Mandsaur University

Subject Name	L	T	P	Credits
Computer Science & Information Technology	2	1	4	5

Course Objectives:

- To impart knowledge about the structure, components and functions of a computer system.
- To understand working of basic input and output devices.
- To learn about the binary number representation along with its operations.
- To learn about internet and its protocols
- To learn about latest trends in information technology

Unit-I

Introduction to computers: Computer system concept, characteristics of computer, generations and types of computer, components of computer system, Booting process , classification of digital computer system, organization of computers. **Computer software and hardware** - Software: System software, application software, firmware, Programming languages classification: machine language, assembly language & high-level language.

Unit-II

Evolution of programming languages: first generation, second generation, third generation & fourth generation language, Language translator: Compiler, Interpreter, and Assembler. Hardware: Input and Output devices, Storage devices. **Organizing Information:** Data and Information, Need for information and Computerization, Qualities of Information, Value of Information, Decision making, Data Concepts, Data processing stages and types, Files and databases.

Unit-III

Information Technology and its Impacts: Information Technology, Role of computer-based information systems, the information society, information Technology hardware, information technology software, Social and Economic Impact of Information Technology, IT in Government, The Digital Divide, The evolution of the Internet and its impact, IT in developing countries, IT and
Gender, IT implementation in organizations, Social/Legal/Ethical issues of Information Technology.

Unit-IV

Internet, Security and E-commerce: Introduction, Internet basic, Internet protocols, Internet addressing, Browser WWW,E-mail, telnet, ftp, application, benefits and limitation of internet, electronic conferencing, and teleconferencing. Introduction to Cryptography, Security, E-commerce & its applications, M-Commerce, Data Privacy, Introduction to IT Act, Digital Signatures, Electronic Governance.

Unit-V

Latest IT Trends and Role of IT: Artificial Intelligence, Computational Intelligence, Geographic Information System (GIS), Data Mining. Role of IT: Role of IT in different Area–Education, Industry, Banking, Marketing, Public Services and others.

Books:

1. Computer fundamentals: By V. Rajaram; PHI
2. Fundamentals of IT: Leon and Leon; Leon Tec World
3. D.H. Sanders," Computers Today", Mc Graw Hill, 1988.
4. "Computer Science, an Overview", J. Brookshear, Addison Wesley, 2000.
5. "Computers in Your Future", Meyer, Baber & Pfaffenberger, Que (Macmillan/Prentice-Hall), 1999.
6. "Information System Management", S K. Bansal, APH Publishing Corporation

Course Outcomes:

- Student will be able to learn about
- Classify computers in different categories based on their capabilities.
- Describe the major components of computers and information technology applications: Hardware, software, data, processes, computer networks and people.
- Impact of information technology on society

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Subject Name	L	T	P	Credits
Programming in C	2	1	4	5

Course Objectives:

- The course aims to provide exposure to problem-solving through programming.
- It aims to train the student to the basic concepts of the C-programming language.
- This course involves a lab component which is designed to give the student hands-on experience with the concepts.
- Illustrate the flowchart and design an algorithm for a given problem and to develop C programs using operators.
- Develop conditional and iterative statements to write C programs

Unit I

Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance; algorithms & flowcharts; Characteristics of a good program – accuracy, simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/conventions of coding, documentation, naming variables; Top down design; Bottom-up design.

Unit II

History of C; Structure of a C program, Data types; Constant & Variable; Operators & expressions; Control Constructs – if-else, for, while, do-while; Case statement; Arrays; Formatted & unformatted I/O; Type modifiers & Storage classes; Ternary operator; Type conversion & type casting; Priority & associativity of operators.

Unit III

Functions; Arguments; Return value; Parameter passing – call by value, call by reference; Return statement; Scope, visibility and life time rules for various types of variable, static variable; Calling a function; Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples.

Unit IV

Special constructs – Break, continue, exit(), goto & labels; Pointers - &and * operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc(), calloc(), free(); String; Pointer to function, Function to parameter, Structure – basic, declaration, membership operator, pointer to structure, referential operator, self referential structures, structure within structure, array in structure, array of structures; Union – basic, declaration; Enumerated data type; Typedef; Command line arguments.

Unit V

File handling and related functions; printf & scanf family; C preprocessor – basics, # Include,# define,# undef, conditional compilation directive like #if, #else, #endif, #ifdef and #ifndef; Variable argument list functions.

Reference Books:

1. Kerninghan & Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.

Course Outcomes

- Identify situations where computational methods and computers would be useful.
- Given a computational problem, identify and abstractthe programming task involved.
- Approach the programming tasks using techniques learned and writepseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Exercise files concept to show input and output of files in C
- Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables
- Exercise conditional and iterative statements to Write C programs

List of Experiments

1. Write a program for simple arithmetic operations?
2. Write a program for finding greatest number among two numbers?
3. Write a program for the greatest number among the three numbers?
4. Write a program for finding an even or odd number?
5. Write a program for finding leap year?
6. Write a program to swap two numbers using a third variable?
7. Write a program to swap two numbers without third variable?
8. Write a program for printing of table which is given by the user?
9. Write a program for printing of table with valid condition?
10. Write a program to print in * in the pattern pyramid?
11. Write a program to print binary number (0, 1) in pyramid pattern?
12. Write a program to find the largest number among two numbers using ternary operator?
13. Write a program to check given number is prime or not?
14. Write a program to generate the Fibonacci series?
15. Write a program for finding sum & average of array element?
16. Write a program to calculate the area of giving the shapes: 1. Circle 2. Triangle 3. Rectangle 4. Square using switch case statement?

17. Write a program to swap two numbers using a third variable to function?
18. Write a program to swap two numbers without using a third variable to function?
19. Write a program for triangle to the given pattern

```
*
* *
* * *
* * * *
* * * * *
```

20. Write a program for pyramid to the given pattern

```
*
* *
* * *
* * * *
```

21. Write a program for finding reverse number which is given by the user?
22. Write a program for finding the sum of the given number?
23. Write a program to find even or odd number using functions?
24. Write a program to find largest and smallest element from an array?
25. Write a program for finding the sum of two matrices?
26. Write a program for finding the factorial number?
27. Write a program finding factorial using recursion?
28. Write a program finding power of a given number using recursion?
29. Write a program to print Fibonacci series using GOTO?
30. Write a program of special constructs using continue?
31. Write a program of special constructs using break?
32. Write a program to store information of student using structure?
33. Write a program to find the address of a variable using pointer variable?
34. Write a program finding power of a given number?
35. Write a program to connect two strings using string function?
36. Write a program to compare one string to another string using string function?
37. Write a program to calculate the length of string using string function?
38. Write a program to copy one string to another string using string function?
39. Write a program to copy one string to another string without string function?

40. Write a program to calculate the area of a circle using the macro function?
41. Write a program to include user defined header file in C Program.?
42. Write a program to check macros which is defined or not in the program?
43. Write a program to a read one character from the file using file function?
44. Write a program to a write one character to the file using file function?
45. Write a program to append one character to the file using file function?
46. Write a program to read numbers and characters from the file using file function?
47. Write a program to write numbers and characters to the file using file function?
48. Write a program to append numbers and characters to the file using file function?

Mandsaur University

Subject Name	L	T	P	Credits
Client Side Scriptings	2	1	4	5

Course Objectives:

- To learn about web technologies.
- To learn developing web pages using HTML.
- To learn web designing using Cascading Style Sheet.
- To learn JavaScript to validate and make dynamic website.
- To learn basics of XML, JavaScript, AJAX.

Unit-I

Introduction - What is scripting, Difference between client side and server side, Concept of WWW, Protocols, web servers, Web designing, Concepts of effective web design, Web design issues, Display resolution, Look and Feel of the Web site, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation, Various browsers.

Unit-II

HTML - Concept of hypertext, HTML features, Uses, Versions, tags, HTML5 and various features, Various tags, Table creation, Formatting tags, style tag, bookmarks and cross reference using HTML, Paragraph, Lists, Frame, Basic forms and meta tags, Iframe, Audio, Video, Article and various new tags introduced in HTML5,Overview of DHTML and XHTML.

Dynamic HTML: Filters and transitions, Data binding with tabular data control binding to IMG, TABLE, Structured graphics, Active controls.

Unit-III

Cascading Style Sheet - CSS introduction, Defining and using Simple basic CSS, CSS framework, Cascading Style sheets in line styles, style element External style sheet, text flow and Box model, user style sheets, various tag selectors, Overview of CSS3 and its features, HTML5 and CSS3, Linking CSS file with HTML code.

Unit-IV

Advanced JavaScript - Introduction, Core features, Data types and Variables - Operators, Expressions, and Statements, Functions, Objects, Array, Date and Math related Objects, Document Object Model, Event Handling, validations, Loops, Popup boxes. Browser Management and Media Management , Classes, Constructors, Object-Oriented Techniques in JavaScript – Object constructor and Prototyping - Sub classes and Super classes, Overview of JSON.

Angular JS - Overview of Angular JS, Angular modules, directives, controllers, scopes, filter, services, events, forms, validation.

Unit-V

XML - Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Using XML with application, Transforming XML using XSL and XSLT,

Ajax Framework - Introduction to AJAX Creating an XMLHttp Request Object, Basic communication techniques with server, Interact with XML files in the Web Server, Implementing basic AJAX techniques.

JQuery - JQuery Introduction, JQuery Selectors, JQuery and DOM, JQuery and Events, JQuery and AJAX, JQuery and UI, Animation and effects.

Books:

1. HTML and Web designing - Kris Jamsa and Konrad King
2. HTML 5, Black Book, dreamtech Press
3. Ajax for Beginners - Ivon Bayross Sharanam Shah
4. Web Technology - N.P. Goplan, J.Akilandeswari
5. Internet Technology and Web Design - ISRD Group
6. Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.
7. David Flanagan, "JavaScript: The Definitive Guide, Sixth Edition", O'Reilly Media, 2011
8. AJAX: The Complete Reference, By Thomas Powell

Course Outcomes:

- Learn to plan deploy and making effective website.
- Analyze a web project and identify its elements and attributes in comparison to traditional projects.
- Understand, analyze and create web pages using HTML, DHTML and Cascading Styles sheets.
- Understand, analyze and build dynamic web pages using JavaScript (client side programming).
- Understand, analyze and build interactive web applications using AJAX, JQuery.
- Understand, analyze and create XML documents and XML Schema.

Subject Name	L	T	P	Credit
Mathematical Foundation of Computer	3	1	-	4

Unit-I

Sets theory, Relations and Functions: Sets, Subsets, Power sets, Complement, Union and Intersection, Demorgan's law Cartesian products. Relations: relational matrices, properties of relations, equivalence relation. Functions: Injection, Surjection and Bijective mapping, Composition of functions, the characteristic functions and Mathematical induction.

Unit-II

Proportions & Lattices: Proposition & prepositional functions, logical connections, truth-values and truth table, the algebra of prepositional functions, the algebra of truth values, applications (switching circuits, basic computer components). Partial order set, Hasse diagrams, upper bounds, lower bounds, maximal and minimal element, first and last element.

Lattices: Lattices, sub lattices, Isotonicity distributive inequality, Lattice homomorphism, lattice isomorphism, complete lattice, Complemented lattice distribution lattice .

Unit-III

Group theory and Fields: Group axioms, permutation group, sub group, co-sets, normal subgroup, semi group, Lagrange theorem, fields, minimal polynomials, reducible polynomials, primitive polynomial, polynomial roots, applications.

Unit-IV

Graphs: Finite graphs, incidence and degree, isomorphism, sub graphs and union of graphs, connectedness, walk, paths, and circuits. Eulerian graphs, tree properties of trees, pendant vertices in tree, center of tree, spanning trees and cut vertices, binary tree ,matrix representation of graph, incidence and adjacency matrix and their properties, applications of graphs in computer science.

Unit-V

Discrete Numeric function and Recurrence relation: Introduction to discrete numeric functions and generating functions, introduction to recurrence relations and recursive algorithms, linear recurrence relations with constant coefficients, homogeneous solutions, particular solutions and total solutions.

Books:

1. J. P. Trembley & R. P. Manohar, "Discrete Mathematical Structure with applications to Computer Science".
2. Kenneth H. Rosen-203, "Discrete Math & its Applications" 5th ed.
3. K. A. Ross and C. R. B. Writht, "Discrete Mathematics ".
4. Bernard Kolman & Robert C. Busby, "Discrete Mathematical Structures for Computer Science".

Subject Name	L	T	P	Credits
Communication Skills & Behavioural Management	3	1	2	5

Objectives

To equip the students with the necessary concepts, techniques and skills of communications to communicate with others, inspire them and enlist their activity and willing cooperation in the performance of their jobs.

Course Contents

Unit-I

Nature and Role of Business Communication: Introduction, Meaning, Definition, Function, Characteristics, Importance, Process, Function and Objective of Communication.

Unit-II

Perceptions and Realities: Different Forms of Communication and their importance, (**Media of Communication, Verbal, Non - verbal, Formal - Informal**) Barriers to communication.

Unit-III

Written Communication: Individual communication-Letters and Memos Group Communication-Circulars & Notifications; Report Writing and Business Proposal; Writing Curriculum Vitae; Mass Communications-News- Letters, Publicity Handouts, Instructions and Manuals ;Electronic Communication-Fax, e-mail, Internet and Multimedia, Legal Communication, Proposals, Agreements, MOU's & Negotiations; Public Speaking; Handling the Press; Business Etiquette

Unit-IV

Employability and Corporate Skills : Interview skills, Group Discussion, Time management and effective planning, Decision making and Negotiation skills, People skills, Team work, development of leadership qualities, Integrated Speaking and Presentation Skills.

Unit-V

Business Correspondence: Business Letters, Parts & Layouts of Business Letters, Application, Calling/ Sending Quotations/ Tenders/Orders/ Complaints.

Books:

1. Meenakshi Raman, Prakash Singh, Business Communication, Oxford University Press.
2. Communication for Science & Engineering, by Dr. Binod Mishra & Sangita Mishra
3. Business Communication by Dr. R.C. Sharma, Dr. Neeta Sharam
4. Communication Skills, Satya Prakashan, K.K.Ramchandran; Lakshimi.K.K.Karthik
5. Business Communication; Fisher, D
6. Communication in Organizations; 2nd Edition, Jaico Publishing House, Delhi.