



# Shri Vaishnav Vidhyapeeth Vishwavidhyalaya, Indore

## Institute of Computer Applications

Name of Program : MCA

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCCA102	COMPULSORY	Introduction to Programming Languages through C	3	1	4	6	60	20	20	30	20

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

\***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

### Course Education Objective (CEOs):

The languages that programmers use are constantly changing, and the popular languages of today will surely be replaced by new ones. The objective of this course is to provide students with a working knowledge of the basic principles underlying the design of all computer programming languages.

**Course Outcome (COs):** Students completing this course should be able to quickly learn to effectively use new computer programming languages. In particular, after taking this course students should be able to do the following:

- Evaluate programming language features and designs.
- Solve problems using the functional, object-oriented, and declarative paradigms.
- Describe the strengths and limitations of the imperative, functional and object-oriented paradigms for solving different kinds of problems (or in different application domains), especially in relation to each other.
- Explain and answer questions about specific languages that illustrate different paradigms, including questions about relevant concepts and major features.
- Design, define, and evaluate parts of programming languages or similar systems and justify your design decisions.

### Unit I:

  
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**Concept of problem solving,** Problem definition, Flowcharting, Decision table, Algorithm. Introduction to Programming, Program Development Life Cycle, Characteristics of a good program - accuracy, simplicity, robustness, portability, minimum resource and time requirement, modularization; Categories of Programming Languages, Programming Paradigms: monolithic, Procedural, structured, Non Procedural Types of errors in programming Debugging.

### UNIT II:

**Overview of C:** History of C, Features of C, Structure of C program. Elements of C: C character set, identifiers and keywords, data types: primitive and user defined, Constants and variables.

**Operators and Expressions:** Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their precedence and associativity, Type modifiers and type casting. Control Structures – Statement Level, Compound Statements, Selection, Iteration.

**Input/ Output:** Unformatted and Formatted I/O functions in C.

### Unit III:

**Functions:** Definition, prototype, Function call, parameters, parameters passing – call by value, call by reference. Return value. Storage Classes in C: auto, extern, register and static storage class, their scope, storage and lifetime of variable, design issues for functions, recursion, Recursion v/s Iteration, types of recursion. Special constructs – Break, continue, exit(), goto and labels;

**Arrays:** Definition, Access of Elements, initialization; Multidimensional arrays, character arrays.

### Unit IV:

**Pointer:** address and dereferencing operators, declaration, assignment, initialization, comparison, conversion and arithmetic of pointers. pointer to pointer. pointer and arrays, Array of pointers and its limitation, Dynamic memory management using functions like malloc(), calloc(), realloc(), free() etc.. Function returning pointers; Pointer to function, Function as parameter.

**Structure:** Structure –basic, declaration, membership operator, pointer to structure, referential operator, self referential structures, structure within structure, array in structure, array of structure

### Unit V:

**Pre-processor directives:** #include, #define, #undef, #if, #ifdef, #ifndef, #else, #elif, #endif, #error, #pragma. Predefined macros. Command line arguments. Variable argument list functions.

### List of Experiments:

1. Define an algorithm and flowchart. Draw algorithm and flow chart for a program that converts an input Fahrenheit degree into Celsius equivalent.
2. Write an algorithm and a C program to find the greatest among three numbers.



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3. WAP to print an input string in lower case, upper case and mixed case using library function.
4. WAP a C program to reserve an input number.
5. Draw a flow chart to find prime number from 1 to 100.
6. Write a C program to obtain the sum of first n terms of the following series:  
 $X - X^3/3! + X^5/5! - X^7/7! + \dots$
7. WAP to calculate factorial of a number using different loops.
8. WAP to calculate factorial of a number using recursion.
9. WAP in C to generate Fibonacci series.
10. WAP in C to generate Pascal triangle.
11. WAP in C to swap value and address of two variables.
12. WAP in C to search a given element in an array using linear and binary search.
13. WAP to sort an integer array in ascending and descending order according to user's choice.
14. Write a menu driven program to perform matrix addition, subtraction and multiplication.
15. Write a program to sum diagonal elements of two matrices.
16. WAP a C program to reverse a string by recursion.
17. WAP using structure in C to generate student mark-sheet for 3 students with student details name, course, and semester and with marks in 5 subjects, assume max mark in each subject as 100 and passing marks as 35.

### Suggested Readings:

1. Kanitkar Yashwant, 'Let us C', BPB New Delhi
2. Balaguruswami, 'Ansi C', TMH, Delhi
3. Kerninghan & Ritchie, "The C programming language", PHI
4. Schildt, "C: The Complete reference" 4th ed TMH.
5. Cooper Mullish, "The Spirit of C", Jaico Publishing House, Delhi
6. Byron S. Gottfried, "Programming with C", Schaum's Outline Series McGraw-Hill, II-Ed.
7. Concepts of Programming Languages Robert .W. Sebesta 8/e, Pearson Education, 2008.
8. Programming Language Design Concepts, D. A. Watt, Wiley dreamtech, rp-2007.



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MCCA104	COMPULSORY	PC Software	3	1	4	6	60	20	20	30	20

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### Course Educational Objectives (CEOs):-

1. To provide the knowledge of using different software packages including word processor, electronic spreadsheet, presentation s/w
2. To develop an understanding of database management system
3. To explain how to integrate the data stored in word processor, spreadsheet etc.
4. To develop presentation skills using these software.

### Course Outcome (COs):-Students will be able to

1. To create word documents and to format them using various tools available
2. To create tables and manipulate them
3. To use mail merge, labels
4. Creating spreadsheet for storing and managing data using functions
5. Format, print spreadsheet
6. Create power point presentation for different purposes using objects, animation
7. To store and manipulate data stored in databases.
8. To export and import data stored from and to, among word processor, spreadsheet, DBMS, presentation s/w

### Unit – 1

Windows Basics – Introduction to word processor– Editing a document - Move and Copy text - Formatting text & Paragraph – Enhancing document – Columns, Tables and Other features.

  
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### Unit – 2

Introduction to worksheet and shell – getting started with Excel – Editing cell & using Commands and functions – Moving & Copying , Inserting & Deleting Rows & Columns - Printing work sheet.

### Unit – 3

Creating charts – Naming ranges and using statistical, math and financial functions, database in a worksheet – Additional formatting commands and drawing toolbar – other commands & functions – multiple worksheet and macros.

### Unit – 4

Power Point Presentation: Introduction, Power point Environment, Creating a Presentation, Applying Slide Layouts, Using Presentation Views, Formatting, Using Text, Inserting clips Arts and Smart Arts, Adding Charts, Table and Objects, Applying Transitions, Animation effects, Formatting and Checking text, Using Video and Sound, Modifying Visual elements, preparing a complete presentation, Case studies.

### Unit – 5

**DBMS:** Introduction, Basic terms of access, objectives, What is database, Creating a new database, Creating a database through table wizard, Creating a new table, Rename columns, Saving the database, Relationships, Creating table through design view, Query, Form, Reports.

### List of Experiments:

1. To open and practice of OS – Folder related operations, My-Computer, window explorer, Control Panel,
2. To create, save and editing of Text files using word processor.
3. Formatting and printing of document (setting of margins, size, orientation, different breaks etc. Checking of spelling and use of thesaurus
4. Creating, inserting tables, header, footers, hyperlink, different objects in a document.
5. Use of Charts in Word processor.
6. Creating a mail merged documents, labels
7. Creating and manipulating spreadsheets. To create, save and editing of spreadsheets. Use of cell references, sorting and filtering data in a spreadsheet, using formulae.
8. Formatting and printing of spreadsheets (setting of margins, size, orientation, different breaks etc. What if analysis, mail merging.
9. Creating header, footers, hyperlink, different objects in a spreadsheet.
10. Creating different types of graphs and printing.
11. Creation, editing and formatting presentation slides.
12. Create presentation for different purposes using objects, animation.
13. Creation and manipulation of database table using SQL.
14. To store and manipulate data stored in databases.
15. To export and import data among word processor, spreadsheet, DBMS, presentation s/w.



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### Suggested Readings:

1. Taxali R. K. "PC Software for Windows 98, Made Simple" TMH.
2. Saxena Sanjay, "MS Office 2000" Vikas Publication House PVT LTD.
3. Busbby M. and Stultz R.A. "Microsoft Office 2000", BPB.
4. Jain S., Geetha M. and Kratika, "Microsoft Office-2007", BPB
5. Microsoft Office – Complete Reference – BPB Publication.

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MCCA105	COMPULSORY	Fundamentals of Computers & IT	3	1	0	4	60	20	20	0	0

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### Course Educational Objectives (CEOs):-

1. To create basic understanding of Computer System
2. To provide knowledge of concepts of Operating Systems
3. To familiarize the students with the need, goal, function and architecture of various operating system available
4. To develop the understanding of trends of IT industry, safe and ethical use of IT

### Course Outcome (COs):-students will be able to

1. To understand the need, goal and function of the OS
2. Understand and use Windows and Linux operating systems commands.
3. Organizing and manipulating files and folders.
4. Understand and Use different editors of Linux
5. Manipulating data using input output redirection
6. Writing shell scripts

  
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7. To exercise the safe computer practices

### UNIT-I

Basic concepts of IT, Data and Information, Data Processing: History, Classification, Types of Computers. Type of languages, organization of computers Hardware: CPU, Memory RAM, ROM, EPROM, PROM and other types of Memory. Input, Output and Storage Devices Configuration of Computer System, Capabilities, Limitations and Applications of computers Software: System and Application Software, Utility packages, Applications of Information Technology:

### UNIT-II

**Translators:** Assembler, Elements of assembly language programming, pass structure of assembler, design of single pass and two pass assemblers. Compiler and Interpreter: aspects of compilation, memory allocation, compilation of expression, compilation of control structures, code optimization.

### UNIT-III

**Linker & Loaders:** Relocation & linking concepts, design of linkers, self relocating programs, a linker for MS DOS, linking for overlays. **Loaders:** A two pass loader scheme, Relocating loaders, subroutine linkage, Direct linking loader, Binders overlays.

**Macros and Macro Processors:** Macro definition & Call, Macro expansion Nested macro calls, advanced macro facilities.

**Software Tools:** Software tools for program development, editors, debug monitors, programming environment, user interfaces.

### UNIT-IV

Concept of Character, Field, Record and File. Master File, Transaction File, Archival File. Keys: Primary Key, Secondary key, foreign key etc. File Organization: Sequential file, Indexed Sequential file, Random files. Multi key organization, multi key access, multi list file organization, inverted files and their definitions, file operations, Comparison of various file organization. Design of Data Files, Files Security and Back- Up.

### UNIT- V

Use of Communication and IT, Introduction to Computer Networks, Types of Network - LAN, WAN, MAN, Internet, Topologies of LAN - Ring, Bus, Star, Mesh and Tree Topologies, World Wide Web and its Applications and Internet Services.

Information Security and Integrity: Basic Concepts, Perverse Software, Preventive Measures and treatments.

  
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1. Raja Raman V., "Fundamental of Computers" (4th edition.), Prentice Hall of India, New Delhi.
2. Trainer T., et al, "Computers", McGraw Hill.
3. Norton, Peter, "Introduction to Computers, Mc-Graw-Hill.
4. B. Ram, "Computer Fundamentals", New Age International Pvt.Ltd.
5. S. Jaiswal, "Fundamental of Computer & IT", Wiley dream tech India.
6. Computers Today, S.K Basandra, Galgotia publications.
7. Fundamentals of Information Technology Alexis Leon & Mathews Leon, Vikas publishing.
8. D.M. Dhamdhare " System Programming & O.S." 2nd Ed., Tata Mc. Graw Hill.
9. Sardes D.H. "Computer's today" McGraw Hill 1988.



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