.
35. Show customers who have ordered more than 2 books in total (use HAVING).
36. Find the total number of books sold per author (GROUP BY author).

Experiment 3: EMPLOYEE DB

An enterprise wants to automate its employee management process by implementing an Employee Database.The goal is to replace manual record-keeping with a centralized system that stores employee, department, and project details. Use the following table structures and data set to implement Employee DB.

EmployeeDB – Table Structures

1. Departments Table

Column	Type	Constraints
dept_id	INT	PRIMARY KEY
dept_name	VARCHAR	UNIQUE, NOT NULL
location	VARCHAR	NOT NULL

2. Employees Table

Column	Type	Constraints
emp_id	INT	PRIMARY KEY
first_name	VARCHAR	NOT NULL
last_name	VARCHAR	NOT NULL
email	VARCHAR	UNIQUE, NOT NULL
phone	VARCHAR	CHECK (phone LIKE '--____')
hire_date	DATE	NOT NULL
job_title	VARCHAR	NOT NULL

salary	DECIMAL	CHECK (salary > 0)
dept_id	INT	FOREIGN KEY REFERENCES Departments(dept_id)
manager_id	INT	FOREIGN KEY REFERENCES Employees(emp_id) (self-referential)

3. Projects Table

Column	Type	Constraints
project_id	INT	PRIMARY KEY
project_name	VARCHAR	NOT NULL
start_date	DATE	NOT NULL
end_date	DATE	NULL
dept_id	INT	FOREIGN KEY REFERENCES Departments(dept_id)

4. Employee Project Table (Many-to-Many)

Column	Type	Constraints
emp_id	INT	FOREIGN KEY REFERENCES Employees(emp_id), PRIMARY KEY(emp_id, project_id)
project_id	INT	FOREIGN KEY REFERENCES Projects(project_id)
hours allocated	INT	CHECK (hours_allocated > 0)

Sample Data Set
Departments Table

dept_id	dept_name	Location
1	HR	New York
2	IT	San Francisco
3	Finance	Chicago
4	Marketing	Boston
5	Operations	Seattle
6	Legal	Washington D.C.
7	Sales	Dallas
8	R&D	Austin
9	Procurement	Denver
10	Customer Care	Miami

2. Employees Table

emp_id	first_name	last_name	Email	phone	hire_date	job_title	salary	dept_id	manager_id
101	Alice	Johnson	alice.j@corp.com	123-456-7890	2020-03-15	HR Manager	75000	1	NULL
102	Bob	Smith	bob.s@corp.com	234-567-8901	2019-05-20	IT Analyst	65000	2	104
103	Charlie	Brown	charlie.b@corp.com	345-678-9012	2021-01-10	Finance Executive	58000	3	106
104	Diana	Prince	diana.p@corp.com	456-789-0123	2018-07-12	IT Manager	90000	2	NULL
105	Ethan	Hunt	ethan.h@corp.com	567-890-1234	2022-02-25	Marketing Lead	62000	4	NULL
106	Fiona	Hall	fiona.h@corp.com	678-901-2345	2017-11-01	Finance Manager	85000	3	NULL
107	Greg	Miles	greg.m@corp.com	789-012-3456	2023-04-15	IT Support	45000	2	104
108	Hannah	White	hannah.w@corp.com	890-123-4567	2021-09-05	HR Executive	50000	1	101
109	Ian	Scott	ian.s@corp.com	901-234-5678	2020-11-20	Operations Analyst	56000	5	NULL
110	Julia	Adams	julia.a@corp.com	012-345-6789	2019-12-18	Legal Advisor	70000	6	NULL

3. Projects Table

project_id	project_name	start_date	end_date	dept_id
201	Payroll System	2023-01-01	NULL	3
202	Website Upgrade	2023-02-10	NULL	2
203	Recruitment Drive	2023-03-05	NULL	1
204	Ad Campaign	2023-05-20	NULL	4

205	New CRM Tool	2023-04-15	NULL	7
206	Compliance Portal	2023-06-10	NULL	6
207	Inventory System	2023-07-01	NULL	5
208	AI Research	2023-08-05	NULL	8
209	Customer Feedback	2023-09-10	NULL	10
210	Procurement System	2023-10-01	NULL	9

4. Employee_Project Table

emp_id	project_id	hours_allocated
102	202	120
104	202	80
103	201	100
106	201	150
101	203	50
105	204	70
107	202	60
109	207	90
110	206	110
108	203	40

Section A: DDL (Schema Creation & Modification)

1. Write SQL statements to create the above tables with the specified constraints
2. Alter the Employees table to add a column bonus DECIMAL(8,2) with default value0.
3. Drop the column bonus from Employees.

Section B: DML (Insert, Update, Delete)

4. Insert at least 10 rows into Departments, Employees, Projects, and Employee_Project.(use the above data set)
5. Try inserting an employee with a negative salary (should fail due to CHECK constraint).
6. Update the salary of the employee with emp_id = 103 by 15%.
7. Delete an employee record who has resigned (choose any emp_id).
8. Increase all employees' salaries in the IT department by 5%.
9. Change the department of an employee to "Research".(should fail due to FK constraint)

Section C: DQL (Select Queries)

10. List all employees and their details.
11. Show all employees in the "HR" department.
12. Find employees with salaries between 50,000 and 80,000.
13. Retrieve employees hired after 2020.
14. Show employees who are in either the IT or Finance department.
15. Find employees whose email ends with "@corp.com".

16. List all employees with salary > 60,000 AND located in "New York".
17. Display employees in descending order of salary.
18. Count the number of employees in each department.
19. Show the average salary of employees department-wise.
20. Display departments where the average salary is greater than 70,000.
21. Find the number of employees in each project.
22. Display departments with more than 3 employees.
23. Show the sum of all salaries department-wise.
24. List all distinct department IDs from the Employees table.
25. Show employee names with the year they were hired.
26. Show employees grouped by the year of hire.
27. List employees hired in the last 90 days.
28. List the no of years of experience of all the employees

Section D: Joins

29. List all employees with their department names (INNER JOIN).
30. Display all departments along with employees, including those departments without employees (LEFT JOIN).
31. Show employees and the projects they are working on (JOIN 3 tables: Employees, Employee_Project, Projects).
32. List projects along with total hours allocated by employees.
33. Write a query to find employees who are working on more than one project.
34. Show all projects handled by the 'Finance' department.

Section E: PL/SQL Programming

1. Write a procedure GetEmpInfo that takes emp_id as input and displays name, salary, and department.
2. Write a PL/SQL block that checks if an employee's salary is above 50,000. If yes, print "High Salary" ;Otherwise print "Standard Salary".
3. Write a PL/SQL program to display the top 10 rows in the Emp table based on their job and salary
4. Write a stored procedure GiveBonus that takes department ID and a designation as input, along with a bonus amount, and updates the salary of all employees in that department who have the specified designation by adding the bonus amount to their current salary.
5. Create a trigger to prevent inserting employees with a salary less than 30,000.
6. Create a trigger to avoid any transactions(insert, update, delete) on EMP table on Saturday & Sunday.

Note : The list of experiments is not limited to those mentioned above. A comprehensive set of programming or software tool-based exercises may be developed by the respective faculty members.

SEMESTER-IV

COURSE 8: ADVANCED ACCOUNTING

Theory **Credits: 4** **4 hrs/week**

Course Objectives

This course is designed to enable students to achieve the following objectives:

- Understand the basic principles and procedures of single entry system of accounting
- Deal with branch accounting

- Identify and analyse banking company accounts.
- Record and prepare final accounts for insurance companies in accordance with IRDA regulations;
- Examine the various accounts of non-profit organizations..

Course Outcomes:
Upon successful completion of this course, students will be able to:
CO1: Reconstruct financial statements from incomplete records using logical accounting procedures.
CO2: Prepare branch accounts using cost price, invoice price, and debtor system methods.
CO3: Prepare banking company accounts with schedules as per regulatory norms.
CO4: Prepare revenue accounts and balance sheets for life and general insurance companies.
CO5: Prepare accurate financial statements for non-profit organizations and interpret financial performance and position.

SYLLABUS

Unit-I: Accounting for Incomplete Records
Incomplete Records – Features – Differences between Single Entry and Double Entry – Limitations – Ascertainment of Profit using Statement of Affairs Method (Including Problems)

Unit-II: Accounting for Non-Profit Organisations
Non-Profit Organisations – Features – Provisions of Section 8 of Companies Act 2013- Books Maintained – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet – Special Items: Subscription, Donations, Legacies, Entrance Fees – Capital and Revenue Items – Accounting Principles (including Problems).

UNIT-III: Branch Accounting
Branches – Types of Branches – Dependent Branches – Debtors System – Stock and Debtors System – Branch Accounts at Cost Price and Invoice Price – Independent Branches (including Problems).

Unit-IV: Accounting for Banking Companies
Banking Companies – Legal Framework – Banking Regulation Act, 1949 – Final Accounts of Banking Companies – Profit and Loss Account – Balance Sheet with Schedules (including Problems).

Unit-V: Insurance Company Accounts
Insurance Companies – Life and General Insurance – IRDA Guidelines – Preparation of Revenue Account, Profit & Loss Account and Balance Sheet of Life Insurance Companies (including Problems).

Activities

- Prepare reconstructed final accounts from incomplete records using a given data set.
- Solve problems on dependent and independent branch accounting using ledger accounts and adjustment entries.

- Draft financial statements for a simulated banking company using RBI-prescribed format.
- Analyze the annual reports of real insurance companies and identify accounting components.
- Visit a local NGO and collect data to prepare a sample Receipts & Payments Account and Income & Expenditure Account.

References:

1. Gupta, C. B. (2014). *Business organisation*. Mayur Publication.
2. Singh, B. P., & Chhabra, T. N. (2014). *An introduction to business organisation & management*. Kitab Mahal.
3. Sherlekar, S. A., & Sherlekar, V. S. (2000). *Modern business organization & management: Systems approach*. Himalaya Publishing House.
4. Bhushan, Y. K. (2003). *Business organization*. Sultan Chand & Sons.
5. Prakash, J. (2011). *Business organisation and management* (Hindi and English ed.). Kitab Mahal Publishers.

SEMESTER-IV

COURSE 9: COST AND MANAGEMENT ACCOUNTING

Theory **Credits: 4** **4 hrs/week**

Course Objectives:
This course is designed to enable students to :

- Introduce the principles, objectives, and methods of Cost Accounting and preparation of cost sheets.
- Impart knowledge on material cost control techniques and pricing methods of material issues.
- Familiarize students with labour cost computation and overhead allocation techniques.
- Develop analytical skills for interpreting financial statements using various analytical tools.
- Enable students to compute and interpret financial ratios for assessing business performance.

Course Outcomes:
Upon successful completion of this course, students will be able to:

CO1: Understand and differentiate Cost, Financial, and Management Accounting concepts, and prepare a cost sheet using appropriate classifications.
CO2: Apply inventory control techniques and material pricing methods to manage and account for material costs.
CO3: Compute labour costs using various incentive wage plans and distinguish between direct and indirect labour.
CO4: Analyze and interpret financial statements using comparative, common-size, and trend analysis techniques.
CO5: Evaluate business performance through various financial ratios including liquidity, solvency, profitability, and activity ratios.

SYLLABUS

UNIT - I: INTRODUCTION:

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Management Accounting: Features – Objectives-functions-Management Accountant's role–Difference between Cost Accounting, Financial Accounting and Management Accounting– Cost concepts – Cost Classification - Preparation of Cost Sheet. (Including problems)

UNIT-II: MATERIAL:

Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (including problems)

UNIT-III: LABOUR

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods. (including problems)

UNIT-IV: FINANCIAL STATEMENT ANALYSIS AND INTERPRETATION

Financial Statements - Features, Limitations. Need, Meaning, Objectives, and Process of Financial Statement Analysis- Comparative Analysis – Common Size Statement and Trend Analysis (including problems)

UNIT -V: RATIO ANALYSIS

Meaning - Advantages and Limitation of Ratio Analysis – Types of Ratios –Liquidity Ratios- Solvency Ratios- Profitability Ratios- Activity Ratios (including problems)

Activities:

- Listing of industries located in your area and methods of costing adopted by them
- Collectionoffinancialstatementsofanytwoorganizationfortwoyearsandpreparea common Size Statements
- Collection of cost sheet and pro-forma of quotation
- Invited Lectures and presentations on related topics.
- Examinations (Scheduled and surprise tests)

Reference Books:

1. S.P.Jain and K.L.Narang–Advanced Cost Accounting, Kalyani Publishers.
2. M.N.Arora–A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.N.Maheswari–Principles of Management Accounting, Sultan Chand &Sons.
4. Sharma &Shashi Gupta–Management Accounting, Kalyani Publishers.
5. S.P.Gupta–Management Accounting, S. Chand Publishing, NewDelhi.

SEMESTER-IV

COURSE 10: DATA SCIENCE USING PYTHON

Theory **Credits: 3** **3 hrs/week**

Course Objectives:

1. To introduce students to the foundational concepts and significance of data science in modern business and technology contexts.
2. To develop proficiency in Python programming, focusing on data types, control structures, and core operations.
3. To equip students with skills in handling and manipulating structured and unstructured data using Python libraries.
4. To enable students to perform exploratory data analysis and data cleaning using tools like NumPy and Pandas.
5. To foster the ability to visualize data effectively using Python libraries such as Matplotlib and Seaborn.

Course Outcomes:

1. Understand the role of data science, its components, and its relationship with AI and machine learning.
2. Apply Python programming constructs such as strings, lists, tuples, sets, and dictionaries to solve basic data problems.
3. Demonstrate the ability to perform data manipulation and cleaning using NumPy and Pandas.
4. Conduct exploratory data analysis and extract insights from datasets using Python-based tools.
5. Create and customize data visualizations using Matplotlib and Seaborn to communicate analytical findings.

Unit-I: Introduction to Data Science

Importance of Data Science: Need for Data Science, What is Data Science?, Data Science process, Business Intelligence and Data Science, Components of Data Science, Relationship between Artificial Intelligence, Machine Learning and Data Science.

Categories of Data: Unstructured data, Structured data, Semi Structured data, Time series data, Sources of data: APIs, Web pages, Databases, Files, Taxonomy of types of data.

Data Scientist: Responsibilities of a data scientist, Skills required for a data scientist, Programming and Analysis tools for Data Science.

Case Study: Mapping Data Categories to Banking Operations.

Unit-II: Basic Python: Part-I

Features of Python, writing and executing python program, Indentation, Constants, Identifiers, Variables, Keywords, Data types,Input/Output, Operators. Conditional statements, Looping Statements.

Strings: Definition, Positive, Negative indexing, String slicing, String Operations: Concatenation,
Repetition, Membership(in, not in),Comparison, String Methods: upper( ), lower( ), strip( ), replace( ), split( ), join( ), find( ).

Lists: Definition, Indexing, Slicing, Negative Indexing, Nested Lists, Modifying Lists: Updating, Inserting, Deleting elements, List Functions: len( ), max( ), min( ), sorted( ), Looping through Lists.

Unit-III : Basic Python: Part-II

Tuples : Definition, Indexing, Slicing, Nested tuples, Tuple Operations: Concatenation, repetition, membership testing, Tuple Methods: count( ), index( ).
Sets: Definition, Accessing Set elements, Modifying Sets, Set Operations: Union, Intersection, difference, Symmetric Difference.
Dictionaries: Definition, Accessing elements, Modifying Dictionaries, Dictionary methods.
Functions: User defined functions, built-in functions, lambda functions, recursive functions.
Modules: math, random.

Unit-IV : Advance Python : Part-I

Exploratory Data Analysis: What is EDA, Steps involved in EDA, Python Libraries used in EDA.

Numpy: Basics, Array Attributes, Slicing (1D, 2D and 3D), Numpy Array Iteration, Operations on Arrays: Concatenating Arrays , Reshaping Arrays , Splitting Arrays , Statistical Operations on Arrays.

Pandas: Basics, Series, DataFrame, Comparison between Series and DataFrame. Reading data from varied data sources into python DataFrame: Read from Excel Data Source, Read data from .csv file, Read data from Dictionaries.

Data Cleaning : Handling missing values, Removing duplicates, Correcting Inconsistencies.

Dataset Repositories for Data Science & Visualization : Kaggle Datasets, UCI ML repository.

Case Study: Retail Sales Analysis using Kaggle Dataset.

Unit-V : Advance Python : Part-II

Data visualization : Introduction to Data Visualization, Benefits of Data Visualization, Popular Python Data Visualization Libraries.

Matplotlib : Introduction, Basic Plots: Line plot, Bar chart, pie chart, Histogram, Scatter plot, Plot Customization: Titles, labels, and legends,Gridlines and ticks, Colors, markers, and line styles, Subplots and Layouts.

Seaborn : Introduction, Comparison with matplotlib, Generating Plots: Heatmaps, Boxplots.

Case Study: Visualizing Financial data.

Text Books:

1. Kooper, Steven. *Data Science from Scratch*. 2nd Edition. O'Reilly Media, 2019.
2. Vasiliev, Yuli. *Python for Data Science: A Hands-On Introduction*. No Starch Press, 2022.
3. Acharya, Seema. *Reimagining Data Visualization Using Python*. Chapman & Hall/CRC, 2022.

4. VanderPlas, Jake. *Python Data Science Handbook: Essential Tools for Working with Data*. 2nd Edition. O'Reilly Media, 2022.

Reference Books:

1. *Data Science and Analytics with Python*. Chapman & Hall/CRC Data Mining and Knowledge Discovery Series, 2017.
2. Nelson, Daniel. Data Visualization in Python. StackAbuse, 2020. *Available via StackAbuse.*
3. McKinney, Wes. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython. 2nd Edition. O'Reilly Media, 2017.

Online Resources:

1. https://www.coursera.org/learn/python-data-science
2. https://www.mltut.com/best-free-resources-to-learn-python-for-data-science/
3. https://onlinecourses.swayam2.ac.in/

Activities

1. Understanding Data Science, AI, and Machine Learning
Activity:
Conduct a group-based concept mapping session. Students collaborate to create a visual diagram showing connections among data science, AI, and machine learning. Each component (e.g., data analysis, modeling, tools like Python) is linked with explanations.
Evaluation Method:
Assess the concept maps on a 10-point scale based on Completeness of topics (20%), Accuracy of relationships (40%), Clarity and organization (20%) and Group discussion and presentation (20%)
2. Applying Python Programming Constructs
Activity:
Give students a mini coding challenge: write a Python script to count word frequency in a paragraph using strings, lists, dictionaries, and sets.
Evaluation Method:
Evaluate on 1 10-point scale on the basis of: Correct use of each construct (40%), Code readability and comments (20%), Output accuracy (30%) and Bonus for optimized solutions (10%)
3. Data Manipulation and Cleaning Using NumPy & Pandas
Activity:
Provide a messy dataset (e.g., with missing values, duplicates, incorrect formats). Ask students to clean and transform the data using NumPy and Pandas.
Evaluation Method:
Rubric includes: Identification of cleaning tasks (25%), Implementation correctness (40%), Use of appropriate functions and methods (20%), Final cleaned dataset quality (15%)
4. Exploratory Data Analysis and Insight Extraction
Activity:
Students choose a public dataset and perform an EDA process to uncover key trends and outliers. They document their observations in a Jupyter Notebook.
Evaluation Method:
Evaluated on: Depth of analysis (30%), Use of statistical summaries and visualizations (40%), Insightful interpretations (20%) and Notebook presentation quality (10%)
5. Creating Visualizations Using Matplotlib and Seaborn

Activity:
Assign a storytelling task: create a data dashboard using Matplotlib and Seaborn that explains a specific trend (e.g., COVID-19 cases, sales over time).
Evaluation Method:
Evaluate on 1 10-point scale on the basis of: Correct use of chart types (25%), Visual appeal and clarity (25%), Annotation and labelling (20%), Connection to the narrative (30%)

SEMESTER-IV

COURSE 10: DATA SCIENCE USING PYTHON

Practical	**Credits: 1**	**2 hrs/week**

List of Experiments:

1. Write a Python program to demonstrate basic data types in python.
2. Write a Python program to illustrate arithmetic operators.
3. Write a Python program to find the maximum of three numbers.
3. Write a Python Program to find the sum of digits of a number.
4. Write a Python Program to check whether a given number is palindrome or not.
5. Write a Python program to check whether a given number is prime or not.
6. Write a Python program to calculate Simple Interest and Compound Interest.
6. Write a Python program to illustrate Strings and String methods.
7. Write a Python program to illustrate string slicing.
8. Create a list and perform the following methods.
   a) append() b) extend() c) insert() d) pop() e) remove() f) clear
9. Create a list and perform the following functions.
   a) len( ) b) max( ) c) min( ) d) sorted( )
10. Write a program to input n numbers from the user. Store these numbers in a tuple. Print the maximum and minimum number from this tuple.
11. Create a dictionary and apply the following methods.
    a) Print the dictionary items b) Access items c) Use get( ) d) Use get( ) e) Use len( )
12. Write a Python program to find the factorial of a number using functions.
13. Write a Python program to find the factorial of a number using recursion.
14. Write a Python program to find the maximum of two numbers using lambda function.
15. Write a Python program to illustrate a *math* module.
16. Write a Python program to illustrate a *random* module.
17. Write a Python program to illustrate numpy array attributes: ndim, shape, size, dtype.
18. Write a Python program to illustrate numpy array statistical operations.
19. Write a python program to demonstrate Reading data from varied data sources into Pandas DataFrame.
    a) Read Data from Excel Data Source and display.
    b) Read Data from "iris.csv" into pandas DataFrame and display. [source: UCI ML repository]
    c) Load a Python Dictionary into a DataFrame.
20. Consider any Dirty Dataset for Data Cleaning [Source: Kaggle Dataset Repository] And perform the following.
    a) Remove Rows that contain empty cells.
    b) Clean Wrong Format.
    c) Clean Wrong Data.
    d) Remove Duplicates.
21. By using matplotlib generate Bar chart for revenue by product category.
22. By using matplotlib generate Pie chart for market share distribution of companies.
23. By using matplotlib generate Histogram for customer age distribution.
24. By using seaborn generate correlation Heatmap.
25. By using seaborn illustrate Boxplot.

Note : The list of experiments is not limited to those mentioned above. A comprehensive set of programming or software tool-based exercises may be developed by the respective faculty members.

SEMESTER-V

COURSE 11: CORPORATE ACCOUNTING

Theory **Credits: 4** **4 hrs/week**

Course Objectives (CO):
This course is designed to:

- Understand the types of share capital and apply correct accounting treatment for issue, forfeiture, and reissue of shares;
- Bring up with the principles and procedures of issue of shares and debentures
- Evaluate goodwill using various valuation methods and apply the same in accounting problems;
- Ascertain the methods of valuation of shares;
- Prepare final accounts of companies as per provisions of the Companies Act, 2013, incorporating relevant adjustments.

Course Outcomes:
Upon successful completion of this course, students will be able to:
CO1: Apply accounting treatment for issue, forfeiture, and reissue of various types of shares including those issued at par, discount, and premium.
CO2: Record and analyze transactions related to the issue and redemption of debentures and issue of bonus shares under different conditions.
CO3: Compute the value of goodwill using various methods such as Average Profit, Super Profit, Capitalization, and Annuity Methods.
CO4: Evaluate the value of shares using Net Assets, Yield Basis, and Fair Value methods for decision-making purposes.
CO5: Prepare final accounts of companies as per the Companies Act, 2013 with adjustments to the Profit and Loss Account and Balance Sheet.

SYLLABUS

Unit I: Accounting for Share Capital
Kinds of Shares – Types of Preference Shares – Issue of Shares at Par, Discount and Premium - Forfeiture and Reissue of Shares (including problems).

Unit II: Issue and Redemption of Debentures and Issue of Bonus Shares
Accounting Treatment for Debentures Issued and Repayable at Par, Discount and Premium - (including problems).

Unit III: Valuation of Goodwill
Need and Methods - Average Profit Method, Super Profits Method – Capitalization Method and Annuity Method (including problems).

Unit IV: Valuation of Shares
Need for Valuation - Methods of Valuation - Net Assets Method, Yield Basis Method, Fair Value Method (including problems).

Unit V: Company Final Accounts
Provisions of the Companies Act, 2013 - Preparation of Final Accounts – Adjustments Relating to Preparation of Final Accounts – Profit and Loss Account and Balance Sheet – (including problems with simple adjustments).

Activities:

- Solve practical problems on the issue, forfeiture, and reissue of shares using real-time scenarios andaccounting formats.
- Prepare a simulated ledger and journal entries for the issue and redemption of debentures at par, discount, and premium.
- Conduct a group activity to study bonus share announcements of listed companies and record corresponding accounting treatments.
- Practice valuation of goodwill using various methods (Average Profit, Super Profit, Capitalization, and Annuity) with guided worksheets.
- Organize a role-play or mock business scenario to perform share valuation using Net Asset, Yield Basis, and Fair Value methods.

References

1. Jain, S. P., & Narang, K. L. (2022). *Corporate accounting* (Latest ed.). Ludhiana: Kalyani Publishers.
2. Reddy, T. S., & Murthy, A. (2022). *Corporate accounting* (Revised ed.). Chennai: Margham Publications.
3. Maheshwari, S. N., & Maheshwari, S. K. (2021). *Advanced accountancy – Volume II* (11th ed.). New Delhi: Vikas Publishing House.
4. Gupta, R. L., &Radhaswamy, M. (2022). *Advanced accounting* (19th ed.). New Delhi: Sultan Chand & Sons.
5. Shukla, M. C., Grewal, T. S., & Gupta, S. C. (2021). *Advanced accounts – Volume II* (20th ed.). New Delhi: S. Chand Publishing.

SEMESTER-V

COURSE 12 A: ENTREPRENEURSHIP AND START-UPS

Theory	**Credits: 4**	**4 hrs/week**

Course Objectives:
This course is designed to:

- Understand the concept of entrepreneurship, traits of entrepreneurs, and their role in economic development.
- Explore methods for identifying business opportunities and fostering creativity and innovation.
- Develop the ability to prepare feasibility reports and business plans for new ventures.
- Gain knowledge of funding sources, team management, and operational controls for start-ups.
- Recognize the role of various institutional supports available for promoting entrepreneurship.

Course Outcomes:
Upon successful completion of this course, students will be able to:

CO1: Understand the concept of entrepreneurship, traits of entrepreneurs, types of entrepreneurs, and their role in economic development with emphasis on women entrepreneurs.

CO2: Identify viable business opportunities through creativity and innovation, and apply methods for generating and evaluating new business ideas.

CO3: Prepare a feasibility report assessing technical and economic viability, and develop the core components of a business plan.

CO4: Explore various sources of finance, and apply basic principles of capital management, team building, sales, and e-commerce for running a new venture.

CO5: Analyze the role and support of institutional frameworks in promoting entrepreneurship, including the functions of SIDBI, DICs, KVIC, NSIC, and others.

SYLLABUS

UNIT I: Introduction to Entrepreneurship

Definition of Entrepreneur, Entrepreneurial Traits, Entrepreneur Vs. Manager-Types of Entrepreneurs-Entrepreneurial decision process. Role of Entrepreneurship in Economic Development. Woman as Entrepreneur- Success stories of Entrepreneurs.

UNIT II: New Venture Creation
Identification of Business Opportunities-Sources of new ideas-methods of generating new ideas-creativity and innovations- process of creativity-barriers to creative thinking.

UNIT-III: Preparation of Feasibility Report
Technical feasibility-economic viability-business plan-salient features of business plan

UNIT-IV: Financing and Managing the new venture
Sources of capital, Record keeping, recruitment, motivating and leading teams- Fixed and Working Capital- Management of Working Capital- Marketing and Sales Management – E-Commerce.

UNIT-V: Institutional support to Entrepreneurship
Role of Directorate of Industries, District Industries Centers (DICs), Industrial Development

Corporation (IDC), State Financial corporation (SFCs), Commercial banks, Small Scale Industries Development Corporations(SSIDCs), Khadi and village Industries Commission (KVIC), National Small Industries Corporation (NSIC),Small Industries Development Bank of India(SIDBI).

Activities:

- Case Study Analysis: Analyze success stories of Indian entrepreneurs, highlighting traits and contributions to economic development.
- Idea Generation Workshop: Conduct a brainstorming session where students generate and present innovative business ideas using creativity techniques.
- Feasibility Report Preparation: Prepare a mini feasibility report for a selected business idea, covering technical and economic viability.
- Start-up Simulation Activity: Simulate startup operations including budgeting, recruitment, team leadership, and digital marketing strategies.
- Institutional Mapping Project: Create a presentation or chart showing the functions and support provided by key entrepreneurial institutions in India.

References:

1. Entrepreneurship Development by S.S. Khanka S. Chand &Company
2. Entrepreneurship by Robert D. Hisrich, Michael P. Peters, and Dean A. Shepherd, McGraw Hill
3. Small Scale Industries and Entrepreneurship by Vasant Desai Himalaya Publishing House
4. Entrepreneurship Development and Small Business Enterprises by Poornima M. Charantimath, Pearson Education
5. Essentials of Entrepreneurship and Small Business Management by Norman M. Scarborough, Pearson Education

SEMESTER-V

COURSE 12 B: BUSINESS INTELLIGENCE TOOLS AND DATA VISUALIZATION

Theory **Credits: 3** **3 hrs/week**

Course Objectives

This course is designed to:

- Develop student understanding of Business Intelligence (BI) principles and decision support systems.
- Train students in Advanced Excel for data analysis and visualization.
- Impart working knowledge of Tableau for real-time data visualization and dashboards.
- Equip learners with hands-on skills to analyze, interpret, and communicate data.
- Integrate BI tools for business forecasting, decision-making, and storytelling.

Course Outcomes

By the end of this course, the student will be able to:

CO1: Describe the framework, scope, and applications of Business Intelligence.

CO2: Analyze business datasets using advanced Excel functions like pivot tables, Power Query, and dashboards.

CO3: Visualize data interactively using Tableau and build industry-grade dashboards.

CO4: Apply BI tools to different business domains (Finance, Marketing, HR, Operations).

CO5: Present analytical findings to stakeholders using compelling data storytelling techniques.

SYLLABUS

Unit I: Introduction to Business Intelligence and Data-Driven Decisions

Meaning and Definition of Business Intelligence – Evolution of BI – Role in Managerial Decision Making – BI Architecture – Data Warehousing Basics – Data Marts – OLAP vs OLTP – BI Applications in Functional Areas – Business Metrics and KPIs – Data-Driven Culture.

Unit II: Business Intelligence with Advanced Excel – Part I

Introduction to Excel for BI – Data Types – Data Cleaning Using Flash Fill, Text Functions, Remove Duplicates – Logical Functions (IF, AND, OR, Nested IF) – Lookup Functions (VLOOKUP, HLOOKUP, XLOOKUP, INDEX & MATCH) – Sorting and Filtering – What-If Analysis – Data Validation.

Unit III: Business Intelligence with Advanced Excel – Part II

Pivot Tables and Pivot Charts – Slicers and Timelines – Power Query and Power Pivot – Creating Dashboards in Excel – Forecasting Using Excel – Goal Seek and Solver – Scenario Analysis – Macro Basics – KPI Tracking Templates – Interpreting Excel BI Outputs.

Unit IV: Business Intelligence with Tableau – Part I

Getting Started with Tableau – Connecting to Data Sources – Data Types and Dimensions/Measures – Simple Visualizations (Bar, Line, Pie, Map, Scatter) – Filters, Sorting, Grouping – Calculated Fields – Parameters – Basic Dashboard Creation – Story Points.

Unit V: Business Intelligence with Tableau – Part II

Interactive Dashboards – Dual-Axis Charts – Forecasting in Tableau – Trend and Reference Lines – Real-time Data Streams – Tableau Public vs Desktop – BI Case Studies Using Tableau

in Marketing, HR, and Finance – Exporting and Publishing Dashboards – Data Storytelling and Presentation Skills.

Student-Centric Activities

- Excel Dashboard Project: Students will create an interactive dashboard using Excel (Pivot Tables, Charts, Slicers, Power Query) to visualize sales, HR, or financial data for a fictional company.
- Tableau Data Storytelling Challenge: Students will import a dataset into Tableau (e.g., from Kaggle or Data.gov) and build a multi-chart visualization, interpreting trends and patterns for decision-making.
- Live Case Analysis Using BI Tools: Analyze a real-time business problem (e.g., declining sales in a region) using Excel analytics or Tableau, and present visual insights with actionable recommendations.
- Data Cleaning & Preparation Drill: Students will be given a messy dataset and must use Excel functions (Power Query, Text to Columns, Flash Fill, Remove Duplicates) to clean it for analysis.
- Group Presentation: BI in Industry: Each group researches and presents how business intelligence tools are used in sectors like healthcare, retail, banking, or logistics (with example dashboards).

Reference Books

1. Sharda, R., Delen, D., & Turban, E. (2020). *Business Intelligence, Analytics, and Data Science: A Managerial Perspective* (5th ed.). Pearson.
2. Murray, D. (2016). *Tableau Your Data!: Fast and Easy Visual Analysis with Tableau Software*. Wiley.
3. Kusleika, D. (2022). *Excel 2021 Power Programming with VBA*. Wiley.
4. Alexander, M., & Walkenbach, J. (2021). *Excel Dashboards and Reports* (4th ed.). Wiley.
5. McKinney, W. (2022). *Data Science for Business Intelligence with Excel and Tableau*. O'Reilly Media.

SEMESTER-V

COURSE 12 B: BUSINESS INTELLIGENCE TOOLS AND DATA VISUALIZATION

Practical **Credits: 1** **2 hrs/week**

To complement theoretical understanding, the following hands-on practical exercises are proposed:

1. **Interactive Excel Dashboards:**

- Create dashboards using Pivot Tables, Pivot Charts, Slicers, and Timelines to analyze multi-dimensional data (e.g., regional sales, HR turnover, product profitability).
- Use Power Query for importing and transforming raw datasets.

2. **Advanced Excel BI Simulations:**
   - Practice What-If Analysis, Goal Seek, and Solver for business decision problems (e.g., breakeven analysis, loan repayment planning).
   - Build KPI templates and use conditional formatting for performance visualization.
3. **Tableau Visualization Lab:**
   - Connect Tableau to various data sources (Excel, CSV, Google Sheets).
   - Develop visualizations such as dual-axis charts, maps, and trend lines.
   - Build and publish dashboards using filters, parameters, and story points.
4. **BI Mini Project:**
   - Teams develop a BI project analyzing sectoral data (e.g., Retail, Banking, Healthcare) and present insights using Tableau dashboards and Excel analytics.
   - Include executive summary, KPIs tracked, and business recommendations.
5. **Real-Time Case-Based BI Analysis:**
   - Use a case scenario (e.g., employee attrition or customer churn) and apply both Excel and Tableau to derive insights.
   - Evaluate data cleanliness, visualization effectiveness, and decision relevance.

SEMESTER-V

COURSE 13 A: BUSINESS ANALYTICS USING EXCEL AND POWER BI

Theory **Credits: 3** **3 hrs/week**

Course Objectives
This course is designed to:

- Introduce the fundamentals of Business Analytics and data-driven decision-making.

- To train students in Excel-based analytics including data cleaning, transformation, and visualization.
- Equip learners with skills to use Power BI for real-time interactive data dashboards.
- Help students understand how to draw insights from data for business problem-solving.
- Develop analytical thinking and storytelling abilities using visual tools.

Course Outcomes

Upon successful completion, the student will be able to:

CO1: Understand the role of analytics in business problem-solving and strategic planning.

CO2: Use Excel for advanced analytics including pivot tables, statistical functions, and dashboards.

CO3: Transform, model, and visualize data using Power BI.

CO4: Interpret insights and present business intelligence reports using visual storytelling.

CO5: Apply analytics to domains such as Marketing, Finance, HR, and Operations.

SYLLABUS

Unit I: Introduction to Business Analytics

Definition and Importance of Business Analytics – Types: Descriptive, Predictive, Prescriptive – Analytics vs. Analysis – Business Analytics Life Cycle – Role of a Business Analyst – Data-Driven Decision Making – Data Sources – Case-based Applications.

Unit II: Data Analytics using Excel – Part I

Working with Raw Data – Data Cleaning & Structuring – Text Functions – Logical Functions (IF, AND, OR, IFERROR) – Lookup Functions (VLOOKUP, HLOOKUP, XLOOKUP, INDEX-MATCH) – Data Validation – Conditional Formatting – Named Ranges – Form Controls.

Unit III: Data Analytics using Excel – Part II

Pivot Tables and Charts – Slicers and Timelines – Power Query – Data Modeling with Power Pivot – What-if Analysis – Goal Seek, Solver – Statistical Tools in Excel – Excel Dashboards for KPI Tracking – Forecast Sheet – Exporting Reports.

Unit IV: Power BI – Data Loading and Modeling

Overview of Power BI Desktop and Power BI Service – Data Loading from Excel/CSV/Cloud – Data Transformation in Power Query Editor – Relationships and Data Modeling – Calculated Columns and Measures using DAX – Data Types and Hierarchies – Star Schema.

Unit V: Power BI – Visualization and Insights

Creating Interactive Visuals (Bar, Line, Pie, Cards, Maps, Gauge) – Filters and Slicers – Drill Down/Up – Tooltips and Bookmarks – Dashboard Design Principles – Publishing Reports to Power BI Service – Sharing and Collaborating – Case Study: Power BI Dashboard for Sales/Finance/HR Analytics.

Student-Centric Activities

- Mini-Project on Business Scenario Analysis: Students analyze a real or simulated business problem (e.g., sales performance, inventory control) using Excel functions (e.g., VLOOKUP, Pivot Tables, What-If Analysis) and visualize key metrics using Power BI dashboards.

- Data Cleaning Challenge in Excel: Students are given a raw dataset and asked to clean and organize the data using Power Query, Remove Duplicates, Data Validation, and other Excel tools, followed by importing into Power BI.
- Power BI Dashboard Competition: Students design an interactive dashboard in Power BI using slicers, cards, charts, and KPIs to present insights on a provided dataset (e.g., retail sales, customer feedback, or financials).
- Business Insights Presentation: Each student presents a data-driven story based on Excel/Power BI analysis, explaining trends, insights, and business implications to simulate stakeholder reporting.
- Group Activity: Excel vs Power BI Tools Debate: Student groups compare features and use-cases of Excel and Power BI for business analytics, culminating in a classroom debate with examples.

Reference Books

1. Winston, W. L. (2021). *Microsoft Excel Data Analysis and Business Modeling* (7th ed.). Microsoft Press.
2. Jablonski, D. (2022). *Data Analytics with Microsoft Excel: Building Data Models and Dashboards*. Apress.
3. Souder, M. (2023). *Beginning Power BI: A Practical Guide to Self-Service Data Analytics*. Apress.
4. Sharda, R., Delen, D., & Turban, E. (2020). *Business Intelligence, Analytics, and Data Science: A Managerial Perspective* (5th ed.). Pearson.
5. Padilla, J. (2023). *The Definitive Guide to DAX: Business Intelligence for Microsoft Power BI, SQL Server Analysis Services, and Excel* (3rd ed.). Microsoft Press.

SEMESTER-V

COURSE 13 A: BUSINESS ANALYTICS USING EXCEL AND POWER BI

Practical **Credits: 1** **2 hrs/week**

The following lab-based practical exercises are designed to reinforce theoretical knowledge through hands-on learning:

1. Excel Analytics Lab

- **Data Cleaning & Transformation:**

    - Clean messy business data using Flash Fill, Text to Columns, Remove Duplicates, and Data Validation.

- **Analytical Functions Practice:**
    - Apply IF, AND, OR, IFERROR, and nested formulas to solve business case questions.
    - Use lookup functions like VLOOKUP, HLOOKUP, XLOOKUP, INDEX & MATCH for dataset linkage.
- **Dashboards & Reports:**
    - Build a sales performance dashboard using PivotTables, PivotCharts, Slicers, and conditional formatting.
    - Perform scenario analysis using Goal Seek and Solver for forecasting or financial planning.

2. Power BI Fundamentals Lab

- **Data Import & Cleaning:**
    - Import sales/HR/finance datasets from Excel into Power BI.
    - Clean and transform data using Power Query Editor (e.g., remove nulls, split columns, change data types).
- **Data Modeling:**
    - Create relationships using Star Schema.
    - Create calculated columns and DAX measures (e.g., Total Sales, Profit Margin).

3. Power BI Visualization Projects

- **Build Interactive Dashboards:**
    - Visualize business metrics using cards, bar/line charts, maps, pie charts, slicers, and filters.
    - Apply drill-down, bookmarks, tooltips, and hierarchy features for layered insights.
- **Insight Reporting:**
    - Use dashboard output to prepare a brief business report summarizing key patterns and suggested decisions.

4. Business Case Study Project

- Mini-project on a domain of choice (Marketing/HR/Finance/Operations):
    - Analyze data in Excel, transform in Power BI, and visualize outcomes.

- Present insights using storytelling techniques to simulate real-world stakeholder presentations.

5. Skill-Based Student Activities

- Weekly peer reviews on dashboard aesthetics, insights, and clarity.
- Weekly speed challenge on formula writing, data import, or chart creation.
- Mock client reporting using data-driven slides built from Excel/Power BI.

SEMESTER-V

COURSE 13 B: ACCOUNTING INFORMATION SYSTEM

Theory **Credits: 3** **3 hrs/week**

Course Objectives
This course is designed to:

- Provide conceptual and applied understanding of Accounting Information Systems (AIS) in a computerized environment.
- Enable students to use Microsoft Excel for recording, processing, and reporting accounting data.

- Develop practical skills in financial modelling, dashboards, and internal control using Excel.
- Expose students to analytical and reporting tools in Excel for decision support.
- Prepare students for technology-integrated accounting roles in organizations.

Course Outcomes

After completing this course, students will be able to:

CO1: Demonstrate a clear understanding of the role of AIS in business operations.
CO2: Record and process financial transactions using Excel templates.
CO3: Apply advanced Excel tools for analysis and reporting of accounting information.
CO4: Build control mechanisms and audit trails using Excel features.
CO5: Create dashboards and interactive MIS reports for financial decision-making.

Syllabus

UNIT I: Fundamentals of AIS and Excel for Accounting

Definition and Components of AIS – Manual vs. Computerized Accounting Systems – Importance of Excel in AIS – Excel Basics: Interface, Formatting, Formula Entry – Cell Referencing (Relative, Absolute) – Sheet Linking – Creating Basic Accounting Templates (Journal, Ledger, Trial Balance).

UNIT II: Transaction Processing in Excel

Preparation of Journal and Posting to Ledger in Excel – Trial Balance and Adjustments – Preparation of Trading, Profit & Loss Account and Balance Sheet – Linking Sheets for Dynamic Updates – Automating Final Accounts with Excel Formulas – Conditional Formatting for Alerts – Creating Templates for Recurring Use.

UNIT III: Data Analytics using Excel – Part II (Dashboards & Tools)

Pivot Tables and Charts – Slicers and Timelines – Power Query – Data Modelling with Power Pivot – What-if Analysis – Goal Seek, Solver – Statistical Tools in Excel – Excel Dashboards for KPI Tracking – Forecast Sheet – Exporting Reports.

UNIT IV: Internal Control and Audit Features in Excel

Internal Control in AIS – Data Validation Techniques – Drop-down Lists – Protecting Worksheets and Workbooks – Excel-based Audit Trails – Introduction to Excel Macros – Audit Schedules Using Excel – Error Handling Functions – Use of Track Changes and Comments for Audit Trails.

UNIT V: Management Reporting and MIS with Excel

MIS Reports: Types and Uses – Budget Preparation and Variance Analysis – Fund Flow and Cash Flow Analysis – Creating Management Dashboards – Graphical Reports – KPIs for Business Functions – Connecting Excel with External Data Sources – Exporting and Presenting Reports for Stakeholders.

Student-Centric Activities

- Design a Basic AIS in Excel: Students create a simple accounting system in Excel including journal entries, ledgers, trial balance, and financial statements using formulas and cell referencing.

- Simulate a Business Transaction Cycle: Students are assigned roles (sales, purchase, cashier, accountant) and record a full transaction cycle (from sales order to financial report) using AIS principles in Excel templates.
- Internal Controls Audit Exercise: Students review a mock Excel-based accounting system and identify missing or weak internal controls, then suggest corrective measures.
- AIS Case Study Analysis: Students study real-life AIS implementations (e.g., Tally, SAP, Quick Books) and compare their functionality to Excel-based AIS models.
- Group Presentation on AIS Modules: Teams present specific AIS modules (General Ledger, Inventory, Payroll, etc.) with examples of how Excel can be used to build or simulate these functions.

Reference Books

1. Romney, M. B., & Steinbart, P. J. (2021). *Accounting Information Systems* (15th ed.). Pearson Education.
2. Hurt, R. L. (2020). *Accounting Information Systems: Basic Concepts and Current Issues* (5th ed.). McGraw Hill.
3. Winston, W. L. (2019). *Microsoft Excel Data Analysis and Business Modeling* (6th ed.). Microsoft Press.
4. Collings, S., & Ameen, J. (2022). *Excel for Accountants* (2nd ed.). Kogan Page.
5. Purbhoo, M. (2021). *Excel-Based Accounting Information Systems for Small Businesses*. Routledge.

SEMESTER-V

COURSE 13 B: ACCOUNTING INFORMATION SYSTEM

Practical **Credits: 1** **2 hrs/week**

To enhance the theoretical understanding of Accounting Information Systems (AIS), the following hands-on lab activities are proposed:

1. Excel-Based Accounting Templates Lab

- Create Excel templates for:
    - **Journal Entries and Ledger Posting** with dynamic formulas
    - **Trial Balance** with auto-summing features
    - **Trading and Profit & Loss Account**
    - **Balance Sheet with auto-linking**

- Use **cell referencing** (relative and absolute) to ensure dynamic data updates across sheets.

2. Transaction Processing & Automation

- Simulate recording of a **complete business transaction cycle**:
  - Sales, Purchases, Returns, Payments, Receipts, and Adjustments
- Automate final accounts generation using:
  - **Excel functions** like SUMIF, IF, AND, OR, and nested formulas
  - **Named Ranges** for easy data handling

3. MIS and Dashboard Design

- Create **KPI Dashboards** using Pivot Tables, Charts, Slicers, and Conditional Formatting.
- Use **Goal Seek**, **Solver**, and **Forecast Sheet** for management analysis (e.g., break-even, budgeting).
- Develop **Graphical MIS Reports** for Cash Flow, Expenses, or Profitability using charts and trendlines.

4. Internal Control Simulation

- Apply **Data Validation** to restrict wrong entries (e.g., dropdowns for voucher types).
- Protect sheets/workbooks and track changes to simulate **audit trail**.
- Use **Comments, Notes, and Conditional Formatting** to indicate discrepancies.
- Create a basic **Macro** to automate repetitive entries.

5. Integrated AIS Project

- Create a mini AIS using Excel with:
  - Journals → Ledgers → Trial Balance → Final Accounts → MIS Reports
- Present the final integrated report as a **case study** simulating an organization's financial reporting process.

SEMESTER-VI

COURSE 14 A: AUDITING

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Understand the fundamentals and importance of auditing.
- Identify and differentiate various types of audits.
- Learn audit planning procedures and internal control systems.
- Understand vouching and distinguish it from investigation.
- Gain knowledge of company audit and audit report preparation

Course Outcomes (CO):
Upon successful completion of this course, students will be able to:

CO1: Understand the meaning, objectives, and importance of auditing, and differentiate auditing from book-keeping and accounting, emphasizing the auditor's role in detecting corporate frauds.

CO2: Identify and distinguish various types of audits based on ownership, timing, and objectives, including statutory and specialized audits.

CO3: Apply knowledge of audit planning processes including audit programmes, working papers, audit evidence, and systems of internal check, control, and internal audit.

CO4: Understand the principles and procedures of vouching for different business transactions and differentiate between auditing and investigation.

CO5: Explain the legal provisions related to company audit including auditor qualifications, appointment, rights, responsibilities, and the structure and contents of an audit report under the Companies Act, 2013.

SYLLABUS

Unit I: Introduction
Meaning – Objectives – Importance of Auditing – Characteristics – Book Keeping vs Auditing - Accounting vs Auditing – Role of Auditor in Checking Corporate Frauds.

Unit II: Types of Audits
Based on Ownership, Time and Objective - Independent, Financial, Internal, Cost, Tax, Government, Secretarial Audits.

Unit III: Planning of Audit
Steps to be taken at the Commencement of a New Audit – Audit Programme - Audit Note Book– Audit Working Papers - Audit Evidence - Internal Check, Internal Audit and Internal Control.

Unit IV: Vouching and Investigation
Definition and Importance of Vouching – Objectives of Vouching -Vouching of Cash andTrading Transactions – Investigation - Auditing vs. Investigation.

Unit V: Company Audit and Auditors Report
Auditor's Qualifications – Appointment and Reappointment – Rights, Duties, Liabilities and Disqualifications - Audit Report: Contents –Preparation - Relevant Provisions of Companies Act, 2013.

Activities:

- Prepare a comparative chart on Bookkeeping vs Accounting vs Auditing.
- Create a presentation on different types of audits with real-life examples.

- Draft a sample audit programme and audit working papers for a small business.
- Practice vouching with sample cash and trading transaction documents.
- Prepare a mock audit report based on Companies Act, 2013 provisions

References:

1. Basu, S. K. (2013). *Fundamentals of auditing*. PHI Learning.
2. Kumar, P., Sachdeva, B., & Singh, J. (2022). *Auditing: Theory and practice* (Latest ed.). Kalyani Publishers.
3. Kapoor, N. D. (2022). *Auditing* (Latest ed.). S. Chand & Company Ltd.
4. Saxena, R. G. (2021). *Principles and practice of auditing* (Latest ed.). Himalaya Publishing House.
5. Gupta, P. (2010). *Internal auditing practices in India: Effectiveness, independence and benefits*. MPG Books.

SEMESTER-VI

COURSE 14 B: FINANCIAL INSTITUTIONS AND MARKETS

Theory **Credits: 4** **4 hrs/week**

Course Objectives

1. To provide knowledge about the structure, role, and functioning of financial institutions and markets in India.
2. To acquaint students with the regulatory framework governing financial systems.
3. To understand the operations of money and capital markets.
4. To explore the functioning and significance of banking and non-banking institutions.

5. To enable students to analyze the role of financial institutions and instruments in economic development.

Course Outcomes

Upon completion of the course, students will be able to:

1. Explain the evolution, structure, and role of financial institutions and markets in India.
2. Analyze the regulatory framework and its impact on financial markets.
3. Differentiate between various segments of money and capital markets.
4. Examine the role of commercial banks, development banks, and NBFCs in the financial system.
5. Assess the impact of global financial developments on Indian markets.

Syllabus

UNIT I: Introduction to Financial System

Structure of the Indian Financial System – Financial Institutions, Financial Markets, Financial Instruments – Role and Functions of Financial System – Financial Sector Reforms – Regulatory Framework: RBI, SEBI, IRDA, PFRDA – Overview of Financial Services.

UNIT II: Money Market

Concept and Functions of Money Market – Features and Structure – Components of Money Market: Call Money Market, Treasury Bills Market, Commercial Paper, Certificates of Deposit, Repo and Reverse Repo Markets – Role of RBI in Money Market Regulation.

UNIT III: Capital Market

Capital Market: Meaning, Structure, and Functions – Primary and Secondary Markets – Stock Exchanges – Instruments of Capital Market – Listing of Securities – SEBI Guidelines – NSE and BSE – Role of Clearing Corporation and Depositories (NSDL, CDSL).

UNIT IV: Financial Institutions

Commercial Banks – Public and Private Sector Banks – Cooperative Banks – Regional Rural Banks – Development Financial Institutions: NABARD, SIDBI, EXIM Bank, IFCI – Non-Banking Financial Companies (NBFCs) – Mutual Funds – Credit Rating Agencies.

UNIT V: Global Financial Environment and Emerging Trends

International Financial Institutions: IMF, World Bank, ADB – Foreign Capital Flows: FDI and FII – Global Financial Markets – Eurocurrency Markets – Derivatives Market – FinTech and Digital Innovations in Financial Services – Financial Inclusion.

Recommended Reference Books

1. Bhole, L. M., & Mahakud, J. (2017). *Financial institutions and markets* (6th ed.). McGraw Hill Education.
2. Pathak, B. V. (2018). *The Indian financial system: Markets, institutions and services* (5th ed.). Pearson Education.
3. Khan, M. Y. (2021). *Indian financial system* (11th ed.). McGraw Hill Education.
4. Gurusamy, S. (2019). *Financial markets and institutions* (4th ed.). Tata McGraw Hill.
5. Machiraju, H. R. (2020). *Indian financial system* (5th ed.). Vikas Publishing House.

SEMESTER-VI

COURSE 15 A: INCOME TAX

Theory **Credits: 4** **4 hrs/week**

Course Objectives (CO):

This course is designed to:

- Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning.
- Understand the provisions and compute income tax for various sources.
- Grasp amendments made from time to time in Finance Act.
- Compute total income and define tax complicacies and structure.

- Prepare and File IT returns of individual at his own.

Course Outcomes:
Upon successful completion of this course, students will be able to:
CO1: Understand the basic concepts and definitions under the Income Tax Act, 1961, including person, assessee, income, residential status, and tax exemption provisions.

CO2: Compute taxable salary income by applying relevant provisions related to allowances, perquisites, and deductions.

CO3: Analyze and calculate taxable income from house property and business/profession, distinguishing capital and revenue expenses.

CO4: Apply rules for computing capital gains and income from other sources, identifying long-term and short-term classifications.

CO5: Integrate various heads of income to compute the total taxable income of an individual with accuracy.

SYLLABUS

Unit-I: Introduction
Income Tax Act-1961 - Basic Concepts: Income, Person, Assessee -Assessment Year, Previous Year, Rates of Tax, Agricultural Income, Residential Status of Individual -Incidence of Tax – Incomes Exempt from Tax (Theory only).

Unit-II: Income from Salaries
Basis of Charge- Components of Salary- Allowances, Perquisites, Profits in Lieu of Salary, Deductions from Salary Income, Computation of Salary Income (including problems).

Unit-Ill: Income from House Property and Profits and Gains from Business
Annual Value, Let-out/Self Occupied/Deemed to be Let-out house -Deductions from Annual Value -Computation of Income from House Property Definition of Business and Profession Procedure for Computation of Income from Business – Revenue and Capital Nature of Incomes and Expenses – Admissible and Inadmissible Expenses – Expenses Expressly Disallowed – Computation (including problems).

Unit-IV: Income from Capital Gains - Income from Other Sources
Meaning of Capital Asset – Types – Procedure for Computation of Long-term and Short-term Capital Gains/Losses Meaning of Other Sources - General Incomes – Specific Incomes – Computation (including problems).

Unit-V: Computation of Total Income of an Individual
Computation of Total Income (Simple problems)
Activities

- Practice of provisions of Taxation
- Visit a Tax firm
- Talk on Finance Bill at the time of Union Budget
- Guest lecture by Chartered Accountant
- Presentation of tax rates
- Practice of filing IT Returns online

References:

1. Singhania, V. K., & Singhania, M. (2024). *Students' guide to income tax (including GST)*. Taxmann Publications.
2. Mehrotra, H. C., & Goyal, S. P. (2023). *Income tax: Law and accounts*. Sahitya Bhawan Publications.
3. Lal, B. B., & Vashisht, N. (2023). *Income tax and tax planning*. Pearson Education.
4. Reddy, T. S., & Reddy, Y. H. P. (2023). *Taxation*. Margham Publications.
5. Ahuja, G., & Gupta, R. (2024). *Systematic approach to income tax*. Bharat Law House.

SEMESTER-VI

COURSE 15 B: FINANCIAL PLANNING

Theory **Credits: 4** **4 hrs/week**

Course Objectives

1. To introduce students to the concept and importance of financial planning in personal and professional life.
2. To enable students to develop budgeting, saving, and investment strategies.
3. To familiarize learners with insurance planning, tax planning, and retirement planning.

4. To equip students with the knowledge to evaluate financial products and services.
5. To instill financial discipline and help in creating short-term and long-term financial goals.

Course Outcomes

By the end of the course, students will be able to:

1. Understand the process and significance of personal and corporate financial planning.
2. Apply budgeting and saving strategies for effective money management.
3. Evaluate various investment avenues and develop appropriate investment plans.
4. Assess insurance, tax, and retirement planning needs.
5. Design a comprehensive financial plan tailored to different life stages.

Unit I: Introduction to Financial Planning

Concept of Financial Planning – Objectives and Importance – Steps in Financial Planning – Time Value of Money – Role of Financial Planner – Legal and Ethical Aspects of Financial Planning – Financial Goals and Risk Profiling.

Unit II: Budgeting and Savings

Budgeting Process – Types of Budgets – Creating a Household Budget – Importance of Savings – Emergency Fund Planning – Saving Instruments – Bank Deposits, Recurring Deposits, Fixed Deposits, PPF, NSC – Financial Discipline.

Unit III: Investment Planning

Investment Objectives – Risk-Return Analysis – Asset Allocation – Types of Investments: Equity, Bonds, Mutual Funds, Real Estate, Gold – SIPs and Portfolio Management – Factors Affecting Investment Decisions – Use of Robo-Advisors.

Unit IV: Insurance and Tax Planning

Concept of Insurance – Types of Insurance: Life, Health, Property, Liability – Principles of Insurance – Tax Planning: Basic Concepts – Tax Saving Instruments under Sections 80C, 80D, 10(10D) – Filing Income Tax Returns – Tax Planning for Salaried and Business Professionals.

Unit V: Retirement and Estate Planning

Retirement Planning: Importance, Estimating Retirement Needs – Retirement Products: EPF, PPF, NPS, Annuities – Estate Planning: Wills, Trusts, Nomination – Succession Planning – Legal and Regulatory Framework.

Reference Books

1. Kapoor, J. R., Dlabay, L. R., & Hughes, R. J. (2021). *Personal finance* (13th ed.). McGraw Hill Education.
2. Gitman, L. J., Joehnk, M. D., & Billingsley, R. S. (2020). *Personal financial planning* (14th ed.). Cengage Learning.
3. Sinha, M. (2022). *Financial planning: A ready reckoner*. Taxmann Publications.
4. Keown, A. J. (2022). *Personal finance: Turning money into wealth* (8th ed.). Pearson Education.
5. Bhargava, B. S. (2020). *Financial planning for individuals*. Himalaya Publishing House.

SEMESTER-VII

COURSE 16: ACCOUNTING FOR SERVICE ORGANISATIONS

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Introduce the conceptual framework of accounting practices for service organisations.
- Enable students to prepare and analyse financial statements of various service sectors.
- Impart knowledge of revenue and expense recognition applicable to service entities.
- Familiarise students with sector-specific reporting systems such as in hospitals, hotels, and educational institutions.
- Develop practical skills in using accounting software for service organisation transactions.

Course Outcomes (COs):
At the end of the course, the student will be able to:

CO1: Understand the concept, characteristics, and regulatory framework of accounting for service organisations and distinguish it from goods-based accounting.

CO2: Prepare financial statements for educational institutions by applying principles of fund-based accounting and recognising various income streams.

CO3: Apply accounting techniques for hospitals and healthcare organisations by identifying revenue sources and cost elements, and preparing income and expenditure accounts.

CO4: Prepare departmental accounts and final accounts for hotels and hospitality organisations using industry-standard practices such as USALI.

CO5: Record and analyse financial transactions in transport and miscellaneous services and demonstrate the use of accounting software for service organisations.

SYLLABUS

Unit I: Introduction to Accounting for Service Organisations

Meaning and Characteristics of Service Organisations – Difference between Goods and Services Accounting – Need and Scope of Service Sector Accounting – Regulatory Framework for Service Organisations – Applicable Accounting Standards (Overview) – Preparation of Basic Financial Statements for Service Entities

Unit II: Accounting for Educational Institutions

Nature of Educational Institutions – Types of Income: Fees, Donations, Grants – Accounting for Scholarships and Endowments – Preparation of Income and Expenditure Account and Balance Sheet – Fund-Based Accounting (General Fund, Capital Fund)

Unit III: Accounting for Hospitals and Health Services

Types of Healthcare Institutions – Sources of Revenue: Patient Fees, Grants, Donations – Accounting for Consumables and Medicines – Preparation of Income and Expenditure Account and Balance Sheet – Budgeting and Cost Control in Hospitals

Unit IV: Accounting for Hotels and Hospitality Organisations

Revenue Streams: Room Rent, Restaurant, Event Services – Departmental Accounting in Hotels – Treatment of Tips and Service Charges – Uniform System of Accounts for the Lodging Industry (USALI) – Preparation of Final Accounts for Hotels

Unit V: Accounting for Transport and Miscellaneous Services

Types of Transport Services – Revenue and Cost Structure in Transport Accounting – Ticketing, Freight, and Fuel Accounting – Accounting for Other Services: Consultancy, Legal, Telecom – Application of Accounting Software (Tally/ERP) in Service Sector

Activities:

- Field Visit to a local service organisation (hospital, hotel, school, or transport company) to observe real-time accounting practices.

- Preparation of Sample Accounts (Income & Expenditure, Receipts & Payments, Balance Sheets) for different service entities using dummy data.
- Group Presentations on sector-specific accounting practices (e.g., hotel vs. hospital accounting).
- Guest Lecture by an industry expert or CA specializing in service industry audits.
- Seminar on Uniform Systems of Accounting, especially in hospitality and education sectors.

Reference Text books

1. Maheshwari, S. N., & Maheshwari, S. K. (2021). *Advanced accountancy* (Vol. 2). Vikas Publishing House.
2. Tulsian, P. C. (2018). *Financial accounting*. Pearson Education.
3. Gupta, R. L., &Radhaswamy, M. (2020). *Advanced accountancy*. Sultan Chand & Sons.
4. Arora, M. N. (2022). *Cost and management accounting*. Himalaya Publishing House.
5. Horngren, C. T., Datar, S. M., & Rajan, M. V. (2022). *Cost accounting: A managerial emphasis*. Pearson.

SEMESTER-VII

COURSE 17: INDIAN ACCOUNTING STANDARDS (Ind AS)

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Introduce the conceptual and legal framework for Ind AS implementation in India.
- Provide a comprehensive understanding of the presentation and disclosure requirements under Ind AS.
- Enable students to apply Ind AS in recognising and measuring assets, liabilities, income, and expenses.

- Tain students in applying revenue recognition, financial instrument, and group reporting standards.
- Analyse emerging issues in Ind AS with reference to real-world financial reporting.

Course Outcomes:

Upon successful completion of this course, students will be able to:

CO1: Understand the need for IFRS convergence, the regulatory framework governing Ind AS, and the applicability and adoption roadmap under the Companies Act, 2013.

CO2: Apply disclosure and presentation standards (Ind AS 1, 7, 8, 10, 24) to financial statements in accordance with Ind AS requirements.

CO3: Evaluate and account for various assets including property, plant, equipment, intangibles, and discontinued operations as per applicable Ind AS.

CO4: Recognise and measure revenues, provisions, and financial instruments using Ind AS 115, 37, 32, 107, and 109 including fair value and amortised cost methods.

CO5: Analyse group accounting standards, business combinations, joint arrangements, and emerging areas like leases, share-based payments, and first-time adoption of Ind AS.

SYLLABUS

Unit I: Introduction to Ind AS and Regulatory Framework

Need and Objectives of Convergence with IFRS – Introduction to Indian Accounting Standards – Legal Framework under Companies Act, 2013 – Role of MCA, ICAI, NFRA – Applicability of Ind AS to Companies – Roadmap for Ind AS Adoption – Structure of Financial Statements as per Schedule III

Unit II: Presentation and Disclosure Standards

Ind AS 1: Presentation of Financial Statements – Ind AS 7: Statement of Cash Flows – Ind AS 8: Accounting Policies, Changes in Accounting Estimates and Errors – Ind AS 10: Events after the Reporting Period – Ind AS 24: Related Party Disclosures – Concepts, Formats, and Disclosure Requirements.

Unit III: Asset Measurement and Recognition

Ind AS 16: Property, Plant and Equipment – Ind AS 38: Intangible Assets – Ind AS 105: Non-Current Assets Held for Sale and Discontinued Operations – Ind AS 36: Impairment of Assets – Measurement Criteria, Recognition, Depreciation, Impairment, and Disclosure Requirements

Unit IV: Revenue, Provisions and Financial Instruments

Ind AS 115: Revenue from Contracts with Customers – Ind AS 37: Provisions, Contingent Liabilities and Contingent Assets – Financial Instruments: Ind AS 32 (Presentation), Ind AS 107 (Disclosures), and Ind AS 109 (Recognition and Measurement) – Application of Amortised Cost, Fair Value, and Risk Disclosure

Unit V: Group Accounting and Emerging Trends

Ind AS 103: Business Combinations – Ind AS 110: Consolidated Financial Statements – Ind AS 111: Joint Arrangements – Ind AS 112: Disclosure of Interests in Other Entities – Overview of Ind AS 116 (Leases), Ind AS 102 (Share-based Payments), and Ind AS 101 (First-time Adoption of Ind AS) – Recent Developments and Implementation Challenges.

Activities:

1. Comparative Analysis Projects: Prepare a report comparing AS, Ind AS, and IFRS for selected standards (e.g., revenue recognition, PPE, leases).
2. Financial Statement Review: Analyse published financial statements of listed Indian companies prepared under Ind AS (e.g., Reliance Industries, Infosys, etc.).
3. Mock Presentations: Group presentations simulating boardroom disclosures and notes to accounts using Ind AS Schedule III format.
4. Guest Lectures/Webinars: Organise talks by practicing Chartered Accountants or financial reporting analysts on Ind AS implementation challenges.
5. Case Study Discussions: Solve studies on transition to Ind AS, revenue recognition under Ind AS 115, or financial instruments reporting.

References:

1. Ghosh, T. P. (2023). *Illustrated guide to Indian Accounting Standards (Ind AS)*. Taxmann Publications.
2. ICAI. (2023). *Ind AS: Study material and implementation guidance*. Institute of Chartered Accountants of India.
3. Maheshwari, S. N., & Maheshwari, S. K. (2021). *Corporate accounting* (6th ed.). Vikas Publishing House.
4. Tulsian, P. C. (2020). *Financial reporting*. Pearson Education.
5. Bhandari, K. V. (2022). *Ind AS and IFRS: Practical approach*. Bharat Law House Pvt. Ltd.

SEMESTER-VII

COURSE 18: GENERATIVE AI FOR THE DEVELOPMENT OF OBJECTIVE ORIENTED PROGRAMMES, SYSTEMS AND APPLICATIONS

Theory **Credits: 3** **3 hrs/week**

SEMESTER-VII

COURSE 18: GENERATIVE AI FOR THE DEVELOPMENT OF OBJECTIVE ORIENTED PROGRAMMES, SYSTEMS AND APPLICATIONS

Practical **Credits: 1** **2 hrs/week**

SEMESTER-VIII

COURSE 19: ADVANCED COST AND MANAGEMENT ACCOUNTING

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Understand the conceptual and practical aspects of marginal costing and its applications in decision-making.
- The procedures of standard costing and perform variance analysis for effective cost control.
- Gain knowledge on budgeting techniques and budgetary control mechanisms for planning and control.
- Understand and analyse the fund flow statement to interpret changes in the financial position of an organization.
- Prepare and interpret cash flow statements as per Accounting Standard 3 (AS-3) to evaluate the liquidity position of a firm.

Course Outcomes (COs):
Upon successful completion of this course, students will be able to:

CO1: Explain the concept of marginal costing and apply CVP analysis and break-even analysis in decision- making.

CO2: Calculate and analyse material, labour, overhead, and sales variances using standard costing techniques.

CO3: Prepare various types of budgets and implement budgetary control systems for financial planning.

CO4: Construct and interpret fund flow statements to identify the sources and uses of funds.

CO5: Prepare cash flow statements as per AS-3 and differentiate between cash flow and fund flow statements.

SYLLABUS

UNIT-I: MARGINAL COSTING

Meaning – Importance – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing: Differential Costing– Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance – Limitations.(Including Problems)

UNIT-II: STANDARD COSTING AND VARIANCE ANALYSIS

Standard Costing: Meaning – Importance – Standard Costing and Historical Costing – Steps involved in Standard Costing. Variance Analysis: Material variance – Labour variance – Overhead variance – Sales variance. (Including Problems)

UNIT-III: BUDGETS AND BUDGETARY CONTROL

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets – Budgetary Control – Classification of Budgets – Preparation of Budgets. (Including Problems)

UNIT-IV Funds Flow Analysis

Meaning and Concept of Working Capital (Fund) – Funds Flow Statement –Meaning and Uses of Funds Flow Statement – Preparation of Funds Flow Statement. (Including Problems)

UNIT – V: Cash Flow Analysis as per AS3

Cash Flow Statement – Meaning and Uses of Cash Flow Statement – Preparation of Cash Flow Statement – Difference between Cash Flow Statement and Funds flow Statement. (Including Problems)

Activities:
- Break-Even Analysis Project – Prepare a break-even chart using marginal costing and CVP analysis.
- Variance Calculation Workshop – Calculate and interpret material, labour, and overhead variances.

- Budget Preparation Assignment – Draft a functional budget for a business scenario.
- Fund Flow Case Study – Analyze balance sheets and prepare a fund flow statement.
- Cash Flow Statement Activity – Prepare a cash flow statement as per AS-3 and compare it with fund flow.

References:

1. Sharma, R. K., & Gupta, S. K. (2023). *Management accounting: Principles & practice* (Latest ed.). Kalyani Publishers.
2. Jain, S. P., & Narang, K. L. (2022). *Advanced cost and management accounting* (Latest ed.). Kalyani Publishers.
3. Kaplan, R. S., & Atkinson, A. A. (2015). *Advanced management accounting* (3rd ed.). Pearson Education.
4. Horngren, C. T., Datar, S. M., & Rajan, M. V. (2018). *Cost accounting: A managerial emphasis* (15th ed.). Pearson Education.
5. Drury, C. (2017). *Management and cost accounting* (10th ed.). Cengage Learning.

SEMESTER-VIII

COURSE 20: FORENSIC ACCOUNTING

Theory **Credits: 4** **4 hrs/week**

Course Objectives:

This course is designed to:

- Introduce the fundamentals and scope of forensic accounting and its growing relevance in financial fraud detection and litigation support.
- Equip students with skills to identify and analyse fraudulent activities using forensic tools and investigative techniques.
- Familiarize learners with legal procedures, ethical standards, and financial crime legislation.
- Enable learners to apply forensic techniques in corporate investigations, digital fraud, and money laundering cases.

- Develop a sound understanding of data analytics and technology in modern forensic accounting.

Course Outcomes (CO):
Upon successful completion of this course, students will be able to:
CO1: Understand the role of forensic accounting in detecting, investigating, and preventing financial fraud.
CO2: Identify types of fraud and apply investigative procedures using accounting evidence.
CO3: Interpret laws and ethical frameworks related to forensic audits and financial crimes.
CO4: Use forensic tools and techniques to analyse complex financial transactions.
CO5: Gain practical knowledge on forensic accounting.

SYLLABUS

Unit I: Introduction to Forensic Accounting

Definition, Nature, and Scope of Forensic Accounting – Differences between Forensic Accounting and Auditing – Evolution and Development of Forensic Accounting – Types of Frauds and Financial Crimes – Importance of Forensic Accounting in Modern Business Environment

Unit II: Tools and Techniques of Forensic Accounting

Forensic Techniques: Document Verification, Data Mining, Ratio Analysis, Benford's Law – Investigative Methods and Interviews – Red Flags and Symptoms of Financial Fraud – Forensic Audit Trail – Role of Internal Controls – Case Studies on Fraud Detection

Unit III: Legal and Regulatory Framework

Overview of Indian Legal Provisions Related to Fraud- Companies Act, 2013- Indian Penal Code- Prevention of Corruption Act- Money Laundering Act (PMLA)- Income Tax and GST Fraud Provisions- Role of Enforcement Agencies: CBI, SFIO, ED, SEBI, and RBI

Unit IV: Corporate Fraud and Forensic Investigation Process

Types of Corporate Fraud: Misappropriation, Falsification of Records, Insider Trading – Fraud Risk Management – Steps in Forensic Investigation – Reporting and Documentation – Role of Forensic Accountant in Court Proceedings – Expert Witness

Unit V: Technology and Forensic Accounting

Use of Digital Tools and Data Analytics in Forensic Accounting – Computer-Assisted Audit Techniques (CAATs) – Cyber Fraud and Digital Forensics – Block chain and its Impact on Fraud Prevention – Emerging Trends in Forensic Accounting

Activities:

- Conduct mock forensic investigations using sample data.
- Case study analysis of major Indian and global corporate frauds (e.g., Satyam, Enron).
- Organize student-led debates or role-plays on ethical issues in forensic investigations.
- Guest lecture by a forensic accountant or law enforcement officer.

- Field visit to auditing firms or economic offenses wings.

References:

1. Bologna, G. J., & Lindquist, R. J. (1995). *Fraud auditing and forensic accounting* (2nd ed.). Wiley.
2. Dutta, S. K. (2022). *Forensic accounting: Principles and practice*. Taxmann Publications.
3. Crumbley, D. L., Heitger, L. E., & Smith, G. S. (2015). *Forensic and investigative accounting* (8th ed.). CCH Incorporated.
4. Singh, K. (2021). *Forensic accounting and fraud examination*. Dreamtech Press.
5. Tiwari, B. (2020). *Forensic accounting*. New Age International Publishers.

SEMESTER-VIII

COURSE 21: DESIGNING WEB APPLICATIONS USING AI TOOLS

Theory **Credits: 3** **3 hrs/week**

SEMESTER-VIII

COURSE 21: DESIGNING WEB APPLICATIONS USING AI TOOLS

Practical	**Credits: 1**	**2 hrs/week**