Post Graduate Diploma in Computer Application (PGDCA)

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION

Duration: 12 Months (1 Year) Eligibility: Graduation

COURSE STRUCTURE OF PGDCA SEMESTER Ist													
Subject Details			**Main Examinations**				**Sessionals *****		**Credit Distribution**			**Allotted Credits**
Subject Code	**Subject Name**	**Total Marks**	**Major**		**Minor**		**Max Marks**	**Min Marks**	**L**	**T**	**P**	**Subject wise Distribution**
			Max Marks	**Min Marks**	**Max Marks**	**Min Marks**						
Theory Group												
4TPDC- 101	Information Technology Tools and Network Basics	100	50	17	20	7	30	12	2	1	-	3
4TPDC- 102	Windows and MS Office	100	50	17	20	7	30	12	2	1	-	3
4TPDC- 103	Objects Oriented Programming With C++	100	50	17	20	7	30	12	2	1	-	3
4TPDC- 104	Database Concepts and Introduction to SQL	100	50	17	20	7	30	12	2	1	-	3
4TPDC- 105	Communication Skills & Personality Development	100	50	17	20	7	30	12	2	1	-	3
Practical Group			**Term End Practical Exam**				**Lab Performance**					
4TPDC- 103	Objects Oriented Programming With C++	50	25		08		25	08	-	-	3	3
4TPDC- 104	Database Concepts and Introduction to SQL	50	25		08		25	08	-	-	2	2
Grand Total		**600**										**20**

Minimum Passing Marks are equivalent to Grade D　　　　　　　　　　**L- Lectures T-Tutorials P- Practical**

Major- Term End Theory Exam/ Practical Exam

Minor- Pre University Test

Sessional weightage – Attendance 50%, Three Class Tests/Assignments 50%

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION

Duration: 12 Months (1 Year) Eligibility: Graduation

COURSE STRUCTURE OF PGDCA II SEMESTER												
Subject Details			**Main Examinations**				**Sessionals** ***		**Credit Distribution**			**Allotted Credits**
Subject Code	**Subject Name**	**Total Marks**	**Major**		**Minor**		**Max Marks**	**Min Marks**	**L**	**T**	**P**	**Subject wise Distribution**
			Max Marks	**Min Marks**	**Max Marks**	**Min Marks**						
Theory Group												
4TPDC- 201	Introduction to Internet &Web Technology	100	50	17	20	07	30	12	2	1	-	3
4TPDC- 202	Programming and Problem Solving throughPython	100	50	17	20	07	30	12	2	1	-	3
4TPDC-203	Data Structure throughC++	100	50	17	20	07	30	12	2	1	-	3
Elective-I												
4TPDC- 204	Information Security Management	100	50	17	20	07	30	12	2	1	-	3
4TPDC- 205	Introduction to Graphic Design using Photoshop											
Practical Group			**Term End Practical Exam**				**Lab Performance**					
4TPDC- 201	Introduction to Internet &Web Technology	50	25		08		25	08	-	-	1	1
4TPDC- 202	Programming and Problem Solving throughPython	50	25		08		25	08	-	-	2	2

4TPDC- 203	Data Structure throughC++	50	25	08	25	08	-	-	2	2
4TPDC-206	Project Report	100	50	17	50	17	-	-	2	2
	Elective-I									
4TPDC- 204	Information Security Management									
4TPDC- 205	Introduction to GraphicDesign using Photoshop	50	25	8	25	8	-	-	1	1
	Grand Total	**700**								**20**

Minimum Passing Marks are equivalent to Grade D   **L- Lectures T- Tutorials P- Practical**
Major- Term End Theory Exam/ Practical Exam
Minor- Pre University Test
Sessional weightage – Attendance 50%, Three Class Tests/Assignments 50%

DETAILED SYLLABUS

Semester I

4TPDC-101 : Information Technology Tools and Network Basics

Unit I :

- **Introduction to Computer:** Computer and Latest IT gadgets, Evolution of Computers & its applications, IT gadgets and their applications, Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software, Open source and Proprietary Software, Mobile Apps.
- **Introduction to Operating System:** Operating System, Basics of Operating System, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, running an application, Operating System simple setting, using mouse and changing its properties, changing system date and time, changing display properties, to add or remove Program and its features, adding, removing & sharing Printers, File and Folder management, types of file extensions.

Unit II : Word Processing - Word Processing Basics, Opening Word Processing Package, Title Bar, Menu Bar, Toolbars & Sidebar, Creating a New Document, Opening and Closing Documents, Opening Documents, Save and Save As, Closing Document, Using The Help, Page Setup, Page Layout, Borders, Watermark, Print Preview, Printing of Documents, PDF file and Saving a Document as PDF file, Text Creation and manipulation, Document Creation, Editing Text, Text Selection, Cut, Copy and Paste, Font, Color, Style and Size selection, Alignment of Text, Undo & Redo, AutoCorrect, Spelling & Grammar, Find and Replace, Formatting the Text, Creating and using user defined Styles, Paragraph Indentation, Bullets and Numbering, Change case, Header & Footer, Table Manipulation, Insert & Draw Table, Changing cell width and height, Alignment of Text in cell, Delete / Insertion of Row, Column and Merging & Splitting of Cells, Border and Shading, Mail Merge, Table of Contents, Indexes, Adding Comments, Tracking changes, Macros.

Unit III : Spreadsheet - Elements of SpreadSheet, Creating of SpreadSheet, Concept of Cell Address [Row and Column] and selecting a Cell, Entering Data [text, number, date] in Cells, Page Setup, Printing of Sheet, Saving Spreadsheet, Opening and Closing, Manipulation of Cells & Sheet, Modifying / Editing Cell Content , Formatting Cell (Font, Alignment, Style), Cut, Copy, Paste & Paste Special, Changing Cell Height and Width, Inserting and Deleting Rows, Column, AutoFill, Sorting & Filtering,

Freezing panes, Formulas, Functions and Charts, Using Formulas for Numbers (Addition, Subtraction, Multiplication & Division), AutoSum, Functions (Sum, Count, MAX, MIN, AVERAGE),Sort, Filter, Advanced Filter, Database Functions (DSUM, DMIN,DMAX, DCOUNT, DCOUNTA), What-if Analysis, Pivot table Charts (Bar, Column, Pie, Line), Data Validation.

Unit IV : Presentation - Creation of Presentation, Creating a Presentation Using a Template, Creating a Blank Presentation, Inserting & Editing Text on Slides, Inserting and Deleting Slides in a Presentation, Saving a Presentation, Manipulating Slides, Inserting Table , Adding Pictures, Inserting Other Objects, Resizing and Scaling an Object, Creating & using Master Slide, Presentation of Slides , Choosing a Set Up for Presentation, Running a Slide Show, Transition and Slide Timings, Automating a Slide Show, Providing Aesthetics to Slides & Printing, Enhancing Text Presentation, Working with Color and Line Style, Adding Movie and Sound, Adding Headers, Footers and Notes, Printing Slides and Handouts.

Unit V : Introduction to Internet and WWW, E-mail, Social Networking and e-Governance Services - Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology , Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address, ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering), Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Exploring the Internet , Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages.

Unit VI : Digital Financial Tools and Applications, Overview of Future Skills & Cyber Security - Digital Financial Tools, Understanding OTP [One Time Password]and QR [Quick Response] Code, UPI [Unified Payment Interface], AEPS [Aadhaar Enabled Payment System], USSD[Unstructured Supplementary Service Data], Card [Credit / Debit], eWallet, PoS [Point of Sale], Internet Banking, National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), Immediate Payment Service (IMPS), Online Bill Payment

4TPDC-102: Windows and MS Office

Unit I :

Introduction to Windows 10 - Introduction**,** Overview, Installation, Getting Started, GUI Basics, Navigation, Start Menu, Taskbar, Tablet Mode, File Explorer, Cortana, Notifications, Quick Actions, Cloud, Universal Apps

Working with Windows 10 - Multiple Desktops, Users Management, Security, Parental Control, Applications, Web Browsing, Networking, Virtualization, Remote Access, Backup & Recovery, Project Spartan, Apps Management, Email Management, Keyboard Shortcuts, System Tray, Media Management, Favourite Settings, Shortcuts, Phones.

Unit II : Microsoft Office Introduction - Introduction to MS Office Suite, Understanding the different applications in the suite, Versions of Microsoft Office, Understanding the Interface, Customizing the Quick Access toolbar, Adding and removing commands, moving the toolbar, creating custom commands, using the Ribbon Interface, tabs and groups, customizing the ribbon, keyboard shortcuts

Unit III :

Getting Started Word Basic (2019) - Introduction of word, understanding OneDrive, creating and opening documents, saving and sharing documents, text basics, formatting text, using find and replace, indents and tabs, line and paragraph spacing, lists, links, page layout, printing documents, breaks, columns, headers and footers, page numbers

Working with Object Word (2019) - Pictures and text wrapping, formatting pictures, shapes, text boxes, aligning, ordering, and grouping objects, list and tables, creating lists, creating tables, formatting tables, charts, checking spelling and grammar, track changes and comments, inspecting and protecting documents, SmartArt graphics, inserting and formatting images, wrapping text around images, applying and modifying styles, mail merge, new features in office 2019.

Unit IV :

Getting Started with Excel (2019) - Introduction, Understanding OneDrive, understanding spreadsheets, the Excel interface, the Excel ribbon, Creating and Opening Workbooks, Saving and opening files, Working with Cells and Sheets, Cell Basics, Modifying Columns, Formatting Cells, Understanding Number Formats, Working with Multiple Worksheets, Grouping and ungrouping worksheets, Using Find & Replace, Checking Spelling, Page Layout and Printing, Formulas and Functions: Intro to Formulas, Creating More Complex Formulas, Relative and Absolute Cell References, Functions,

Working with Data with Excel (2019) - Basic Tips for Working with Data, Freezing Panes and View Options, Sorting Data, Filtering Data, Advanced filter option, Groups and Subtotals, Tables, Charts and graphs, Conditional Formatting, Doing More with Excel: Comments and Co-authoring, Inspecting and Protecting Workbooks, Intro to PivotTables,

Doing More with PivotTables, Pivot charts, What-if Analysis, Extras: New Features in Office 2019, What are Reference Styles?, Office Intelligent Services.

Unit V :

Getting Started with Power Point (2019) - PowerPoint Basics: Understanding OneDrive**,** Creating and Opening Presentations**,** Saving Presentations, Working with Slides: Slide Basics**,** Text Basics, Applying Themes**,** slide layout, slide background**,** Applying Transitions, Managing Slides, Using Find & Replace, Printing, Presenting Your Slide Show.

Text and Objects with Power Point (2019) - Lists, Indents and Line Spacing, Inserting Pictures, Formatting Pictures, Shapes, Aligning, Ordering, and Grouping Objects, Animating Text and Objects, More Objects: Inserting Videos, Inserting Audio, formatting multimedia, animating objects, Tables, Charts, SmartArt Graphics, Review and Collaborating: Checking Spelling and Grammar, Reviewing Presentations, Inspecting and Protecting Presentations, Customizing Your Presentation: Modifying Themes, Slide Master View, Links, Action Buttons, Rehearsing and Recording Your Presentation, Sharing Your Presentation Online, What is Office 365?, New features in office 2019, Office Intelligence Services.

4TPDC-103: Objects Oriented Programming with C++

Unit I :

Overview of C++ - Overview of C++, Software crisis, Object oriented programming paradigm, Basic concepts of OOP, Advantages/Benefits of OOP, Usage/applications of OOP

C++ Environment - Program development environment, The language and the C++ language standards, Introduction to various C++ compilers, The C++ standard library, Prototype of main () function, i/o operator, manipulator, comments, data types

Creating and Compiling C++ Programs - TURBO C++ IDE, Creating, compiling and running a C++ program using idea and through command line, Elements of C++ Language, Structure of a C++ program, C++ tokens, Type conversion in expressions.

Decision Making and Branching - Introduction, Sequential statements, Mathematical Functions, Branching statements, looping Statements, Nested loops, Programming examples.

Unit II :

Arrays and Functions- Arrays, The meaning of an array, Single-dimensional arrays, Two-dimensional arrays (Multi-dimensional arrays), User Defined Functions, Elements of user-defined functions, Return values and their types, Function calls, Categories of functions, Passing parameters to functions, Recursion, Command Line Arguments, Storage Class Specifiers.

Classes and Objects - Classes, Structures and classes, Unions and classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data members, Static member functions, Passing object to functions, Returning objects, Object assignment

Array, Pointers, References and the Dynamic Allocation Operators - Array of objects, Pointer to object, Type checking in C++, The this pointer, Pointer to Derived Types, Pointer to class members, References, C++'s Dynamic Allocation Operators.

Constructors and Destructors - Introduction, Constructors, Default Constructor, Parameterized constructors, Copy Constructors, Multiple Constructors in a class, Constructors with default arguments, Default Arguments, Special Characteristics of Constructor functions, Destructors.

Unit III : Polymorphism – Introduction to polymorphism, Types of polymorphism, Function overloading, Overloading Constructor Function, Finding the address of an overloaded function, Operator Overloading, Creating a Member Operator Function, Creating Prefix and Postfix forms of the increment (++) and decrement (– –) operators (Overloading Unary Operator), Overloading the Shorthand Operators (i.e. +=, == etc), Operator Overloading Restriction (Rules), Operator Overloading using friend function, Overloading new and delete operator, Overloading some special operators, Overloading [ ]

(Subscripting) operator, Overloading() (Function Call) operator, Overloading Binary Arithmetic operators, Concatenating String, Overloading Comma (,) operator, Overloading the I/O operators.

Unit IV : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes.

Virtual function, Pure Virtual functions, early Vs. late binding.

Unit V : The C++ I/O System Basics - The C++ I/O System basics, C++ predefined streams, Formatting using the ios members, Clearing Format Flags, An Overloaded

form of setf( ), Examining the Formatted Flags, Using width( ), Using precision( ),
Using fill( ), Using Manipulators to format I/O, Creating your own Manipulators

4TPDC-104: DataBase Concepts and Introduction to SQL

Unit I : Introduction to DBMS

- What is database?
- Types of database systems
- Advantages of using a DBMS
- Different types of database models

Unit II : An Architecture of the Database system

- Three level of Architecture
- Logical, Physical, conceptual new
- Logical data independence

Unit III : Relational Data Model

- What is the relational data model?
- Concepts of tables, attributes, tuples and keys
- Primary and foreign keys
- Constraints
- ER diagrams
- Entry-Relationship Diagrams (ERDs)

Unit IV : Normalization and Database Design

- What is normalization?
- Advantages of normalization
- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)
- Denormalization
- Database design process

Unit V :SQL Basics

- Introduction to SQL

- Data types

- Basic SQL syntax and commands

- Creating tables

- Inserting data into tables

- Retrieving data from tables using SELECT statement

- Filtering data using WHERE clause

- Sorting data using ORDER By clause

Unit VI : Advanced SQL

- Join (Inner Join, Right Join, Full Outer Join)

- Aggregating data using GROUP By clause

- Filtering grouped data using HAVING clause

- Subqueries

- Views

- Indexes

Unit VII : Database Administration

- Introduction to database administration

- Backup and recovery

- Performance tuning

- Security and access control

- Database maintenance

- Selecting the right database

4TPDC-105: Communication Skills and Personality Development

Unit I :

English Language - Listening, Speech, Pronunciation, Reading, Spelling, Writing
Right

Nouns : Countable and Uncountable, Pronouns : Personal, Relative and Others, Articles

The Parts of Speech, The Prepositions, Clauses : Coordinate, Subordinate, Relative Adverbs, Adjectives and Adjective Phrases, Verb.

Unit II :

The Model Auxiliaries, Adverb, Adverb Phrases Comparisons and Intensification, Linking Devices, Subject Verb Agreement, Tenses, Common Errors, Word Building, Vocabulary

Developing Ability of Question and Answer, Body Language and Its Use in Speaking, Group Discussions, Interview Skills.

Unit III :

Composition - Making a Technical Report, E-Mails and Text Messages Composing, Letter Writing, Paragraph Writing, E-mail Writing, Writing Resume, Writing a Cover Letter

Personality development: Soft Skills Development, Body Language, Behavioral and Symptomatic Soft Skills, Etiquette and Manners, Positive Thinking, Motivation, Goal setting, Team building, Self Confidence, Leadership Skills, Time Management.

Unit IV :

Introduction to Personality a) Basic of Personality b) Human growth and Behavior c) Theories in Personality d) Motivation

Communication skills and Personality Development a) Intra personal communication and Body Language b) Inter personal Communication and Relationships c) Leadership Skills d) Team Building and public speaking

Unit V :

Techniques in Personality development I a) Self confidence b) Mnemonics c) Goal setting d) Time Management and effective planning

Techniques in Personality Development II a) Stress Management b) Meditation and concentration techniques c) Self hypnotism d) Self acceptance and self growth

Semester II

4TPDC-201: Introduction to Internet and Web Technology

Unit I : Internet - Evolution, Protocols, Interface Concepts, Internet Vs Intranet, Growth of Internet, ISP, Connectivity, URLs, Domain names, Portals, Application. E-MAIL - Basics of Sending & Receiving.

Unit II : Word Wide Web (www) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols. Space on Host Server for Website, HTML, Design tools, HTML editors, Image editors.

Unit III : HTML - Concepts Of Hypertext, Versions of HTML, Elements of HTML, Syntax, Head & Body Sections, Building HTML Documents. Inserting Texts, Images, Hyperlinks, Backgrounds And Color Controls, Different HTML Tags, Table Layout and Presentation, Use of Font Size & Attributes, List Types and Its Tags, Use of Frames and Forms in Web Pages.

Unit IV : JavaScript Overview, syntax & conventions. Variables, Expressions, Branching & Looping statements, Functions, Arrays Objects, Events & Document Object Model - onClick, onMouseOver, on Submit, on Focus, on Change.

Unit V : E - Commerce an Introductions, Concepts, Advantages and Disadvantages, Internet & E-Business, Applications, Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, , Smart Cards and Credit Card-Based Payment Systems, Introduction E-Governance and its applications , Various Sites .

4TPDC-202: Programming and Problem Solving through Python

Unit I : Introduction to Python

- What is Python?
- Advantages of using python
- Installing python and PyCharm
- Writing and running your first Python program

Unit II : Basic Concepts of Python

- Variables and Data Types
- Operators

- Control Flow
- Loops
- Functions

Unit III : Data Structure in Python

- Lists, Tuples, and Dictionaries
- Working with Lists and Tuples
- Working with Dictionaries
- List Comprehensions

Unit IV : File Handling in Python

- Reading and Writing Text Files
- Working with CSV Files
- Working with JSON Files

Unit V : Object-Oriented Programming in Python

- Classes and Objects
- Inheritance
- Polymorphism
- Encapsulation

Unit VI : Modules and Packages in Python

- What are Modules and Packages
- Creating Modules and Packages
- Importing Modules and Packages
- Working with Standard Libraries

Unit VII : Exception Handling in Python

- What are Exceptions?
- Handling Exceptions
- Raising Exceptions
- Using Try and Except Blocks

4TPDC-203: Data Structure through C++

Unit I : Analysis of Algorithm - Introduction, Criteria of Algorithm, Time Complexity, Space Complexity, Asymptotic Notation: Big Oh (O) Notation: Big Omega (Ù) Notation: Big Theta (È) Notation.

Types of Data structures - Introduction, Types of Data structures, Linear Data Structures, Non Linear Data Structure, Array, SPARSE MATRICES, Garbage Collection, Benefits, Disadvantages.

Unit II : Stacks - Introduction, Push operation, Pop operation, Stack implementation using arrays, (static implementation of stacks), STACK as a Linked List, Stack as an abstract data structure, Applications of stack, Conversion of Expressions, Precedence and associativity of the operators, Evaluation of Postfix expression, Multiple stacks, Queue-Introduction, Different types of queues, Queue (Linear queue), Queue as an abstract data structure, Circular queue, Double ended queue (Dequeue), Priority queue, QUEUE as a Linked List, Applications of Queue.

Linked Lists - Concept of list and array , Introduction to Data Structures, Arrays, Linked list, Singly or Linear linked list, Circular singly linked list, Doubly linked lists, Header Node, Applications of linked lists, Addition of two long positive numbers.

Unit III : Trees - Introduction, Representation of tree, Binary Tree , Representation of binary tree, Array representation of binary tree, Linked List representation of binary tree, Basic Operation on Binary Tree- Traversals, Binary Tree Traversal Algorithms (Recursive), Creation of Binary Search Tree:, Types of binary trees, Operations on Binary Search Tree (BST), Threaded binary trees, Application of Binary Tree:, B-Tree, Height Balanced Tree, Graph - Introduction to Graphs, Undirected Graph, Directed Graph or digraph, Graph Representation, Adjacency Matrix Representation, Adjacency List Representation, Graph Traversals, Breadth First Traversal, Depth First Traversal , Searching in Graph, Minimal Spanning Tree, Kruskal's Algorithm, Prim's Algorithm , Shortest Path in Graph.

Unit IV : Sorting and Searching - Introduction, Bubble sort, Selection Sort, Merge Sort, Quick sort, Insertion Sort, Shell sort, Address calculation sort, Radix sort, Comparison of sorting methods, Hash Table, Collision Resolution Techniques, Linear Search (Sequential Search), Binary Search, Searching an ordered table, Indexed sequential search, Interpolation search.

Unit V : File Structure and Indexing - Introduction, Objectives, Terminology, File Organization, Sequential Files, Disadvantages, Direct File Organization, Indexed Sequential File Organization.

Elective - I

4TPDC-204: Information Security Management

Unit I : Network Fundamentals

Introduction to Ethernet, OSI layers, TCP/IP models , Functions protocols & devices at each layer . Protocol headers for frame, TCP, UDP, IP, ICMP , applications layers like HTTP , SNMP etc. Network Topology Working of Hub , Bridge, Switch , Router , UTM , Remote Administration of and Managed Devices. Types of Networks, VLAN , Subnetting , NAT working with number systems , Fixed length subnet masking , Variable length subnet masking , Classless Inter Domain routing , Inter VLAN routing , Static routing , RIP , RIPv2 , OSPF , EIGRP , IGRP using IPv4 , Routing in IPv6.

Unit II : Introduction to Cyber Security and Attacks

Fundamentals of information security- CIA Triad, Cyber Security controls, Logical controls, Physical controls, Tools & Techniques , Understanding threats , Attacks categories, Hacking process , Vulnerability , Threat & Risk (with examples) , Types of Attacks (DDOS, Phishing, Malware etc. with examples). Threats at clients systems (Malware, Social Engineering, Open ports etc.), Threats to Network, Web Storage & Devices, Understanding the network security, Mitigation Techniques, Fundamental of web/mobile application security, Web Application Attacks (SQL injection, XSS etc.), Mobile application attacks, Data center security, Cloud computing and Data security.

Unit III : Cryptography

Data Transmission and Organization, Error detecting and correcting codes, need of Cryptography, Cryptology fundamentals, Symmetric-Asymmetric cryptography & Cryptographic Algorithms, Private key encryption, Public key encryption, Protocols, Key management including key generation, key storage, key exchange, Encryption folders (Graphical/using Cipher), Data recovery agent, Symmetric key encryption algorithms, DES/3DES, IDEA,RC5, AES, Public key algorithm, RSA & ECC, Diffie-Hellman key exchange, Hash functions, MD5-Message Digest algorithms, SHA-1 Secure Hash Algorithm, HMAC, Applications of cryptography- Secure Email PGP, SSL TLS S/MIME, File Encryption IPsec, IOT attacks against encryption, Public Key Infrastructure Understanding digital certificates and Signatures PKI Standards and Management, X-500, X-509, ETF, IRTF.

Unit IV : Network Security & Countermeasures and Web Server & Application Security

Securing Networks, Network security devices- Router, ACL, Firewalls, Types of Firewalls, Configuration and deployment, Overview of IDS, Network based IDS (NIDS), Host-based IDS, Overview of IPS, Host-Based IPS (HIPS), Network-based IPS(NIPS), UTMTMG-Unified Threat Management Threat Management Gateway, Network Security tools (Scanners and Sniffers etc.) and Countermeasures Wireless Security, Securing Wireless Networks: Wireless Overview, Bluetooth, 820.11.

Client-Server Relationship, Vulnerabilities in web server and applications, Attack methods, Buffer Overflow, SQL Injection, XSS, Session hijacking etc., Secure Coding Practices, OWASP top 10 vulnerabilities and Mitigation Techniques, Web Application Vulnerability Scanning tools (Nessus), Web Application Security Challenges.

Unit V : Cyber Law and Cyber Forensics

Information Technology Act 2000 (as amended in 2008), Rules under Information Technology Act 2000, The Rule of Cyberspace, Cyber Law- Policy Issues and Emerging Trends Online Contract, Digital Signature Cyber Crime, Data Protection, Liability of Intermediary , Copyright and Internet , Domain Name Dispute , Harmful content in Internet, Case Studies.

Digital Evidence, Identification of Digital Evidence, Cyber Forensics Processes - Identification, Preservation, Seizure and Acquisitions. Analysis, Authentication and Presentations, fundamental of Incident Response and Handling, Reporting, Mitigation, Volatile Evidence Collection and Analysis, Disk Imaging and Analysis, Investigating, Information-hiding, Analysis of Email, Tracing Internet Access, Understanding importance of report, Writing of reports, Generating report finding with forensics tools, Chain of Custody forms, Laboratory Documents and Procedures.

4TPDC-205 : Introduction to Graphic Design using Photoshop

Unit I :

- Introduction to Graphic Design and Photoshop
- Overview of graphic design principles and concepts, Introduction to the Photoshop interface and tools, Image file formats and resolution, Color modes and color correction, Basic photo editing techniques: cropping, resizing, and retouching.

Unit II :

- Layout and Composition

- Understanding the principles of visual hierarchy, balance, contrast, proportion, and scale, Typography principles and design, Text tools and effects, working with type layers, Creating graphic elements and shapes.

Unit III :

- Color Theory and Application
- Color theory and psychology, Color palettes and schemes, applying color to designs in Photoshop, Color properties: hue, saturation, and brightness, Color models: RGB, CMYK, and Pantone, Color theory history: the evolution and development of color theory over time, Color wheel: understanding the color wheel and how it can be used to create color harmony.

Unit IV :

- Image Manipulation and Enhancement
- Advanced photo retouching techniques, Filters and effects for creative image editing, Using blending modes and opacity, Creating composite images with layer masks and blending modes

Unit V :

- Vector Graphics and Logo Design
- Vector Graphics, Vector Drawing Tools, Logo Design Principles, Logo Design Process, Brand Identity, Logo Design Trends, Logo Formats and shape tools in Photoshop, Creating logos and icons, The objective of studying typography, principles and techniques, Typography in logo design, Creating branding elements and guidelines.

4TPDC-206 : Project Report

All the candidates of PGDCA are required to submit a project-report based on the work done by him/her during the project period. A detailed Viva shall be conducted by an external examiner based on the project report.