

**BACHELOR OF COMPUTER APPLICATION MASTER OF COMPUTER APPLICATION  
INTEGRATED – SEMESTER FOUR**

Fourth Semester			
S. No.	Name of Subject	Credits	Total Marks
1	Computer Organization	4	100
2	Graph Theory	4	100
3	System Analysis & Design	4	100
4	Financial Accounting	4	100
5	Practical	4	100
<b>Total</b>		<b>20</b>	

**Subject Name:** COMPUTER ORGANIZATION

**Unit-I**

**The Von Neumann Architecture & ALU Organization**

1. Details of Von Neumann Architecture
2. Simple ALU Organization, Arithmetic Processor.

**Unit-II**

**Control Unit & Memory Organization**

1. **Control Unit :** Hardwired and Micro programmed Control
2. **Memory Organization:** Primary Memory, Secondary Memory, High Speed memory, Virtual Memory.

**Unit-III**

**I/O Transfer, Peripherals & Assembly language Programming**

1. **I/O Transfer :** Program Controlled, interrupt Controlled and DMA
2. **Peripherals & Assembly Language:** Introduction to Computer buses, Peripherals, performance bench marking and current trends in architecture / Assembly language programming.

**Subject Name:** GRAPH THEORY

**Unit I: Fundamental concepts**

Basic definitions, operations, properties, proof styles; Trees (properties, distances and centroids, spanning trees, enumeration).

**Unit II: Matchings**

Bipartite graphs, general graphs, weighted matching; Connectivity (vertex and edge connectivity, cuts, blocks, k-connected graphs, network flows).

### **Unit III: Traversability**

Eulerian tours, Hamiltonian cycles; Coloring (vertex and edge coloring, chromatic number, chordal graphs).

### **Unit IV: Planarity**

Duality, Euler's formula, characterization, 4-color theorem; Advanced topics (perfect graphs, matroids, Ramsay theory, extremal graphs, random graphs); Applications.

### **References**

1. Douglas B. West, Introduction to Graph Theory, Prentice Hall of India, 1996.
2. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science. Prentice-Hall, 1974.
3. Frank Harary, Graph Theory, Narosa, 1994.
4. R. Ahuja, T. Magnanti, and J. Orlin, Network Flows: Theory, Algorithms, and Applications, Prentice-Hall, 1988.

### **Subject Name: SYSTEM ANALYSIS & DESIGN**

1. **System Definition and Concepts:** General Theory systems, Manual and automated systems, Real-life business Sub - Systems. System environment and boundaries. Real - time and distributed systems. Basic principles of successful systems. Approach to system development: Structure system analysis and design, Prototype, Joint application development.
2. **System Analyst:** Role and need of system analyst. Qualifications and responsibilities. System analysis as a profession.
3. **System Development Cycle:** Introduction to Systems Development Life cycle (SDLS). Various phases of SDLS: Study, Analysis, Design, Development, Implementation, Maintenance.
4. **Systems documentation consideration:** Principles of systems documentation, types of documentation and their importance, enforcing documentation discipline in an organization.
5. **System Planning:** Data and fact gathering techniques: Interviews, group Communication - questionnaires, Presentations and visits. Assessing project feasibility: Technical, Operational, Economic, Cost benefits analysis, Schedule, Legal and contractual, Political. Modern methods for determining system requirement: joint application, Development program, prototyping, Business Process re-engineering. System selection plan and proposal.
6. **Modular and Structured Design:** module specifications. Top-down and bottom-up design. Module coupling and cohesion. Structure charts.
7. **System Design and Modeling :** Process modeling , Logical and Physical design Conceptual Data modeling Entity- relationship analysis, Entity -relationship modeling, ERDs and DFDs, Concepts of normalization. Process description: Structured English, Decision tree, Decision tables. Documentation: Data dictionary, Recording data
8. **Input and Output:** Classification of forms, Input/output forms design. User-interface design, Graphical interfaces. Standards and guideline for GUI design. Designing physical files and databases: Designing field, Designing physical record, Designing Physical files, Designing database. Introduction to CASE tools, Feature, Advantages and Limitations of CASE tools, Awareness about some commercial CASE tools.
9. **System Implementation and Maintenance:** Planning consideration Conversion methods, Procedures and Controls. System acceptance criteria. System evaluation and performance. Testing and Validation. Preparing user manual .Maintenance activities and issues.

10. **Computer System Audit and Security:** Audit of Computer system usage. Types of threats to computer system control measures: Threat and risk analysis, Disaster recovery and contingency planning, viruses.
11. **OO Analysis/ Design:** Introduction to UML OO development life cycle and modeling .Static and dynamic modeling. Comparison of OO and module-oriented approach. Modeling using UML.
12. **Introduction to Management Information System (MIS):** Meaning and role of MIS. System approach to MIS. Types of information systems: Transaction processing system, Management information system Decision support system, Expert system case studies (Illustrative): MIS for accounting and function, MIS for marketing system.

**Subject Name:** FINANCIAL ACCOUNTING

1. **Meaning and Objective of Accounting:** Meaning & Process, Primary Objectives, Basic Terms.
2. **Theory Base of Accounting:** Basic Assumptions, Basic Principles, Modifying Principles.
3. **Accounting Equation:** Meaning, Process for Development and Accounting Equation.
4. **Journalizing, Posting and Balancing:** Traditional Classification, Accounting Equation Based Classification, Rules of Debit, Credit & Journal Ledger, Posting, Balancing.
5. **Subsidiary Book I-Cash Book:** Meaning & Advantages of Special Journals, Cash Book.
6. **Subsidiary Book II-Cash Books:** Purchases Book, Sales Book journal proper.
7. **Depreciation, Reserves and Provision:** Meaning, Causes, Factors of Depreciation & Accounting, Methods of Allocating & Recording Depreciation, Meaning & Objectives of Provision.
8. **Financial Statement :** Meaning & Usefulness , F.S , Trading Account , Manufacturing Account, profit and Loss Account, Balance Sheet, Final Accounts Classification of Capital and Revenue.
9. **Consignment of Accounts:** Meaning Terms Accounting Entries in the Books Consignor.
10. **Accounting for joint venture:** Meaning Methods of Recording joint and Separate Venture Transactions, Recording in the Books of Books Of One Co-venturer only, All Co- venturers.
11. **Accounting for Non-profit Seeking Organizations:** Meaning Distinction Between profit and Non-profit Seeking Organization Receipts& Payment Account Income and Expenditure Account, Meaning and Accounting Treatment of Some Peculiar Items, Preparation of a Receipts& Payment Account.
12. **Accounts form incomplete records:** Meaning Reasons and Limitation of incomplete records, Preparation of Accounts, Final Accounts Method, Hints for Tracing Missing Information.
13. **Accounting for Partnership Firms-Fundamentals :** Meaning Essential Elements and Nature of a partnership, Partnership Deed, Maintaining Capital Account of Partners, Treatment of Interest on Capital Calculation of Interest on Capital & Drawings, Calculation of Commission to a Partner, Division of Profit among partners, Goodwill .
14. **Accounting for Partnership firms-Retirement/Death of Partner:** New profit sharing ration and gaining ration, Treatment of Goodwill, Adjustment for reserves and Accumulated Profit/Losses, Adjustment of Capitals, Disposal of the amount due to the retiring partner.
15. **Partnership-Dissolution of firm :** Dissolution of Partnership Vs. Dissolution of a firm , Settlement of Accounts (Section 48), Treatment of firm's debts and private debts(Sec.49), Realization Account, Accounting Entries.
16. **Final Account of a Company:** Meaning, Distinction between a company's and firm's Balance sheets.

**Subject Name:** PRACTICAL

