

**GOVT. HOLKAR [MODEL, AUTONOMOUS] SCIENCE
COLLEGE INDORE**
Academic Year 2024-2025



Affiliated to Devi Ahilya Vishwavidyalaya, Indore

Syllabus for PGDCA

Computer Science

(Faculty of Computer Science)

DEPARTMENT OF COMPUTER SCIENCE

PGDCA

Academic Year 2024-2025

Govt. Holkar (Model Autonomous) Science College, Indore										
Computer Science Department										
Syllabus Session 2024-2025										
Programme: PGDCA							Class: PGDCA I Sem.			
S.No	Paper	Course Title	Course Code	Credits	CCE (Max)	CCE (Min.)	External Assessment Max.	External Assessment Min.	Total Max.	Total Min.
1	Core 1	Fundamental of Computer	PGDCA-11	4	25	9	75	26	100	35
2	Core 2	"C" Programing	PGDCA-12	4	25	9	75	26	100	35
3	Core 3	Operating System	PGDCA-13	4	25	9	75	26	100	35
4	Core 4	PC Software	PGDCA-14	4	25	9	75	26	100	35
5	Core 5	System Analysis and Design	PGDCA-15	4	25	9	75	26	100	35
6	Practical 1	Practical based on Theory paper 2 & 4		2			50			17
7	Project 1	Minor Project Phase I (Analysis Part)		2			50			17
				24	125		475		600	

Mr. Mohit Gupta
Student
Clause 06

Mr. Munish Kumar
Industrial Person
Clause 05

Dr. Ugrasen Suman
Subject Expert
Clause 04

Dr. Sharad Gangele
Subject Expert
Clause 03

Dr. Sanjeev Sharma
Subject Expert
Clause 03

Dr. Pradeep Sharma
Convener & HoD

PGDCA I -Semester
PGDCA-11: Fundamental of Computer
Academic Year 2024-2025

Min. Marks: 26

Max. Marks: 75

Course Outcomes:

1. Learn the basics of computer systems, including numbers, codes, and memory.
2. Understand the history and evolution of computing and different computer generations.
3. Familiarize students with input and output devices and their functions.
4. Grasp key software concepts and programming languages.
5. Apply theoretical knowledge to practical problem-solving in computer-related scenarios.

Unit	Topic
I	Number System: Decimal, Binary, Octal, Hex Representations & Their Conversions. Coding System: BCD, ACCESS-3, GRAY, ASCII, and EBCDIC. Logic Gates.
II	Block Diagram & Components of Computer System CU ALU. Primary Memory: RAM- SRAM & DRAM, ROM-PROM. EPROM, EEPROM, Cache Memory Unified & Split. Secondary Memory: Magnetic-Floppy, Hard Disk, Magnetic Tape, Optical CD, VCD CD-R CD-RW.
III	History & Development of Computer, Generations of Computers. Types of Computers Pentium & Power PC. Bus and its Types, I/O Port, Interconnections, Parallel Processing, RAID.
IV	Input Devices Keyboard Mouse, Trackball Joystick Scanner. Digital Camera OMR Bar-Code Reader, Voice Recognizer Light pen, Touch screen. Output Device: Monitors- Characteristics & Types, Digital, Analog, Size, Revolution, Pixel, Video Standard - VGA SVGA, XGA. Printers- Character Impact & Character Non-Impact, Line Impact & Line Non-Impact Plotters, Speakers.
V	Software: System & Application Software & Their Types. Languages: Machine, Assembly & High Level languages. Generation of Languages. Language Processor: Assembler, Interpreter, Compiler, Linker, Loader & Their Types.

Required Text(s):

1. Fundamentals of Information Technology by Leon
2. Fundamentals of Computers by Abhay Chandwani
3. Fundamentals of Computers by Kamal Prakashan
4. Digital Principles & Applications by Malvina & Leach

PGDCA I -Semester
PGDCA-12: "C" Programming
Academic Year 2024-2025

Min. Marks: 26

Max. Marks: 75

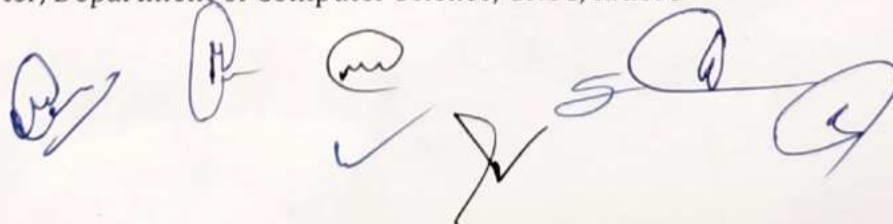
Course Outcomes:

1. Understand various programming languages and their evolution, including 'C'.
2. Learn programming tools like algorithms, flowcharts, and decision tables.
3. Develop the ability to write and edit 'C' programs with confidence.
4. Gain proficiency in fundamental 'C' concepts, including variables, loops, and functions.
5. Learn advanced topics like dynamic memory allocation, pointers, and file handling in 'C'.

Unit	Topic
I	Programming Languages & Language Processor: Machine Language, Assembly Language, Procedural Oriented, Problem Oriented and Natural Languages, Generation of Programming Languages, Structured Programming, Assembler, Compiler, Interpreter, Linker, Loader, Editors. Different Tools for Programming: Features, Advantages & Disadvantages of Algorithm, Flow Chart, Decision Table and Execution Table.
II	Introduction to C Language: History of 'C' Language, Structure and Rules for 'C' program, Header Files, main(), Directory options for running C program. Editing Keys. Basic Terms of C: Tokens, Variables, Expression, Constant & their types, Data Types, Storage Classes, I/O Functions and their types.
III	Control Statements: Decision Control: if-else, Case Control: switch, Loop Control: while, do-while, for & Compression among them. Functions: Function Prototype, Definition, Parameter passing, Recursion & their types. Array: One dimensional, two dimensional & Multi-dimensional Arrays. Structure and Union: Declaration, Initialization and Comparison between them.
IV	Dynamic Memory Allocation: Heap, malloc(), calloc(), free(). Pointer variable, Address operator, Pointer Arithmetic, Pointer to Function, Pointer to Pointer, Pointer to Array, Pointer to Structure, Self-referential Structure, Call by value, Call by reference, Drawback of pointer, Storage classes and library function.
V	Enumerated data types, files, Types of files in C, Defining, Opening & Closing a file, Input-Output operations on files, Different file access modes, Creation of files using structure, File copy & Merging of File, Random access to files, Error handling during I/O operation.

Required Text(s):

1. Programming with C by E. Balaguruswami
2. Programming in C by Denis Ritchie
3. Flying With C by Kamal Prakashan



PGDCA I -Semester
PGDCA-13: Operating System
Academic Year 2024-2025

Min. Marks: 26

Max. Marks: 75

Course Outcomes:

1. Understand the basics of operating systems, including their types and key functions.
2. Grasp process management concepts, including process life cycles, inter-process communication, and deadlock prevention.
3. Learn about process scheduling techniques, both preemptive and non-preemptive, and their applications.
4. Gain knowledge of memory and disk management, including memory allocation and file management.
5. Familiarize yourself with common commands in DOS and Linux for practical use in operating systems.

Unit	Topic
I	Introduction to OS: Definition, Types, Functions, Features: Batch Processing, Multiprogramming, Multiuser, Multitasking, Multiprocessing. Process: Life Cycle, PCB, IPC, Critical section problems. Semaphore. Monitors.
II	Deadlock: Reasons. Methods for Removing deadlocks, Bankers Algorithm Process Scheduling: Preemptive and Non-preemptive scheduling like: FCFS, SJF, Round Robin, Priority Based, MLO. RTS: Real Time OS and its scheduling methods.
III	Memory Management: Static and Dynamic memory management, Internal & External Fragmentation Problem, Paging, Segmentation, Demand paging. File & disk Management: File and Directory concepts and their types. File allocation Methods. Free space management methods, Disk Scheduling Methods.
IV	DOS (Disk Operating System): DOS Basics: Booting, Post, BIOS, FAT, COM.EXE & Batch File, Pipes, and Filters. DOS Commands: Internal: DIR, MD, CD, RD, COPY, DEL, REN, VOL, VER, DATE, TIME, CLS, PATH, TYPE, PROMPT. External: CHKDSK, DOSKEY, XCOPY, MOVE, TREE, DEL TREE LABEL, APPEND, FORMAT, UNFORMAT, PRINT, FDISK, SORT, MORE, ATTRIB, EDIT, SYS, DISKCOPY, DISKCOMP, BACKUP, RESTORE.
V	Linux: History & Features, Linux Structure, File System, Various Flavor of Linux, Process creation & Process identification, Profile & login files. Kernel & shell. Linux Command: ls, cat, who, who am i, cal, clear, date, banner, bc, cd, mkdir, rm, tty, cp, mv, chmod, chgrp, chown, cmp, find, ps, kill, wc.

Required Text(s):

1. Operating System by Bhat
2. Operating System by Achut Godbole
3. Operating System by Tanbum
4. Concepts of Operating System by Kamal Prakashan
5. Linux Complete by BPB Publication

PGDCA I -Semester
PGDCA-14: PC Software
Academic Year 2024-2025

Min. Marks: 26

Max. Marks: 75

Course Outcomes:

1. Master the basics of Windows 95/98, including its key features and common tools.
2. Understand different file formats and applications, enabling efficient file handling.
3. Become proficient in word processing using MS Word, including formatting and editing documents.
4. Develop spreadsheet skills in MS Excel, including working with formulas and data formatting.
5. Create effective presentations with MS PowerPoint, using various features and printing options.

Unit	Topic
I	Windows 95/98: Features, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin. Accessories: Calculator, Notepad, Paint, WordPad, Windows, Explorer & Folder, Multiple users' features of Windows. Dial-Up Networking. Various Types Files & Application Format: .Pdf, .Avi, .Wav, .Zip, .Wmf, .Mp3, .Mpe, .Mpa, .Mti.
II	Word Processor-MSWORD: Introduction to MS Word: Features, Creating, Saving, Opening. Deleting files in Word, Interface, Toolbars, Ruler, Menus. Keyboard, Shortcut Printing document, editing document with Edit Menu. Formatting Documents: Paragraph formats, Aligning Text & Paragraph, Borders & Shading, Headers & Footers, and Macros.
III	Spreadsheet. MSEXCEL Worksheet: Features, Creating, Saving. Opening. Deleting. Quitting, Toolbars: Menus, Keyboard Shortcuts. Working with single and multiple workbooks: Copying, Adding, Moving, Deleting. Working with Formulas & Cell referencing: Auto sum. Copying formulas. Absolute & Relative addressing.
IV	MSEXCEL: Formatting Worksheet: - Auto format, alignment, Character styles, Column width, Date format, Borders & Colors, Currently sign. Previewing & Printing worksheet: Page setting, Print titles, Adjusting margins', Page break Headers and Footers. Graphics & Charts: - Using Wizards, Various charts type formatting grid lines, & Legends, Previewing & Printing charts. Functions: Database, Date & Time, Math's & Trigonometry. Statistical. Text and Logical.
V	Presentation Graphics - MS Power Point: Features and Basic terms, Creating presentation by using Wizards. Toolbars. Menus & Different Views. Working with Slides: Create Move, Copy, Delete, Duplicate, Lay-Outing of Slide, Zoom. Printing Presentation: - Printing Slides, Notes, Handouts, and Outlines.

Required Text(s):

1. PC Software by Kamal Prakashan
2. Microsoft Office 97 by GiniCounter

PGDCA I -Semester
PGDCA-15: System Analysis & Design
Academic Year 2024-2025

Min. Marks: 26

Max. Marks: 75

Course Outcomes: -

1. Understand different types of systems and software engineering models.
2. Learn how to investigate and assess the feasibility of system projects, including cost/benefit analysis.
3. Master information gathering methods and tools for structural analysis and design.
4. Acquire testing skills for ensuring software quality and reliability.
5. Gain practical knowledge in system implementation, post-implementation phases, and UML diagram creation for effective system development.

Unit	Topic
I	System and its type, Different software Engineering Models, Preliminary Investigation for System, Feasibility Study and its types, Cost/Benefit Analysis and its method, information finding Methods.
II	Analysis: Tools for Structural Analysis: Flow Chart, DFD, Data Dictionary, Decision Tree, Decision Table.
III	Design: Input, Output, Form, Database, File. Testing: Black box, White box, Alpha, Beta, Unit, Integration and System SQA.
IV	Implementation: Method of Deployment, System Conversion, User Training. Post Implementation: Planning, Maintenance, Extendibility, Replacement, Case- Study for a project.
V	UML (Unifying Modeling Language): Concept of UML, UML Symbol, Basic UML Terms. UML Diagrams: Use- Case, Sequence, Collaboration, Object, Class, Package, State Chart, Activity etc.

Required Text(s):

1. System Analysis & Design by Awad
2. Software Engineering by Pressman
3. Software Engineering by James S. Sen
4. SAD & Software Engineering by Kamal Prakashan

