

Uttarakhand Sanskrit University

Haridwar



CURRICULUM

FOR

Post Graduate Diploma in Computer Applications

(P.G.D.C.A.)

(01 Year Full Time: 02 Semester Program)

(Year 2019-2020)

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: Computer Fundamental & Operating System
Paper- I

Time: 03 Hours**Credit: 04****Total Marks: 100****External Marks: 80****Internal Marks: 20**

Unit	Description	Total: 80
1	History of Development of Computers, Computer System Concept, Block diagram of Computer, Computer System Characteristics, Advantages and Disadvantages, Types of Computers, Basic Components of a Computer System – CPU, Control Unit, ALU, Register, Motherboard, System bus, SMPS, UPS;	16
2	Computer Memory: Primary Memory: RAM, ROM, EPROM, EEPROM, Cache Memory; Primary Memory vs Secondary Memory. Storage Devices - Magnetic Disks, Hard Disk Drives, Floppy Disks, Optical Disks, Blue-Ray Disk, Other portable storage devices, Cloud Storage(Like Google Drive etc.)	16
3	Input Devices: Keyboard, Mouse, Joystick, Scanners, Digital Camera, MICR, OCR, OMR, OBR, Light pen, Touch Screen. Output Devices: Monitors – Characteristics, Types of Monitor; Printers- Impact, Non-Impact Printer, Dot Matrix, Inkjet, Laser Printer; Sound Card and Speakers;	16
4	Computer Programming Languages- Machine, Assembly and High Level; Number System of Computers- Binary, Decimal, Octal, Hexadecimal; ASCII, Unicode; Computer Software and its Need, Types of Software's - Application software: Application Software Uses and Examples; System software, Compiler, Assemblers, Interpreter, Device Drivers, Utility Programs; Virus and Antivirus;	16
5	Operating System: Operating System Concepts, History and Evolution of OS, Need of OS, Types of OS, Elements and Functions of OS, Common Files types, BIOS, POST Operation; Working with basic Commands of DOS and UNIX/LINUX, batch file, Comparison of UNIX/LINUX and Windows OS.	16

Text & Reference Books:

1. Sinha P.K., “*Computer Fundamentals*”, 6th Edition, BPB Publication, 2012.
2. Goel.A, “*Computer Fundamentals*”, Reprint, Pearson Education, 2011.
3. Thareja R., “*Fundamentals of Computers*”, Oxford University Press, 2014.
4. Rajaraman,V., “*Computer Fundamentals*”, 6th Edition, PHI,2012.
5. Srivastva C., “*Fundamentals of Information Technology*”, 3rd Edition, Kalyani Publishers, 2008.
6. Stallings W., “*Operating systems*”, 8th Edition, Pearson, 2014.

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: PC Packages
Paper- II

Time: 03 Hours

Credit: 04

Total Marks: 100

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Windows OS: Overview of Windows OS; Versions of Windows OS; Features of Windows; Basic Operations with Windows; My Computer, Recycle bin, Desktop, Icons, Windows Explorer, Screen Description & Working Styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Operations like Copy, Delete, Moving of files and folders from one drive to another, Shortcuts; Accessories and Windows Settings using Control Panel- Printers, Network, Fonts, Creating Users, Internet Settings, Start Button & Program Lists; Installing and Uninstalling new Hardware & Software Program on Computer.	16
2	Office Packages: MS-Office, Open-Office and Google Docs. MS Word: Introduction, Area of use, Starting Word, Different Bars, Document View, Text Area, Exiting Word; Creating, Editing, Saving, Closing, Printing and Opening an Existing Document. Working with Fonts, Style, Layout, Paragraph, Cut, Copy, Paste, Undo and Redo, Spell Check, Find, Replace, Bullets, Numbering, Header, Footer, Page-Setup, Page Number. Creating Table, Modifying Table, Merging of Cells, Split Cells, Insert Pictures, Symbols and Graphics. Mail Merge, Importing and exporting to and from various formats.	16
3	MS Excel: Introduction, Area of use, Concepts of Workbook & Worksheets, Starting MS-Excel, different Bars, Row, Column and Cell. Exiting MS-Excel. Creating a New Workbook, Working with Cells. Working with Fonts. Merging of Cells. Inserting a Row and Column, Deleting a Row and Column. Saving a Workbook, Closing a Workbook. Different Data Types and Operators used in Excel, Working with Calculation and Functions. Working with Chart.	16
4	MS PowerPoint: Starting MS-PowerPoint, different Bars, Different Types of Views and Exiting MS-PowerPoint. Creating a New Presentation, Working with Slides, Applying Design Templates, Applying Custom Animations, Applying Slide Transitions. Saving a Presentation, Running a Presentation, Closing a Presentation and Opening an Existing Presentation. Working with Notes, Handouts, Columns & Lists, Adding Graphics, Sounds and Movies to a Slide;	16
5	Introduction of MS Access: Database, Tables, Create Table, Insert data in table, Data types in MS Access. Microsoft Office Picture Manager: Introduction and uses; Introduction of DTP: Definition of D.T.P, Uses and Advantage of DTP, Working with Microsoft Publisher for DTP, Various Templates of MS Publisher for DTP;	16

Text & Reference Books:

1. Jain S. “MS Office 2010 Training Guide”, BPB Publications, 2010.
2. Kroenke D., Nilson D., “Microsoft Office 365 in Business”, US Edition, Wiley India Pvt. Ltd, 2011.
3. Sinha P.K., “Computer Fundamentals”, 6th Edition, BPB Publication, 2012.
4. Goel.A, “Computer Fundamentals”, Reprint, Pearson Education, 2011.
5. Prakhar Complete Course For DTP (Coreldraw, Pagemaker, Photoshop)

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: Network Essentials and E-Commerce
Paper- III

Time: 03 Hours

Credit: 04

Total Marks: 100

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Networking Fundamentals: Basic concept of Network, Type of Computer Network, Need, Uses and Advantages of Computer Network, Network topology, different types of network LAN, MAN, WAN; Transmission Categories- Simplex, Half Duplex & Full Duplex, Networks connecting devices, OSI model and layers, TCP/IP model and layers.	16
2	Internet Communication: Internet Concepts: History of Internet, Internet Architecture, Applications of Internet, Various Internet Services, Intranet, Extranet, ISP, Internet Connectivity, DNS, WWW, URL, HTTP, IP, FTP, Web Browsers, Search Engines, E-mail Concepts, Internet chatting - Voice chat, text chat; Remote Login, IP Addressing, Subnet mask, Network Address Classes- A,B and C; Security issues on Internet.	16
3	E-Commerce Technologies: Definition, Advantages and disadvantages of e-commerce, Types of ecommerce, Infrastructure requirements for e-commerce, Different ecommerce website and their features; Business models of E-Commerce; Introduction of E-Governance;	16
4	Electronic Payment System: Introduction, Online payment systems –prepaid and postpaid payment systems, e-cash, e-cheque, Smart Card, Credit Card, Debit Card, Online banking (net banking), mobile wallet, UPI, BHIM, PAYTM app, Payment gateway, Security issues on Electronic payment system; Introduction of Mobile Commerce, E-learning.	16
5	Introduction to Artificial Intelligence, Cloud computing, IOT, Big data, Virtual Reality and Blockchain Technology; Cyber Security: Need of Cyber Security, Securing your PC, Securing your Mobile;	16

Text & Reference Books:

1. Data Communication and Networking – B. Forouzan – MCGrawth Hill.
2. Jain V.K. ,”O Level Module - M 1.2 - Internet & Webpage Designing”– BPB Publications,2015
3. Turban, Efraim, and David King, “Electronic Commerce: A Managerial Perspective”, 2010, Pearson Education Asia, Delhi.
4. Whiteley D, “E - Commerce: Strategy, Technologies and Applications”, Tata McGraw hill, 1st edition.
5. Kalakota, Ravi, “Frontiers of Electronic Commerce”, 2004, Addison –Wesley, Delhi.
6. Joseph P.T., “E-Commerce An Indian Perspective (Second Edition)”, S.J. Presentice-Hall of India

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: Programming in C
Paper- IV

Time: 03 Hours

Credit: 04

Total Marks: 100

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Basic definition of Pseudo Code, Algorithm, Flowchart, Program; Fundamentals of C: Introduction of C language, Data Types, Variables, Identifiers, Constant, Modifier, Keywords, Assignment Statements, I/O Statements, I/O function; Operators and Expressions: Expression in C, Different types of Operators: Arithmetic, Relational, Logical, Assignment, Conditional, Increment and Decrement, Bitwise, Comma and sizeof operator, Precedence and associativity of Operators, type casting.	16
2	Decision and Control Structures: Conditional Statement – if, if-else, Nested if-else, switch-case; Loops: while, do while, for loop; Jump Statements: break, continue, goto and return. Storage Classes: Automatic, External, Static, Register; Arrays: Definition, Application of Array, 1-Dimensional, Multi-dimensional array and its declaration,	16
3	Functions: Function Types, function declaration, function definition, function call (Call by value, Call by reference), Formal and Actual parameter, Recursive function. String: Operations of Strings, String Length, Compare, Concatenate, Reverse, Copy, Character Search using array.	16
4	Pointers: Declaration, Passing pointer to a Function, Operations on Pointers, Array accessing through pointers, Dynamic Memory Allocation. Structures and Unions: Structure declarations, definitions, array of structure, pointers to structures, Union definition, declaration, Enumerated data types,	16
5	File Handling: Introduction of File, Types of file in C, Modes of Files; File Operations: Opening, Closing, Reading, Writing and Seeking; Examples of file handling programs; Command Line Arguments;	16

Text & Reference Books:

1. Balagurusamy, E: Programming in ANSI C, Tata McGraw-Hill publication
2. Gottfried Byron S: Programming with C, Tata McGraw-Hill publication
3. Kerninghan & Ritchie: The C Programming Language, PHI.
4. Balagurusamy, "Programming in C", 5th Edition, Tata McGraw-Hill Education, 2007
5. Yashavant Kanetkar, "Let us C", 10 th Edition, BPB publication, 2010

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: Practical & Viva
Paper- V

Time: 03 Hours

Total Marks: 100

Credit: 04

Unit	Practical-1 Based on Computer Fundamentals and PC Package	Total: 100
1 to 5	Description	
	<ul style="list-style-type: none"> ➤ Computer Hardware ➤ Basics of DOS and Unix/Linux commands ➤ Basic Windows and Linux operations ➤ MS Office package (Word processing, Spreadsheet and Presentation) ➤ MS Access: Database, Tables, Create Table, Insert data in table, Data types in MS Access. ➤ Microsoft Office Picture Manager: ➤ Microsoft Publisher for DTP 	

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (I- Semester)
Paper Name: Practical & Viva
Paper- VI

Time: 03 Hours

Total Marks: 100

Credit: 04

Unit	Practical-2 Based on Programming in C	Total: 100
1 to 5	Description	
	<ul style="list-style-type: none"> ➤ Fundamental C Programs. ➤ Programs implementing Operators. ➤ Programs using Control Statements and Loop Control Structures. ➤ Programs implementing concepts of Array. ➤ Programs implementing concepts of String. ➤ Programs implementing concepts of Functions & pointers. ➤ Programs implementing concepts of Pointers. ➤ Programs using Structures. ➤ Programs using Files. 	

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (II- Semester)
Paper Name: Data Base Management System (DBMS)
Paper- VII

Time: 03 Hours

Credit: 04

Total Marks: 100

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Definition of DBMS, Database System Architecture, File Processing System Vs DBMS, Advantages and Disadvantages of DBMS, Users of DBMS, DBA and DBA Responsibilities, RDBMS, RDBMS vs DBMS;	16
2	Data Models: Relational Model, Network Model, Hierarchical Model, Entity Relationship Model, Entity Relationship Diagram (ERD), Relational Databases, Relational data model concept, Terms: Tuple, Attribute, Relationship and its Type;	16
3	Keys: Super Key, Candidate Key, Primary Key, unique, Foreign Key; Introduction to Normalization, Data Anomalies in NF, Normal Form: 1NF, 2NF, 3 NF; Introduction to Relational Algebra and Joins.	16
4	Introduction of SQL, Characteristics of SQL, Basic Structure, SQL Commands: DDL, DML, DCL Commands; Create and Use Database, Data types in SQL, Create Table, Insertion of data into the tables, SELECT Statement, SQL Clause, WHERE Clause, Viewing of data into the tables, Deletion operations, Updating the contents of the table, Modifying the structure of the table, Renaming table, Destroying tables; Data Constraints, Type of Data Constraint.	16
5	Viewing The Data: SQL Operator: Arithmetic Operators, Logical Operators, Relational Operators, Comparison Operators; SQL Searching: Range Searching, Pattern Searching; SQL Functions: Aggregate Functions, Number Functions, Group Functions, Scalar Functions, Data Conversion Functions, Character Functions; Manipulating Dates in SQL, SQL Sub queries Joins.	16

Text & Reference Books:

1. Elmasri R, Navathe S.B., “*Fundamentals of Database Systems*”, Benjamin Cummings Publishing Company, 7th edition, 2015.
2. JD Ullman, Garcia-Molina, “*Database System: The Complete Book*”, Edition 4th, Pearson Education India, 2009.
3. S.K Singh, “*Database Systems: Concepts, Design and Applications*”, Edition 2nd, Pearson Education India 2008.
4. Ramakrishnan R., Gehrke J., “*Database Management System*”, second edition, McGraw-Hill (IE), 3rd edition, 2014
5. Ivan Bayross, “*Database Concepts & Systems for Students*”, Edition 3rd, Shroff Publishers & Distributors Pvt Limited, 2009.
6. Silberschats, Kroth and Sudershan, “*Principles of Database Systems*”, McGraw Hill Publication, 2011.

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (II- Semester)
Paper Name: Web Technology
Paper- VIII

Time: 03 Hours

Credit: 04

Total Marks: 100

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Introduction to Web Technologies: Application of Web Technologies, Components of Web Technologies (Web Page, Web Server, Mail Server, Cookies, etc), Static and Dynamic Websites, Web Publishing Concepts, Domain Name Registration, Web Space Registration, Management and uploading (utilities like FTP), Client-Server Architecture.	16
2	HTML:, Introduction To HTML, Elements of HTML Syntax, HTML Tags, Title, Head & Body Sections, Building HTML Documents, Formatting Tags, Inserting Texts, Images, Hyperlinks, Backgrounds and Colour Controls, List, Table, Use of Font Size & Attributes,	16
3	Forms and Controls, Text, Radio, Checkbox, Combo Box, Select, Button. HTML 5 & Syntax, HTML5 Document Structure (section, article, aside, header, footer, nav, dialog, figure), Attributes of HTML 5, Web Form (datetime, date, month, week, time, number, range, email, url), Audio / Video, Introduction to CSS and Java Script.	16
4	Introduction to PHP, PHP Variable, Static & global variable, GET & POST method, PHP Operator, Conditional Structure & Looping Structure, Array, User Defined Functions, Math Function, Date Function.	16
5	Handling form with GET & POST, Session, Server variable, PHP Components; Working with MySQL using PhpMyAdmin, SQL DML Statement (Insert, Update, Select, Delete), Command, PHP-MySQL Connectivity, PHP-MySQL Functions;	16

Text & Reference Books:

1. Internet for Everyone - Alexis Leon and Mathews Leon, Vikas Publications.
2. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
3. Internet for Every One: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
4. Greenlaw R; HeppE, "Fundamentals of Internet and WWW" 2 nd Edition, Tata McGraw-Hill, 2007
5. Raj Kamal, "Internet& Web Technologies" edition Tata McGraw-Hill Education, Publication,2009
6. Welling & Thomson's *PHP and MySQL Web Development*

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (II- Semester)
Paper Name: Object Oriented Programming using Java
Paper- IX

Time: 03 Hours

Total Marks: 100

Credit: 04

External Marks: 80

Internal Marks: 20

Unit	Description	Total: 80
1	Object Oriented Programming Concept: Basic Concepts of Object-Oriented Programming, Benefits of OOP, Applications of OOP, Difference between C/C++ and JAVA. Introduction to Java: Features of Java, JVM, JDK and JRE Environment. Java Programming Fundamental: Structure of java program, Data types, Variables, Operators, Keywords, Type casting, Decision Making (if, else, switch), Looping (for, while, do-while), Jump Statements.	16
2	Classes and Objects: Creating Classes and objects, Memory allocation for objects, Accessing Class Members, Constructor; Inheritance: Types, uses and Implementation of Inheritance; Polymorphism, Method Overloading, Method Overriding, Use of Static and Final.	16
3	Arrays and Strings: Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods, Vectors, Wrapper Classes. Abstract Class and Interface Abstract classes and methods, Interfaces;	16
4	Packages: Modifiers and Access Control, Packages Concept, System Packages, Creating user defined packages Exception Handling: Introduction, Exception types, Using try-catch, multiple catch, Nested try, throw, throws and finally, Creating User defined Exceptions.	16
5	File Handling: Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File. Applet Programming: Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag, Adding Applet to HTML File, Getting Input from the User in Applet, Running the Applet.	16

Text & Reference Books:

1. E Balagurusamy, "Programming with Java", 4 th Edition 2010.
2. Hebert Schildt, "Java the Complete Reference", 8th Edition 2011.
3. Bruce Eckel, "Thinking in Java", Kalyani Publishers", 4 th Edition 2011.

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) – 01 Year
PGDCA (II- Semester)
Paper Name: Practical & Viva
Paper- X

Time: 03 Hours

Total Marks: 100

Credit: 04

Unit	Practical-1 Based on DBMS and Web Technology (HTML, PHP)	Total: 100
1 to 5	Description	
	<ul style="list-style-type: none"> ➤ Introduction to MySQL and SQL Commands. ➤ DDL Commands ➤ DML Commands ➤ TCL Commands ➤ SQL Query ➤ Working with HTML tags ➤ Designing of Web page using HTML ➤ Working with PHP ➤ Designing of Web page using PHP ➤ Web application development using HTML and PHP ➤ Database connectivity through PHP 	

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) – 01 Year
PGDCA (II- Semester)
Paper Name: Practical & Viva
Paper- XI

Time: 03 Hours

Total Marks: 100

Credit: 04

Unit	Practical -2 Based on Java	Total: 100
1 to 5	Description	
	<ul style="list-style-type: none"> ➤ Fundamental of Java Programs. ➤ Programs implementing Data Types and Operators. ➤ Programs using Control Statements. ➤ Programs implementing concepts of Class and Object. ➤ Programs implementing concepts of Constructors. ➤ Programs implementing concepts of Overloading. ➤ Programs implementing concepts of Arrays. ➤ Programs implementing concepts of String. ➤ Programs implementing concepts of Inheritance. ➤ Programs implementing Packages. ➤ Programs implementing concepts of Exception Handling. ➤ Programs using File Handling. ➤ Programs implementing concepts of Applet 	

Uttarakhand Sanskrit University, Haridwar
(P.G. Diploma in Computer Application) - 01Year
PGDCA (II- Semester)
Paper Name: Project
Paper- XII

Time: 03 Hours

Total Marks: 100

Credit: 04

Unit	Project	Total: 100
	Description	
	<p>Course Work on System Analysis and Design for Project:</p> <ul style="list-style-type: none"> ➤ Basics of System, System element, System Planning and Analysis, SDLC, DFD, DSS, Data and fact gathering techniques, Feasibility study. <p>Project Development:</p> <ul style="list-style-type: none"> ➤ Project must be developed in the computer laboratory of concern institute under the supervision of faculties of concern subject. <p>Project should be based on:</p> <ul style="list-style-type: none"> ➤ DBMS – RDBMS (MySQL, Oracle, etc.) ➤ Programming/Scripting Language (PHP, Java, etc.) <p>Format of the Student Project Report on Completion of the Project:</p> <ul style="list-style-type: none"> ➤ Cover page as per format ➤ Certificate of Approval ➤ Certificate of project guide ➤ Certificate of the company/Organization ➤ Certificate of Evaluation ➤ Declaration / Self Certificate ➤ Acknowledgement ➤ Synopsis of the project ➤ Main Report <ul style="list-style-type: none"> ❖ Objectives & Scope of the project ❖ Theoretical Background of Project ❖ Definition of problem ❖ System Analysis & Design ❖ System Planning (PERT Chart) ❖ Methodology adopted, system Implementation & Detail of Hardware & Software used ❖ System maintenance & Evaluation ❖ Cost and benefit Analysis ❖ Detailed Life Cycle of the project <ul style="list-style-type: none"> • ERD,DFD • Input and Output Screen Design • Process involved • Methodology used for testing • Test Report, Printout of the code sheet ❖ User/Operational Manual- including security aspects, access rights, back up, Controls etc. ❖ Conclusion ❖ References ❖ Soft copy of the project on CD/DVD/USB. 	<p>Project Work: 60</p> <p>Presentation & Viva: 40</p>

	<p>Note:</p> <ul style="list-style-type: none">➤ At the time of Presentation of project and viva-voce examination, each student must have certified hard copy and soft copy of developed project.➤ Project must be submitted before two week of commencement of theory exam.➤ During the project viva examination project must be run.	
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