Course Name: P.G.D.C.A
Rules and Regulations, Course Scheme and Scheme of Examinations
(For those who join From June 2022 Onwards)

1) **Course Objectives :**

The objective of this programme is to develop system programmers and analysts to meet the manpower requirement of fast developing software industry. The programme is designed to enrich the programming and analysis ability of students. Professional computer knowledge is offered through PGDCA.

2) **Eligibility for admission :**

The applicants for PGDCA must have completed their graduation.

3) **Duration of the Course :**

1 Year – Two Semesters

Course Scheme:

SEMESTER I

Part	Course Title	Hours	Credit	Marks			Course Code	Focus on Employability/ Entrepreneurship/ Skill Development	Revised/ New/ No Change/ Interchanged. (If revised % of change)
				I	E	Total			
Core 1	Fundamental of Computers	40	5	40	60	100	**G22CA11/** G3CA11	Skill Development	No Change
Core 2	Programming in C	40	5	40	60	100	**G22CA12/** G3CA12	Skill Development	No Change
Core 3	Lab: C Programming	40	5	40	60	100	**G22CAP11** /G3CA1P1	Skill Development	No Change
Core 4	Lab: GUI Programming	30	5	40	60	100	**G22CAP12/** G3CA1P2	Skill Development	No Change
Core 5	Lab: Office Automation	30	5	40	60	100	**G22CAP13/** G3CA1P3	Employability	No Change
		180	**25**	**200**	**300**	**500**			

SEMESTER II

Part	Course Title	Hours	Credit	Marks			Course Code	Focus on Employability/ Entrepreneurship/ Skill Development	Revised/ New/ No Change/ Interchanged. (If revised % of change)
				I	E	Total			
Core 6	Web Programming	40	5	40	60	100	**G22CA21/** G3CA21	Skill Development	No Change
Core 7	Relational Database Management System	40	5	40	60	100	**G22CA22**	Skill Development	20% Revised
Core 8 Lab	Lab: Web Programming	30	5	40	60	100	**G22CAP21** / G3CA2P1	Skill Development	No Change
Core 9 Lab	Lab: Relational Database Management System	40	5	40	60	100	**G22CAP22** / G3CA2P2	Skill Development	No Change
Core 10 Lab	Lab: Multimedia	30	5	40	60	100	**G22CAP23** / G3CA2P3	Employability	No Change
		180	25	200	300	500			

Course Title : Fundamental Of Computers	Total Hours :40 Hours
Course Code : G22CA11	Total Credits : 5

Course Outcomes

COs	CO Statement
CO1	Provide the fundamental concepts of computer.
CO2	Familiarize the computer codes and memory system.
CO3	Understand the input, output devices and languages used in computer.
CO4	Know the networking concepts.
CO5	Understand the process of control and communication with barriers to Communication.

Unit I   **8 Hours**
Fundamental of computer systems - Introduction; Definition of Computer; Basic Computer Operations; Characteristics of Computer; Applications of Computer; Limitation of Computer; Types of Computers; History of Computer; Computer Generations.

Unit II   **8 Hours**
Introduction to Number System - Introduction; Number System; Conversions.
Memory System in a Computer - Introduction; Capacity of Primary Memory; Secondary Storage;

Unit III   **8 Hours**
Input Output Devices – Introduction; Input Devices; Output Devices; Types of Printers; Ports.
Computer Software & Languages – Introduction; Software; Types of Software; Compiler; Interpreter; Loader and Linker; Programming Language; High Level Languages.

Unit IV   **8 Hours**
Data Communications and Computer Networks – Introduction; Data Communication; Computer Network; Network Topology; Network Terms – Router, Switch, Gateway, Hub, Bridges, Repeaters.

Unit V   **8 Hours**
Internet Basics – Introduction to Internet; The History of the Internet; Applications of Internet; Domain Name System; E-Mail; FTP.
Information Security – Introduction; Security Audits; Intrusion Test; Network Security; Firewall; Virus.

Text Book
1. Dr.Manoj Wadhwa, "Fundamentals of Computers", International Book House Pvt. Ltd. Second Edition 2013.

Unit I	1.1 – 1.9
Unit II	2.1 – 2.3
3.1 – 3.3
Unit III	4.1 – 4.5
5.1 – 5.8
Unit IV	8.1 – 8.5 (8.5.1, 8.5.3, 8.5.5 – 8.5.8)
Unit V	9.1 – 9.6

	12.1 – 12.6

Reference Books

1. AnithaGoel, "Computer Fundamentals", Dorling Kindersley (India) Pvt Ltd., 2016.
2. V.Rajaraman, "Fundamentals of Computers", NeeharikaAdabala, Sixth Edition, PHI Pvt. Ltd., 2015.

e - Resources

1. https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html
2. https://www.tutorialspoint.com/computer_fundamentals/index.htm
3. https://www.youtube.com/watch?v=eEo_aacpwCw
4. https://www.youtube.com/watch?v=iBl5kXVN6qA
5. https://www.youtube.com/watch?v=mYWsllbszYQ
6. https://www.youtube.com/watch?v=jKA5hz3dV-g
7. https://onlinecourses.swayam2.ac.in/cec19_cs06/preview/

Course Title: Programming in C	Total Hours: 40 Hours
Course Code: G22CA12	Total Credits: 5

Course Outcomes

COs	CO Statements
CO1	To know about basic programming concepts
CO2	To analyse the input and output operations
CO3	To illustrate the use of decision making and branching
CO4	To elucidate the usage of array and strings
CO5	To understand how to design user-defined functions

Unit I   **10 Hours**
Overview of C - History of C; Importance of C; Basic structure of C programs;
Constants, Variables and Data Types - Character set; C Tokens; Keywords and Identifiers; Constants; Variables; Data types; Declaration of variables; Defining symbolic constants.
Operators and Expressions - Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment and Decrement operators; Conditional operator; Bitwise operators; Special operators.

Unit II   **6 Hours**
Operators and Expressions - Arithmetic Expressions; Evaluation of Expressions; Precedence of Arithmetic operators.
Managing Input and Output Operations - Reading a character; Writing a character; Formatted input; Formatted output.

Unit III   **8 Hours**
Decision Making and Branching - Decision making with if statement; Simple If statement; The If..Else statement; Nesting of If….Else statement; The Else If ladder; The switch statement; The ? : Operator; The goto statement.
Decision Making and Looping - The while statement; The do statement; The for statement.

Unit IV   **10 Hours**

Array - One-dimensional arrays; Declaration of One-dimensional arrays; Initialization of One-dimensional arrays; Two-dimensional arrays; Initializing two-dimensional arrays.
Character Arrays and Strings - Declaring and initializing string variables; Reading string from terminal; Writing strings to screen; Arithmetic operations on characters; Putting strings together; Comparison of two strings; String handling functions.

Unit V   **6 Hours**

User-Defined Functions - Need for user-defined functions; A multi-function program; Elements of user-defined functions; Definition of functions; Return values and their types; Function calls; Function declaration; Category of functions; No arguments and no return values; Arguments but no return values; Arguments with return values; No arguments but returns a value; Functions that return multiple values; Nesting of functions; Recursion.

Text Book

E. Balagurusamy, "Programming in ANSI C", 7th Edition, McGraw Hill Education Pvt. Ltd., New Delhi, 2017.

Unit I	Chapter 1 (Page No. 1-3, 12)
	Chapter 2 (Page No. 22 - 36, 42, 43)
	Chapter 3 (Page No. 52 - 61)
Unit II	Chapter 3 (Page No. 61 - 64)
	Chapter 4 (Page No. 82 - 100)
Unit III	Chapter 5 (Page No. 112 - 134)
	Chapter 6 (Page No. 151 - 165)
Unit IV	Chapter 7 (Page No. 191 - 212)
	Chapter 8 (Page No. 235 - 255)
Unit V	Chapter 9 (Page No. 268 - 292)

Reference Book

1. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Seventh Impression, Pearson Education, 2009.

e - Resources

1. https://www.codewithharry.com/videos/c-tutorial-in-hindi-with-notes/
2. https://www.tutorialspoint.com/cprogramming/index.htm
3. https://www.geeksforgeeks.org/c-programming-language/
4. https://techniyojan.com/2019/12/c-programming-basics-notes.html
5. https://www.javatpoint.com/c-programming-language-tutorial

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Course Title : LAB : C Programming	Total Hours :40 Hours
Course Code : G22CAP11/G3CA1P1	Total Credits : 5

COs	CO Statement
CO1:	Develop the logic for the given problem.
CO2:	Recognize and understand the syntax and construction of C code.
CO3:	Know the steps involved in compiling, linking and debugging C code.
CO4:	Declare and define the user defined functions.

List of Programmes:

1. Program to implement simple if.
2. Program to implement if else.
3. Program to implement else if ladder
4. Program to implement switch case.
5. Program to implement while loop.
6. Program to implement do while loop.
7. Program to implement for loop.
8. Program to implement nested for loop.
9. Program to implement functions.
10. Program to implement Recursive functions.
11. Program to display the Length of given string.
12. Program for Comparison of two given string.
13. Program to arrange names in alphabetical order.
14. Program to illustrate the use of built-in string functions.

Course Title: LAB: GUI Programming	Total Hours: 30 Hours
Course Code: **G22CAP12/** G3CA1P2	Total Credits: 5

Course Outcomes

COs	CO Statement
CO1	To understand the basic concepts of Windows application development using VB.Net
CO2	To gain knowledge on the basic tools in VB.Net
CO3	To create application using VB.Net
CO4	To gain knowledge on client server programming in VB.Net
CO5	To gain knowledge on ASP .Net

1. Write a VB.Net program to design a Digital Clock.
2. Write a VB.Net program to calculate Simple Interest and Compound Interest.
3. Write a VB.Net program to find Sum of Digits.
4. Write a VB.Net program check the given number is Armstrong or not.
5. Write a VB.Net program to design a Simple Calculator.
6. Write a VB.Net program to perform List box operations.
7. Write a VB.Net Program to perform Quiz.
8. Write a VB.Net program to display Font Dialog box.
9. Write a VB.Net program to illustrate the usage of Menu Strip.
10. Write a VB.Net program for String Operations.
11. Write a VB.Net program to design an Application Form.
12. Write a VB.Net program to illustrate the use of Data Set and Data Grid View.
13. Write an ASP .Net program to illustrate the use of Validation Controls.
14. Write an ASP .Net program to display Multiplication table.

Course Title : LAB: Office Automation	Total Hours :30 Hours
Course Code : G22CAP13/ G3CA1P3	Total Credits : 5

Course Outcomes

COs	CO Statement
CO1	Able to create folders and file operations such as copy, paste, delete and rename.
CO2	Create and edit documents in Word, Excel, Powerpoint.
CO3	Develop slideshow presentations using Powerpoint.
CO4	Implement different types of Layouts in designing the documents.
CO5	Able to use formula and charts using Excel worksheets.

1. Working with Explore [Files/Folders: Create, Copy, Paste, Delete, Rename]
2. Create and Edit document
3. Create a document with different alignments
4. Table Manipulation
5. Mail Merge
6. Creation of Worksheet and Editing
7. Manipulating Excel Functions
8. Create and Process Employee pay details
9. Create different types of Chat
10. Create and Edit Database Table
11. Manipulating query commands from the Database Table
12. Report Generation
13. Slide Layout Generation
14. Slide Animation
15. Slide Transition Effects

SEMESTER – II

Course Title: Web Programming	Total Hours: 40 Hours
Course Code: G22CA21/G3CA21	Total Credits: 5

Course Outcomes

COs	CO Statements
CO1	To know about web browser
CO2	To understand basic tags in HTML
CO3	To illustrate the use of hyperlinks
CO4	To elucidate the purpose of navigation in web page
CO5	To explain formatting of tables and form design in HTML

Unit I   **8 Hours**
Editing and Viewing HTML - Opening a Web Page in Notepad; Previewing a Web Page in a Web Browser; Making, Saving, and Viewing Changes
Setting Up the Document Structure - Specifying the Document Type; Creating the HTML, Head, and Body Sections; Creating Paragraphs and Line Breaks; Specifying a Page Title and Metatags; Publishing a File to a Server.

Unit II   **8 Hours**
Formatting Text by Using Tags - Creating Headings; Applying Bold and Italic Formatting; Applying Superscript and Subscript Formatting; Using Monospace and Preformatted Text; Formatting a Block Quotation; Configuring view setting in Internet Explorer
Using Lists and Backgrounds - Creating Bulleted and Numbered Lists, Creating Definition Lists; Inserting Special Characters; Inserting Horizontal Lines; Choosing Background and Foreground Colors; Specifying a Background Image File.

Unit III   **8 Hours**
Creating Hyperlinks and Anchors - Hyperlinking to a Web Page; Using Partial Paths and Filenames; Using Relative and Absolute Paths; Setting a Target Window; Hyperlinking to an E-Mail Address; Creating and Hyperlinking to Anchors; Hyperlinking to Other Content
Displaying Graphics - Selecting a Graphics Format; Preparing Graphics for Web Use; Inserting Graphics; Arranging Elements on the Page; Controlling Image Size and Padding; Hyperlinking from Graphics; Using Thumbnail Graphics; Including Alternate Text for Graphics; Adding Figure Captions.

Unit IV   **8 Hours**
Creating Navigational Aids - Planning Your Site's Organization; Creating a Text-Based Navigation Bar; Creating a Graphical; Navigation Bar; Creating an Image Map; Redirecting to Another URL
Creating Tables - Creating a Simple Table; Specifying the Size of a Table; Specifying the Width of a Column; Merging Table Cells; Using Tables for Page Layout.

Unit V   **8 Hours**
Formatting Tables - Applying Table Borders; Applying Background and Foreground Fills; Changing Cell Padding, Spacing, and Alignment
Creating User Forms - Create a basic form; Create check boxes and option buttons; Creating lists.

Text Book
Faithe Wempen, "HTML5 Step by Step", Microsoft Corporation, 2011.

Unit I	Chapter 1
	Chapter 2
Unit II	Chapter 3
	Chapter 4
Unit III	Chapter 5
	Chapter 9
Unit IV	Chapter 10
	Chapter 12
Unit V	Chapter 13
	Chapter 14 (Page No. 252 to 262)

Reference Book
1. St. Xavier, "World Wide Web", McGraw Hill Education (India) Pvt. Ltd., New Delhi, 2000.

e - Resources
1. https://www.w3schools.com/html/
2. https://www.geeksforgeeks.org/html-tutorials/
3. https://www.tutorialspoint.com/html/index.htm

4. https://happycoding.io/tutorials/html/
5. https://www.youtube.com/watch?v=qz0aGYrrlhU
6. https://www.youtube.com/watch?v=acsZQ2Aq6-M

Course Title: Relational Database Management System	Total Hours :40 Hours
Course Code : G22CA22	Total Credits : 5

Course Outcomes

COs	CO Statement
CO1	Provide the fundamental concepts of database.
CO2	Familiarize the data models of database.
CO3	Understand the basics of SQL.
CO4	Know the database objects and DCL, TCL commands.
CO5	Understand about the database design.

Unit I   **15 Hours**
Introduction – Introduction to DBMS; File Processing System; Advantages of Database; Disadvantages of Database; Views of Data; Database System Structure.

Unit II   **15 Hours**
Data Models – Data Models; Hierarchy Model; Network Model; Object Oriented Model; Relational Model – Characteristics of Relational Model, E.F. Codd's Laws for a Fully Functional Relational Database Management System; Entity Relationship Model – Basic Concepts, Constraints, Keys, Entity-Relationship Diagram.

Unit III   **15 Hours**
SQL Fundamentals –Introduction; Advantages of SQL; Parts of SQL; Domain Types in SQL; Terminology; Data Definition Language; Data Manipulation Language; Basic Structure of SQL Expression; Column Alias Name; String Operation; Concatenation Operation; Ordering the Display of Tuples; Set Operations; Where Clause; Operators.

Unit IV   **15 Hours**
SQL Fundamentals – Aggregate Function; Group by Clause; Having Clause; Null values; Database Objects - Views - Advantages of View, Creating views; Triggers – Benefits of Triggers, Creating Triggers, Types of Triggers, Trigger Execution Hierarchy, Dropping Triggers.

Unit V   **15 Hours**
SQL Fundamentals – DCL (Data Control Language) – GRANT Command, REVOKE Command; TCL (Transaction Control Language) - The COMMIT Command, The ROLLBACK Command, The SAVEPOINT Command;
Joins, Constraints and Advanced SQL – Constraints – Types of Constraints – DOMAIN Integrity Constraints, Entity Integrity Constraints, Referential Integrity Constraints, Default Constraint.

Text Book
1. V Vidhya, G Jeyaram, K R Ishwarya, "Database Management Systems", Narosa Publishing House Pvt. Ltd.2016.

Unit I	1.1 – 1.6

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Unit II	2.1 – 2.4, 2.6 (2.6.1, 2.6.2) 2.8 (2.8.1 – 2.8.4)
Unit III	4.1 – 4.15
Unit IV	4.16 – 4.18 4.20, 4.21.2 (4.21.2.1, 4.21.2.2), 4.21.4 (4.21.4.1 – 4.21.4.4, 4.21.4.8)
Unit V	4.22 (4.22.1,4.22.2), 4.23 (4.23.1, 4.23.2, 4.23.3) 5.2.1 (5.2.1.1 – 5.2.1.3, 5.2.1.5)

Reference Books

1. Rakesh Saini, M.M.S.Rauthan, AbhaySaxena. Bindu Sharma,"DatabaseManagement System",Vayu Education of India publishing, First Edition 2010.
2. Ivan Bayross, SQL, PL/SQL The Programming Language of Oracle, BPBPublications, Fourth Revised Edition Reprinted 2014.

e- Resources

1.https://www.javatpoint.com/dbms-tutorial
2.https://www.w3schools.com/sql/
3.https://www.youtube.com/watch?v=6Iu45VZGQDk
4. https://www.youtube.com/watch?v=wClEbCyWryI
5. https://www.youtube.com/watch?v=qoAL4MA3P08
6. https://www.youtube.com/watch?v=HXV3zeQKqGY
7. https://onlinecourses.nptel.ac.in/noc22_cs51/preview

Course Title: LAB: Web Programming	Total Hours: 30 Hours
Course Code: G22CAP21/ G3CA2P1	Total Credits: 5

Course Outcomes

COs	CO Statement
CO1	Gain knowledge on the tags in HTML
CO2	Design Forms using HTML tags
CO3	Design web pages using HTML tags

1. Create a Webpage using basic tags.
2. Create a Webpage using formatting tags.
3. Create a Webpage to demonstrate List tags.
4. Create a Webpage to demonstrate the use of Images.
5. Create a Webpage to demonstrate Linking
6. Create a Webpage to demonstrate the use of Table tags.
7. Create a Webpage to demonstrate the use of Frame and Frameset tags.
8. Create a Webpage to demonstrate Text, Password and Button Elements in forms.
9. Create a Webpage to demonstrate Checkbox, Radio and Textarea Elements in forms.
10. Create a Webpage to demonstrate Select and Option element in forms.

Syllabus for those who joined in 2022 – 2023 and afterwards   P.G.D.C.A.

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Course Title : LAB: Relational Database Management System	Total Hours :40 Hours
Course Code : G22CAP22/ G3CA2P2	Total Credits : 5

Course Outcomes

COs	CO Statement
CO1:	Learn how to create tables and perform operations on the table.
CO2:	Understand and execute different SQL queries.
CO3:	To understand the working of SQL Built-in functions,

1. DDL Commands
2. DML Commands
3. Using Constraints
4. SQL Queries.
5. Aggregate Functions.
6. Numeric Functions
7. String Functions.
8. Date Functions.

Course Title : LAB: Multimedia	Total Hours: 30 Hours
Course Code : G22CAP23/ G3CA2P3	Total Credits: 5

Course Outcomes

COs	CO Statement
CO1	Increase the ability to edit and add special features to the images.
CO2	Increase the ability to create flash movie.
CO3	Design various applications such as cards, invitations, certificates etc.
CO4	Use various tools and Filters effectively.

1. Merge different images into a single file using Feather effect.
2. Change the color of an image.
3. Implement Rain effect.
4. Implement Rainbow effect.
5. Create water drop effect.
6. Implement Blinking effect.
7. Place an image into a text.
8. Implement Page Curl effect.
9. Implement Ripple effect.
10. Flaming Hot Fire Text effect.
11. Picture Animation.
12. Image Masking.
13. Text Masking
14. Create Motion Guide Layer.
15. Shape Tweening.
16. Globe Animation.
17. Bouncing a ball through the steps.
18. Procedure to implement moving ball using mouse drag (Action Script)
19. Procedure to display a ball using Random method. (Action Script)
20. Procedure to implement moving ball using mouse roll over (Action Script)