

## Semester II

### 201: Computer Organization and Architecture

(5 Credits, 3L+2T)

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**Objective:** Main objective of this paper is to learn structure and functioning of various hardware components of digital computer. Also study the interactions and communication among these hardware components.

#### Learning Outcomes:

At the end of this course, student should be able to understand

- Simple machine architecture and the reduced instruction set computers.
- Memory control, direct memory access, interrupts, and memory organization
- Basic data flow through the CPU (interfacing, bus control logic, and internal communications).
- Number systems, instruction sets, addressing modes, and data/instruction formats.

**Text Book(s): M Morris Mano Computer systems Architecture third edition Prentice Hall of India Publication**

#### **UNIT 1.Introduction To Digital Computer – (10L)**

Data Representation – Data Types – Complements – Arithmetic Operations – Representations – Fixed – Point, Floating – Point , Decimal Fixed – Point – Binary Codes- Logic Gates, Boolean Algebra, Map Simplification – Combinational Circuits: Half-Adder, Full Adder- Flip Flops - Sequential Circuits

#### **Unit 2.Introduction To Digital Components And Micro Operations – (8L)**

ICs – Decoders – Multiplexers – Registers – Shift Registers – Binary Counters – Memory Unit – Register Transfer Language – Register Transfer – Bus And Memory Transfers – Arithmetic, Logic And Shift Micro Operations , Arithmetic Logic Shift Unit.

#### **Unit 3.Computerorganization And Programming – (10L)**

Instruction Codes – Computer Registers – Computer Instructions – Timing And Control – Instruction Cycle – Memory Reference Instructions – I/O And Interrupt – Machine Language – Assembly Language – Assembler - Program Loops – Programming Arithmetic And Logic Operations – Subroutines – I/O Programming.

**Unit 4: Memory Organization And CPU – (10L)**

Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware – CPU: General Register Organization – Control Word – Stack Organization – Instruction Format – Addressing Modes – Data Transfer And Manipulation – Program Control, RISC

**Unit5: Input – Output Organization – (7L)**

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes Of Transfer – Priority Interrupt – DMA – IOP – Serial Communication

## SEMESTER II

### 202: Applied Database Management Concepts using Oracle

No. of credits: 5

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**Objectives:** The main objective is to teach the concepts related to database its techniques and operations. SQL (Structured Query Language) is introduced in this subject. This helps creates strong foundation for application of data design.

**Learning Outcomes:** At the end of this course, student should be able to (a) Simple Query using sample datasets (b) Complex queries using SQL.(c) Writing PL/SQL blocks

**Pre-requisites:** Concept of Database Management Systems

**Text Books:**

1. Ivan Bayross SQL, PL/SQL The Programming Language of Oracle 3rd Revised Edition  
BPB Publications
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**Unit I: Introduction to Relational Database Management System:**

DBMS VS RDBMS, CODD's Rules, Introduction to Oracle: History, Features, Versions of Oracle, Database Structure: Logical Structure and Physical Structure, Oracle Architecture: System Global Area Processes: Server Processes, Background Processes. Tools of Oracle.

**Unit II: SQL and Components of SQL:**

Defining a database in SQL, Components of SQL: DDL, DML, DCL, DQL, SQL query Rules, Data types, Keywords, Delimiters, Literals. DDL Commands – Defining a database in SQL, Creating table, changing table definition, removing table. Truncating Table. DML Commands- Inserting, updating, deleting data, DQL Commands: Select Statement with all options. Renaming table, Describe Command, Distinct Clause, Sorting Data in a Table, Creating table from a table, Inserting data from other table, Table alias, and Column alias.

Data Constraints: Primary key, Foreign Key, NOT NULL, UNIQUE, CHECK constraint

### **Unit III Operators:**

Arithmetic, Logical, Relational, Range Searching, Pattern Matching, IN & NOT IN Predicate, all, % any, exists, not exists clauses, Set Operations: Union, Union All, Minus, Intersect.

### **Unit IV: Joins and Oracle Functions:**

Relating data through join concept. Simple join, equi join, non equi join, Self join, Outer join, Subqueries, Aggregate Functions , Numeric Functions, String Functions, Conversion functions, Date conversion functions, Date functions.

### **Unit V: Database Objects:**

Index: Creating index, simple index, composite index, unique index, dropping indexes, multiple indexes on table, using rowid to delete duplicate rows from a table, Sequence: Creating sequence, altering sequence, dropping sequence. Views: Using and defining, modifying, deleting. Insert / Drop / filter view. Complex view.

### **Unit VI: Introduction to PL/SQL programming:**

Introduction, Advantages, PL/SQL Block, PL/SQL Execution Environment, PL/SQL Character set, Literals, Data types, Variables, Constants, Displaying User Message on screen, Conditional Control in PL/SQL, Iterative Control Structure: While Loop, For Loop, Goto Statement.

### **Unit VII: Advanced Programming Techniques of PL/SQL:**

**Cursors:** Introduction, Types of Cursors: Implicit Cursor, Explicit Cursors, Parameterized cursors, Programs on cursors,

**Triggers:** Introduction, Use of triggers, Types of Triggers, Creating triggers, Examples on Triggers,

**Stored Procedures / Functions:** Introduction, How oracle executes procedures/ functions, Advantages, How to create Procedures & Functions, Examples.

**Error Handling in PL/SQL** Exception Handling & Oracle Engine, Oracles Named Exception Handlers, User Named Exception Handlers.

## **SEMESTER II**

### **203: C- Programming – II**

**No. of credits: 05**

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**Objectives :** This is a Second course in programming. The objective of this paper is to teach the advanced concepts in C Language. Emphasis is on semantics and problem solving

**Learning Outcomes :** At the end of the course a student should be able to

- (a) Write good programs in C
- (b) Understand and use C libraries,
- (c) Effectively use Arrays and Pointers
- (d) Use Files in C programs, (e) Introducing Graphics Library functions

**Pre-requisites: C- Programming – I**

#### **Text Books:**

Kernighan and Ritchie, The C Programming Language, Tata McGraw Hill

E.Balagurusamy (2009), Programming with C, Tata McGraw Hill

Yashawant Kanetkar, Let Us C, BPB Publication

#### **UNIT I : Recursive functions**

Effect of function calls, Definition of recursive function, Tracing recursive function, Examples on recursive function

#### **UNIT II : User Defined Data Types**

Key word struct-, structure, declaring structure variable, Accessing structure members, array of structure, arrays within structure, Nesting of structure, size of structure, Examples based on practicing structure, Union – introduction, defining a union, access to members, Difference between Structure and Union, Key word enum and its uses, Key word typedef and its uses, Example on union.

### **UNIT III : Pointers**

Direct and Indirect Access; need of pointers, de-referencing, constant and variable pointers, Semantics of array and function declarations. Using key word const in array declarations, Function pointers, pointers as arguments to functions and as return types, generic pointer void \*, Parsing pointer declarations, Pointer to structure, union, Pointer to pointer, array of pointers, Array as pointer, Dynamic memory allocation – malloc(), calloc(), free(), realloc(), Examples.

### **UNIT IV : File Handling in C**

Concept of a File-File attributes, File organizations, File Access, I/O functions, Defining and opening a file, closing a file, Input -Output operations on files, Programs to create and read files, Error handling functions : feof(), ferror(), Random access to files : ftell(), rewind(), fseek(), Examples to update and read data from file.

### **UNIT V : Preprocessor directives**

Macros #define, #include - header files, extern storage class, Examples, Understanding stdio.h, Understanding assert.h, limits.h, stdlib.h, Understanding alloc.h and Dynamic Memory Management.

### **UNIT VI : Miscellaneous concepts**

Bit-wise operators, Hardware Interface commands e.g. int86, inkey etc, Command line arguments

### **UNIT VII : Graphics in C**

Display modes, Graphics drivers, Initialization in graph mode, <graphics.h> header file, functions in graphics library, Input and output in graphics mode.

**Semester: II**  
**204: Financial Management and Accounting**  
**Credit: 4**

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**Objectives:**

1. To orient the students to basic concepts of accounting, costs
2. To make them understand the techniques of management accounting
3. To make them understand the concepts of financial management
4. To give the dimensions of three aspects finance application background in IT packages

**Learning outcome:**

At the end of the course the students shall be able to

1. The student shall be able to have basic understanding necessary for development of software for accounting and cost and finance
2. Interrelation of concepts as dimensions of financial management process.

**Prerequisites:** Good understanding of nature of business expenses and income/ revenue

**Recommended Books:**

1. Ashok Sehagal and Deepak Sehagal , Financial Accounting – Taxman
  2. Tulsian – Financial Accounting
  3. Jain Naramg – Cost Accounting Principles and Practice
  4. I.M. Pandey ,FinacialMangementVikas Publishing House
  5. Book Keeping and Accountancy, M.G. Patkar
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## **Syllabus:**

### **Unit 1 : Introduction to Financial Accounting**

Principles of double entry book keeping, preparation of journal , ledger, trial balance and final accounts ( Trading and Profit and Loss Account and Balance Sheet ) for a sole proprietor. Accounting concepts and conventions

### **Unit 2 : Introduction to Cost and Techniques**

Concept of cost , classification of cost and preparation of cost sheet , Budgetary Control – concept and importance, Simple problems on flexible and cash budget

### **Unit 3 : Standard and Marginal Costing**

Concept of Standard Cost , Variance , advantages and limitations , Computation of basic variances of material and labour cost , concept of marginal cost P/V ration . Contribution, BEP, Margin of Safety and problems on above

### **Unit 4 : Introduction to Financial Management :**

Scope and Nature of Financial Management, Consideration while preparing financial plan.

Concept of Profit Maximization and Wealth Maximization .

Advantages and Limitation of Long Term Sources of Finance, Venture Capital

### **Unit 5 : Sources of Short Term Finance**

Concept of inventory management and EOQ.

Concept of Working Capital and factors affecting working capital, simple problems on estimation of working capital.

### **Unit 6: Investment Decision**

Concept of Time value of money, Risk and Return, Simple problems on Capital Budgeting Techniques – Simple Pay Back , Discounted Pay Back , NPV, ARR, Profitability Index

Ratio Analysis : ( At theory level ) significance of ration with reference to examples of leverage ,profitability , activity, liquidity ratio



## Semester: II

### 205: Lab on C Programming – II and Oracle

No. of Credits: 2

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**Objective:** The objective of this course is to develop logical abilities of students using C language as a vehicle. Students will be exposed to C programming language with an emphasis on semantics and problem solving.

#### Learning Outcomes:

1. provide foundation for programming
2. enable the students to analyze and efficiently solve the problems using C language

#### List of Laboratory Experiments:

List of problems expected to be solved using C Programming and Oracle are to be given by faculty. The bellow gives few problems of C Programming II. As this list represents example problems; the problems discussed and given to solve are not restricts only to this.

1. Write a program to sort a set of names stored in an array in alphabetical order using pointers.
2. Write a program to delete all vowels from a sentence using pointers. Assume that sentence is not more than 80 characters long.
3. Write a program that will read a line and delete from it all occurrences of the word 'the' using pointers.
4. Write a program to count the number of occurrences of any two vowels in succession using pointers.
5. Implement following built-in functions as user-defined functions;  
strlen() → mystrlen(), strcat() → mystrcat(), strcpy() → mystrcpy(), substr() → mysubstr, strcmp() → mystrcmp()
6. Write a program to find whether a string is a palindrome string or not.
7. Write a program to display contents of a file in uppercase letters.
8. Write a program to count characters, spaces, tabs and new lines in a file.
9. Write a program to copy the contents of one file to another file.
10. Write a program to receive strings from keyboard and write them to a file.
11. Write a program to read strings from a file and display them on screen.
12. Write a program to store data corresponding to a book (title, price and number of pages) using a structure and display the entire information.
13. Write a program to store day, month and year using a structure and determine tomorrow's date.
14. Write a program to display students list in ascending order.
15. Write a program to display mark-sheet of students using structure.
16. Write a Program to display shopping-bill of a customer using structure.
17. Write a program to shift an unsigned integer left if the count of number of 1s is positive and right if it's negative (create functions).
18. Write a program to copy the contents of one file to another file using command line arguments.

**Semester: II**

**206: Minor Project-I**

**No. of Credits: 2**

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**Objective:** The objective of this course is to develop skills to solve a problem which requires more efforts than laboratory experiment; this also demands that students has to work in a group and distribute work to solve problem. Finally student document work as dissertation and evaluated it by panel of examiner. Examiner expected to evaluate on their work by testing the functionality of project and content of dissertation along with judging contribution of individual.

**SEMESTER II**

**207 : Business Communication**

**No. of Credits : 2**

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**Objectives:**

The objective is to acquaint undergraduate students with required communication skills.

**Learning Outcomes:**

At the end of this course, student should be able to

- (a) Understand the concept of communication and use of different media
- (b) able to make effective written and oral communication

**Pre-requisites:**

Preliminary knowledge of Business English and basic functioning of business organization

Books :

**Business Communication – Urmila Rai, S.M Rai, Himalaya Publication House, 9<sup>th</sup> edition**

**Taylor Shirley – Communication for Business, Pearson Education**

**Syllabus:**

**Unit 1:** Basic elements of Communication -Concept, Need and Importance, Objectives, Elements of communication, Process, Role of communication in Business, Barriers to communication- physical, semantic and language, socio-psychological, cultural barriers, principles of effective communication

**Unit 2 :** Types – Downward, Upward, Horizontal, grapevine communication, Verbal and Non-verbal Channels – advantages, Methods of communication – pictures, graphs & charts, maps, signs & symbols

**Unit 3:** Media and modes – conventional modes – mail, courier, hand delivery, telegraph, telex, modern communication technology – telephone, cellular phone, sms, voice mail, Fax, e-mail, teleconferencing, websites, notice board, hoardings and bill boards, newspaper and magazines, radio, film, television, internet, Choice of media

**Unit 4 :** Internal and external Communication-Purpose, Formal and Informal communication; Memoranda, Meetings, Notice of meeting, agenda, minutes, resolutions, Circulars , Press Release, Brochures and Product Manuals

**Unit 5 :** Written Communication- Essentials of effective correspondence, formats, types of business letters – enquiries and replies, sales letters, bank correspondence, job application, Report writing-structure of a report, types of reports

**Unit 6 :** Oral communication - Presentation skills, Group discussion skills, Negotiation skills, telecommunication skills,

**Web References:**

<http://www.englishclub.com/business-english/correspondence-samples.htm>

<http://www.writeexpress.com/writing-easy-letters.html>

<http://www.4hb.com/letters/>

<http://www.businessletters.in/>