Dr. B.R. Ambedkar University of Social Sciences
Dr. Ambedkar Nagar (Mhow), M.P.
School of Computer Science

Syllabus for Post Graduate Diploma in Computer Science & I.T.
Application PGDCA
(One Year, Two Semester Course)
Session 2018-2019 Onwards

BASIC GOALS & OBJECTIES

- To Impart computer science & Application Skills to student of PG, M.Phil and PHD of Brauss.

- To Prepare Very, high quality IT/Computer professionals for a global market by grooming them in IT/Computer and Software Development Skills.

- To Provide an opportunity not only to IT/Computer Professional but also to professional and experts from non-IT/domains to acquire a thorough Knowledge of IT concepts and the capacity to swiftly translate this Knowledge into service in their respective domains.

- To Develop Student Sensitivity and Capability to Continually Respond to changing technology and working environment, by using an 'active Learning' approach.

- To enable Students to accept opportunities in a framework of Professionally sound and quality conscious organization, as well as to take up entrepreneurial ventures.

- To Enable research in Social Science and allied Subjects in Confluence with Computer & IT related field by creating experimental laboratories & exploring Frontiers areas in the IT field.

Dr. B.R. Ambedkar University, of Social Sciences (M.P.)
Syllabus for Post Graduate in Computer Science & Application PGDCA

Two Semester PGDCA Course

CURRICULAM AT A GLANCE

CLASS/SEMESTER	P.G.D.C.A.	CCE 30%	Min.MARKS	TERM END EXAM70%	MIN MARKS	TOTAL 100%	MIN. MARKS	Credit
FIRST SEMESTER	Paper-101 Computer Fundamentals	30	10	70	24	100	34	2
	Paper-102 Programming in C	30	10	70	24	100	34	2
	Paper-103 Office Automation S/W Tools	30	10	70	24	100	34	2
	Paper-104 Analysis & Design of Information System	30	10	70	24	100	34	2
	Paper-105 Ambedkar Thought of Philosophy	-	-	-	-	100	34	2
	Paper-106 Application Project Part-1	30	10	70	24	100	34	2
Total First Sem.						600		12
SECOND SEMESTER	Paper-201 Java Programming	30	10	70	24	100	34	2
	Paper-202 DBMS	30	10	70	24	100	34	2
	Paper-203 (A)OPTIONAL Computer Networks Or Paper-203(B) OPTIONAL Computer Oriented Accounting & Financial Applications Or Paper-203(C) OPTIONAL Computer Oriented Numerical & Statistical Techniques	30	10	70	24	100	34	2
	Paper-204 S/W Lab 1-Java Programming & HTML	30	10	70	24	100	34	2
	Paper-205 S/W Lab II & Oracle	30	10	70	24	100	34	2
	Paper-206 Indian Constitution and Social Change	-	-	-	-	200		4
	Paper-207 Application Project Part-II	30	10	70	24	100		2
Total Second Sem.						800		16
GRAND TOTAL						1400		28

INDIVIDUAL PASSING REQUIRED FOR THEORY AND PRACTICE SUBJECT.

School of Computer Science

PGDCA FIRST SEMESTER
Paper code PGDA 101
COMPUTER FUNDAMENTALS

Max.Marks. 70

Time: 3 hours **Min.Marks. 24**

UNIT-I

Introduction to Computers : Evolution characteristics & capabilities: classification: Analog, Hybrid, Digital: Micro, Mini, Main and Super; Components of computers system: Block Diagram, Input devices. Output devices, CPU. Only preliminary concept of Software, Hardware, Low Level Language. High Level Language. Compiler and Interpreter. Preliminary idea of Multimedia computers and associated basic components.

UNIT-II

Number system : Introduction to decimal. Binary. Octal. Hexadecimal numbers system and their interconversion : Coding: (ASCII, EBCDIC. BCD). Introduction to primary memories (RAM, ROM, PROM and EPROM), Preliminary concept of extended. Expanded and Virtual Memory. Register, Counters. Storage device: Hard disk, Floppy disk (sector, cylinder, track, seek time. Latency time and response time).

UNIT-III

Introduction to Operating System : Definition, function, evolution: (Only preliminary idea of terms: Batch Processing. Multiprogramming, Multiprocessing multitasking, time sharing. On-line processing. Real time, and some popular operating system for PC'S): Introduction to DOS: Internal Commands, external commands (tree, Disk copy. Undelete. Chkdsk, Fdisk, Backup. Restore. Format. Unformat Attrib, Xcopy. Diskcomp): Concept of Wild Cards. Batch files. Config files, filtering. Piping and redirection.

UNIT-IV

UNIX : Structure of UNIX system. Kernel. UNIX File system : Concept of files and directories: File oriented command like cat, cp. grep, pwd. Chmod. mv. rm. pg. passwd. bc: File permission. Directory oriented commands like is, mkdir, cd, rmdir, inter-user communication commands like Write. Mail. Mesg. General utilities commands like echo. Cut. Passwd. Kill, date, wc, sleep, who, ps: Introduction to vi editor.

UNIT-V

Windows : Introduction windows desktop. Start button. Taskbar. Switching between programs and windows. Managing files. Folder and object. Windows explorer. Creating shortcut. Control panel: windows accessories :- paintbrush. WordPad. Customizing windows. Sharing information among application. Network neighborhood. Sharing folders and Printers. Internet explorer.

Books Recommended:

1. Jain Satish: Introduction to Computer Science, BPB
2. Sinha , P.K.: Computer Fundamental, BPB
3. Thomas R: Dos 6 and 6.2 Instant reference, BPB
4. Koparker, P.K.: UNIX for you, TMH
5. MS Windows 95/98 – Tec media Publication
6. Alan Simpson's: Easy Guide to Windows, BPB

School of Computer Science

PGDCA FIRST SEMESTER
Paper code PGDA 102
PROGRAMIN IN C

Max.Marks. 70

Time: 3 hours **Min.Marks. 24**

UNIT-I

C language programming: Principles of good Programming (flowchart. Algorithm). Introduction to C language: The structure of a simple program: simple I O function (scanf. Prinf. Gets. puts. Getchar. getche. Getch): Use of semicolon, braces, Parentheses. Comments and newline character: Data type in C. Assignment Statement, Arithmetic, Arithmetic. Relational & Logical Operators; Conditional operators of operators

UNIT-II

Control Structure: The if-else statements. Nesting of if-else, switch statement. Loops; while and do-while loop. The for loop. Function: Returning a value from a function. Local and Global Variables. Storage classes. Parameters. Type declaration of a function. Function with more than one parameters. Prototype of a function.

UNIT-III

Arrays: Declation and initialization: the break and continue statement: Sorting an arrays. Operations with arrays: searching in array (linear and binary). Sorting an array (Bubble. Selection and Insertion). String & String function: sprint. Stripy. Streat. Strlen. Malloc. Sizeof. Strcmp.

UNIT-IV

Pointers: the Concept of pointers. Passing pointers as parameters, arrays of pointers. Pointer to pointers. Array of pointers to string. Sorting an array. Using pointer. Structures: The consept of structure, Initializing. Arrays of Structures. Arrays within structure. Structures. Within Structures. Passing structures to function, unions, basic graphics functions in Turbo C.

UNIT-V

Files: Files in C Modes for files: Functions used in files (getc. Pute. Fopen fclose. Fscanf. Fread. Fwire. Fprint. Fseek. Ftell. Rewind).Text versus binery files, The C preprocessor. Preliminaries of C preprocessor Directives. (* # define, #undef. #include. #ifdef. #ifdef. #endif. #else. #if). Bitwise operators.

Books Recommended:

1. Gottfried. Programming with C. TMH
2. Rajaraman, Introduction to X. PHI
3. Cooper, mulish. The Sprint of C. An introduction to modern Programming, Jaico Pub. House, N. Delhi.
4. Y. Kanetkar, Understanding Pointer in C, BPB
5. Y. Kanetkar, Let us C, BPB
6. Y. Kanetkar, Exploring in C, BPB

School of Computer Science

PGDCA FIRST SEMESTER
Paper code PGDA 103
OFFICE AUTOMATION-S/W TOOLS

Max.Marks. 70

Time: 3 hours **Min.Marks. 24**

UNIT-I

Introduction to Microsoft Office : The office manager. Sharing information with Microsoft office. The Clipboard. Object Linking and Embedding (OLE) Editing Linked Information, Editing Embedded Objects. Word Processing with Copying from one word Document or Another. Print. Auto format.

UNIT-II

MS WORD : Working with headers. Footers. Endnotes Footnotes. Tabs. Tables sorting working with graphics Importing graphics, sizing and Cropping graphics with the picture command. Drawing objects. Text in Drawing (Word Art). Picture using Drawing objects. Rotating and Flipping and objects. Callouts. Filling: Templates. Wizards: Spelling Checker, Autocorrect. Auto text. Grammar Checker, Word Count and Other Statistics. Creating tables of Contents Index. Macros. Introduction to Mail Marge.

UNIT-III

MS EXCEL : Overview of Excel Features. Rearranging worksheet: Excel Page setup. Changing column widths and row heights. auto format. Manual formatting. Using different styles. Hiding rows and columns, working with multiple worksheets. An Introduction to excel charts features: Instant charts with the chart wizard. Creating charts on separate worksheets. Resizing and Moving chart adding chart notes and arrows. Editing charts. Working with graphics in excel: creating and placing graphic objects. Graphics, Introduction to Excel's command macros. Using worksheets as databases.

UNIT-IV

MS POWERPOINT : Creating presentations. Auto content wizard. Editing slides, working with text in power point. Formatting and Aligning Text: Working with graphics in power point: Importing Images from the outside and drawing in power point. Creating organizational charts. Inserting clipart & pictures/photos in power point presentation. Excel charts in power point. Inserting table from word arranging. Previewing and rehearsing. Transition and building effects. Printing presentation elements creating overhead transparencies.

UNIT-V

MS ACCESS : creation of database tables. Forms. Reports & queries. Use of macros & modules. Creation of relationships among tables, generating simple queries using database. MS-Access with other applications, and Internet. Sharing data between applications. Administering & Securing a database. Writing expression for queries.

Books Recommended:

1. Mansfield R: The Compact guide to MS-OFFICE, BPC
2. Murray : Mastering POWER POINT 6.0 for Windows. BPB
3. Cowart : ABC'S of MS – ACCESS. BPB.

School of Computer Science

PGDCA SECOND SEMESTER
Paper code PGDCA 202
DATA BASE MANAGEMENT SYSTEM

Time: 3hours **Max.Marks. 70**
Min.Marks. 24

UNIT I

Basic Concept:
An Introduction to database System, Database System Architecture, Purpose of DBMS, Data Independency, Basic File System, File Organization: Sequential, Index sequential, Hosting, B- Tree based index, Sequential File Organisation, Detailed design of E-R Data Model. Security & Intergrity: Introduction, Acccess Control. Crypto System,Statistical Database Security ; Concurrency control: Transaction & Locking, Database : Kinds of Failure, Recovery Techniques.

UNIT II

Three Data Models :
An Overview of three Main Data Models i.e. Hierarchical Model, Relational Model and their Intercomparision. Concept of Relation, Relational Algebra: Basic Operation like Union, Intersection, Difference, Product Join. The Power of SQL (Creation, Insertion, Deletion, Indexing & Modification of Databases in SQL).

UNIT III

Normalisation:
Relational Database Design : Integrity Constraints, Functional Dependency: single Value and Multi value Functional dependence, Normal form: I, II, III, Boyce Codd, & IVth Normal forms. Join dependency.

UNIT IV

Introduction to Database and foxfro package:
Ideas of database hierarchy (bit, byte, field, record) : Foxpro commands: create, use, list, display, edit, browse, append, insert, delete, zap, pack, copy, to print, quit, clear, go top, go bottom, modify structure, recall, replace, sort, index locate, continue, seek, search, find, close, Arithmetic, data, time and string function with database using commands functions such as count, aveage, sum, time, day, doe, cdow, year, date,ctod, dtoc, cmonth, month, val, trim, str). displaying informatoin with ? and??.

UNIT V

Programming:
Using Input, Output statements and Conditional statement ACCEPT, INPUT, IF-ELSE-ENDIF, DO CASE-ENDCASE, DO WHILE- ENDTEXT, SKIP, WAIT, STORE , SET commands, Generation of REport, Label and Customized Screen, Use of multiple files: Master file updation, Setting relation.

Books recommended:

1. Henry F. Korth & A. Silbershatz : Data Base System Concepts, MGH
2. C.J Date: Database MAnagement System ,MGH
3. R.K. Taxali: foxpro 2.6, TMH.
4. Arun K. Majumdar & P. Bhattacharya: data Base Management System, TMH
5. Jeffrey O. Ullman : Principles of Database Systems, Galgotia Pub. Co. Ltd.
6. Bipin C. Desai : An Introduction to Database Systems, Galgotia Pub. Co. Ltd.
7. James MArtin: Principles Of Database Management , PHI
8. James Martin , computer Database organization, PHl

School of Computer Science

PGDCA SECOND SEMESTER
Paper code PGDCA 203(A)
COMPUTER NETWORKS

Time: 3hours Max. Marks. 70
Min.Marks. 24

UNIT I

Introduction to Computer Networks:

Basics of data communication. digital vs analog transmission mode of transmission. computer Networks: Goals and kinds (LAN/WAN) . idea of hardware and software requirements for computer networks. intercomparsion of various communication media wireless transmission, various toplogies, bus, ring, tree& mesh. OSI reference model vs TCP/IP.

UNIT II

Data Link Layer:

Reference models: OSI vs TCP/IP , Data Link Layer Design Issues: Framing Error Control and Flow Control, Error Detection & Correction, Elementry Data Link Protocols, Sliding Windows Protocols, HDLC frame packet.

UNIT III

Medium Access Sub Layer:

Medium Access Sublayer: Channel allocation problem. Multiple access protocols: ALOHA. CSMA, Collision tree; Standards in LAN/WAN (CCITT & IEEE), High speed LANs: FDDI , Fast Ethernet; Satellite Networks: Polling, FDM, TDM, CDMA.

UNIT IV

The Network and Transport Layer:

Network Layer design issues, and switiching techniques, Routing, Algorithms, congestion control algorithms, the network layer in the internet; transport layer: Elements of transport services, transport protocols, the internet transport protocol, TCP & UDP.

UNIT V

Application Layers and Network Management:

Network Security : Traditional cryptography, cryptography principles, secret, key algorithms, public key algorithms, Authentication protocol, Domain Name System. Simple Network Management protocol, E-mail. News group, WWW. Future trends in computer networks.

Books recommended

1. Tanenbaum: computer Networks. PHI
2. John Freer: Computer Communication & Network, EWP
3. William stalling; data & Computer Communication, PHI
4. Basandra & Jaiswal : Local Area Network, Galgotia
5. James Martin: Computer Networks & Distributed processing, PHI
6. Uyless Black: Computer Networks, PHI

School of Computer Science

PGDCA SECOND SEMESTER

Paper code PGDCA 203(B)

COMPUTER ORIENTED ACCOUNTING & FINANCIAL APPLICATIONS

Time: 3hours **Max. Marks. 70**

Min. Marks. 24

UNIT I

Accounting: basic concept. conventions and principles. Double entry system. Introduction to basic books of accounts, Journal, Ledger , Closing of books of accounts. Trials balance: Final Accounts. Trading. profit and loss accounts and balance sheet.

UNIT II

Introduction to Financial Management: Meaning and scope: Ratio analysis: Meaning, advantages, Limitations.

UNIT III

Fund flow statements: Meaning Importance. Preparation and Interpretation. Cash flow statement : Meaning , Importance, Preparation and Interpretation.

UNIT IV

Introduction to Costing: Nature Importance Principles and Types. Budget and budgetary control: Nature. Importance, Type (Master budget and flexible budget) and Preparation

UNIT V

Introduction to Computerized accounting System : Coding logics codes required, master files, transaction files, introduction to documents used for data collection. processing of different files and outputs obtained. General idea of accounting packages.

Books Recommended:

1. Shukla & Grevel, Advance Accounts, S. Chand & Co.
2. Sharma &Gupta , Financial Management, Kalyani
3. Sharma & Gupta, Management Accounting, Kalyani.

School of Computer Science

PGDCA SECOND SEMESTER

Paper code PGDCA 203(C)

COMPUTER ORIENTED NUMERICAL & STATISTICAL TECHNIQUES

Time: 3 hours **Max. Marks. 70**

Min.Marks.24

UNIT –I

Computer arithmetic: Floating point numbers – operations – normalization's and their consequences: Iterative methods: Zero of a single transcendental equations and zeros of polynomials using bisection. false position. Newton- Raphson. Convergence of solution.

UNIT-II

Simultaneous liner equations: Solution of simultaneous linear equations- gauss elimination method and pivoting. ILL- conditional equations and refinement of solutions: Gauss- seidal iterative method.

UNIT-III

Numerical differentiation and Integration. solutions of differntial equation: Runga – kutta method: Predietor corrector methods: automatic error monitoring : stability of solution.

UNIT-IV

Interpolation and approximation : Polynomial interpolation- Newton and Lagrange: Difference tables. Different frequency charts.

UNIT-V

Regression Analysis : least square fit: Polynomial and curve fitting: Linear regression and non-linear regression algorithms, multiple regression algorithms, General idea of statistical packages.

Books Recommended:

1. Krishnamurthy, E. V. Sen . S. K : Computer Based Numerical Algorithms. East West Press.
2. Motewar, S. N. ; A course in computer programming with numerical techniques, Dhanpat Rai and sons, Delhi.
3. Rajaraman V.; Computer Oriented Numerical Mathematics. PHI.

School of Computer Science

PGDCA SECOND SEMESTER

Paper code PGDCA 104

Analysis and Design of Information System

Time: 3hour **Max. Marks. 70**

Min.Marks.24

UNIT-I

Organizational Foundation of IS: Historical Evolution of Information system. The competitive Business Environment. Advantages of Using Computerized Information System (SI). Six major types of information System. The changing matter of Information Technology, Challenges of information system, Relationship between Organization and Information system. Salient Features of Organization and management , Classical Model. Behavioral Model and Decision Model. Levels and types of Decision Making. System Approach Theory. Management Challenges. Ethical and Social Impact of Information System.

UNIT- II

Technical Foundation of Information System: Charting Techniques. Analysis and Design. Decision Tree . Decision Table. DFD Dictionary, Information System Software Tools and Approaches: Advantages and disadvantages of using IS Software Tools. Idea of Object Oriented Programming. CASE tool, PERT $ CPM. Recent Database Management Irends. Distributed Databases: Object Oriented and Hypermedia Database. Telecommunications. The Internet.

UNIT-III

Building Information System : Traditional System Development Life Cycle (SDLC). Analysis : Problem Identification. Fact Gathering. Fact Analysis, Feasibility Study, Feaibility, Report . Design : Physical and Logical Design. File Design .I/O Design , Database design Limitation of traditional life cycle approach. Prototyping, Outsourcing information system. A Typical Case Study of Information System.

UNIT-IV

Implementation: Managing and Controlling of Information System. Testing, training. conversion. Post Implementation phase. Ensuring quality with IS. Traditional tool & methodology for quality assurance. New approaches to quality assurance . Measuring Information System Success. Areas of Problem in Information System. Causes of Information system Success and Failure. Controlling Risk Factor . Auditing Information System. Causes of Information system Success and Failure. Controlling Risk Factor. Auditing Information System.

UNIT-V

Management and Organizational Support System: Knowledge Work System. Decision Support System (DSS). Group Decision Support System (GDSS). Executive. Support System (ESS). Artificial Intelligence (AI). Expert System (DSS). Neural Network. Growth of International System. Main Technological Issues: Merger of International Technology and Infrastructure.

Books Recommended:

1. Lauden C. Kennieth & Lauden P. Jane : Management information System : Organization Technique. PHI.
2. Awad E.M: Systems Analysis and Design, Galgotia Pub.
3. Murdic. Ross. Clagett: Information System for Modern Management. PHI
4. Bhatnagar S. C. : Computer & Information Management. PHI

School of Computer Science

PGDCA SECOND SEMESTER

Paper code PGDCA 201

Java Programming

Time: 3 hours **Max.Marks.70**

Min.Marks.24

UNIT I

Introduction to Object Oriented Programming: Basic concept , Benefits of OOPS, Application of OOP, Java evolution : history, features, C, C++ & Java a comparison. Java and WWW, HW,& SW requirements for Java, Structure of simple Java Program, Java tokens, statement, Java virtual machine. command line arguments, programming style, constants & variables, symbolic constants, type casting : Various operators in Java (arithmetic, relation, logical , assignment, increment, decrement , conditional, bitwise, & special operator) ; arithmetic expressions & their evaluation, precedence of arithmetic operator type conversations in expressions, operator precedence and associatively, mathematical functions.

UNIT II

Decision making and branching : Decision making with if statement . Simple if statement the if....else statement, nesting of if... else statements. the else if Ladder. the switch statement , The ? operator. the while statement, the do statement the do statement, the for statement, jump in loops, labeled loops, classes, objects and methods; Defining a class objects, accessing class members. constructors, methods: Defining a class, adding variables and methods, creating objects, accessing class members. constructors, methods overloading, static members, nesting of methods inheritance; extending a class members. overriding methods, final variables and methods, final classes, finalize methods, abstract method and classes visibility control.

UNIT III

Arrays , strings and vectors: Arrays, one dimensional arrays, creating an array, two dimensional arrays, strings, vectors, wrapper classes defining interfaces, multiple inheritance, extending interfaces, implementing interfaces, accessing interface variable, packages : Java API packages, using system packages, naming conventions, creating packages, accessing a package, using a package, using a package , adding a class to a package, hiding classes.

UNIT IV

Multithreaded programming; creating threads, extending the thread class, stopping and blocking a thread. life cycle of a thread, using thread methods, thread exceptions. thread priority. synchronization, implementing the runnable interface elements algorithms, thrashing other consideration, demand segmentation.

UNIT V

Applet programming : Local and remote applets. hoe applets differ from applications, preparing to write applets, building applets code , applets life cycle. creating and executable applet. designing a web page, adding applets to HTML file, running the applet. more about applet tag. passing parameters to applets, aligning the display, more about HTML tags, displaying numerical values getting input from the user.

Books Recommended:

1. Programming with Java a primer by E. Balagurusamy
2. Peter North's Guide to Java Programming, Tecmedia Pub.
3. Mastering in Java, Techmedia Pub. schatz & Galvin
4. Core J A V A 2 Volume _I Fundamentals Sun Microsystems.