

(P.G. DEPARTMENT OF COMPUTER SCIENCE)

**OUTLINES OF TESTS,
SYLLABI AND COURSES OF READING**

FOR

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

(PGDCA)

(SEMESTER SYSTEM)

FIRST YEAR (Semester I & II)

(2021-22 and 2022-23 Sessions)

FACULTY OF COMPUTING SCIENCES



SRI GURU TEG BAHADUR KHALSA COLLEGE

Sri Anandpur Sahib

An Autonomous College

Affiliated to Punjabi University, Patiala

APPROVED

Board of Studies Meeting held on 23rd June
2021

PROGRAMME OF STUDY**PGDCA
(SEMESTER-I)**

Paper Code	Name Of Subject	Hours Per Week				Examination Scheme Marks				
		L	T	P	TOTAL	Internal	External	Practical	Total	Credits
PGDCA-101	Fundamentals of Information Technology	3	1	-	4	30	70	--	100	4
PGDCA-102	Operating Systems	3	1	-	4	30	70	--	100	4
PGDCA-103	Problem Solving using 'C'	3	1	-	4	30	70	--	100	4
PGDCA-104	Software Lab-I (Office Automation & Productivity Tools)	-	-	5	5	30	--	70	100	2.5
PGDCA-105	Software Lab-II (Based on PGDCA-103)	-	-	5	5	30	--	70	100	2.5
PGDCA-106	Choice Based Course (CBC)-I*	3	1	-	4	50	--	--	50	4
TOTAL						200	210	140	550	21

CBC-I*: Any one of the following papers may be opted:

PGDCA-106 E1	Computer Oriented Statistical Methods
PGDCA-106 E2	Quantitative Aptitude & Reasoning

The breakup of marks for the internal assessment for theory Subjects will be as under:

Mid semester test - I	7.5 Marks
Mid semester test - II	7.5 Marks
Attendance	4.5 Marks
Seminar/Projects	10.5 Marks

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PROGRAMME OF STUDY**PGDCA
(SEMESTER-II)**

Paper Code	Name of Subject	Hours Per Week				Examination Scheme Marks				
		L	T	P	Total	Internal	External	Practical	Total	Credits
PGDCA-201	Database Management System	3	1	-	4	30	70	--	100	4
PGDCA-202	Introduction To Computer Networks & E-Commerce	3	1	-	4	30	70	--	100	4
PGDCA-203	Object Oriented Programming Using C++	3	1	-	4	30	70	--	100	4
PGDCA-204	Software Lab-Iii (Based On Pgdca-201)	--	--	5	5	30	--	70	100	2.5
PGDCA-205	Software Lab-Iv (Based On Pgdca-203)	--	--	5	5	30	--	70	100	2.5
PGDCA-206	Choice Based Course (Cbc)-Ii*	--	--	4	4	50	--	--	50	4
Total						200	210	140	550	21

CBC-II*: Any one of the following paper may be opted:

PGDCA-206 E1	Workshop on Corel Draw
PGDCA-206 E2	Workshop on Adobe Photoshop

The breakup of marks for the internal assessment for theory Subjects will be as under:

Mid semester test - I	7.5 Marks
Mid semester test - II	7.5 Marks
Attendance	4.5 Marks
Seminar/Projects	10.5 Marks

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PGDCA-101: Fundamentals of Information Technology

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three Sections-A, B & C. Section A and B (Consist of unit I and II of the syllabi, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section-C is Compulsory.

UNIT-I

Introduction: Historical Evolution of Computer, Block Diagram of computer, characterization of computers, types of computers, the computer generations.

Basic Anatomy of Computers: memory unit, input-output unit, arithmetic logic unit, control unit, central processing unit, RAM, ROM, PROM, EPROM.

Input-Output Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Voice Recognition Devices, Optical Recognition devices, Web Cameras, electronic white board, Dot matrix, Character and Line printer, Desk Jet printer, Laser printer, and plotters, projectors, Headphone.

Number System: Non-positional and positional number systems, Base conversion, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other.

Binary Arithmetic: Addition, subtraction and multiplication. Computer Codes: weighted and non-weighted code, BCD, EBCDIC, ASCII, Unicode, XS-3, Grey Codes.

UNIT-II

Computer Software: Introduction, types of software, systems software, GUI, operating system, high level languages, assemblers, compilers and interpreters, system utilities, application packages.

Basic concepts of algorithm and Flow Charts: Flow charts, algorithm and decision tables, stages in the development of computer program, testing and debugging, program documentation.

Internet Related Concepts: Internet, Uses of Internet, Basic services of Internet, Email, FTP, TELNET, and WWW. Familiarities with terms: HTTP, HTTPS, URL, Web Browsers, IP Address, Domain Name, ISP, Web Portal, Search Engines, Blog, Surfing, Wiki, 5G networks.

Applications of Information Technology and Trends: IT in Business and Industry, IT in Education & training, IT in Science and Technology, IT and Entertainment, Current Trends in IT Application - AI, Virtual Reality, Voice Recognition, Robots, Multimedia Technology. Introduction to E-governance, E-Governance Mobile Apps UMANG, Digital Locker, Digital Library.

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E-Commerce: Meaning, its advantages & limitations, Infrastructure for E-commerce, Types of E-Commerce Applications.

Text Books:

1. P.K. Sinha and P. Sinha, Foundations of Computing, First Edition, BPB. Reference Books

Reference Books:

1. Chetan Srivastva, Fundamentals of Information Technology, Kalyani Publishers.
2. Satish Jain, Information Technology, BPB.
3. Sukhmeen Kaur, Vikram Gupta, S.S. Bhatia and Navneet Kaur, “Fundamentals of Information Technology”, Kalyani Publishers.

PGDCA-102: Operating Systems

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabus, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section C is Compulsory.

UNIT-I

Introduction to Operating System: Definition, Its need, Services, Early systems.

Types of Operating Systems: Batch processing operating system, Multiprogramming operating system, Time Sharing operating system, Multi-tasking operating system, Distributed operating system, Network operating system, Real time operating system, Multi-processor system and Parallel Processing, Mobile Operating System.

Process Management: Process concept, types of Process scheduling, basic concepts of CPU Scheduling, Scheduling Criteria, and Scheduling algorithms: FCFS, SJF, Round Robin & Queue Algorithms.

Deadlocks: Deadlock Definition and its Characterization.

UNIT-II

Windows: MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders.

Control Panel – Display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using Windows Accessories.

Linux: History & Features of Linux, Linux Architecture, File System of Linux, Hardware Requirements of Linux, Various flavours of Linux, Linux Standard Directories, Functions of Profile and Login Files in Linux, Linux Kernel.

Linux Commands: bc, cal, cat, cd, clear, cmp, cp,mv, date, find, ls, pwd, mkdir, more, rm, rmdir, chgrp, chmod, chown, tty, wc, who, whois, grep, telnet, overview of vi editor, basics of shell programming.

Text Books:

1. Andy Rathbone, "Windows for dummies", Pustak Mahal.
2. Stan Kelly-Bootle, "Understanding UNIX", BPB Publications.
3. Silverschatz , "Operating system concepts", Pearson education India.

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Reference Books:

1. Tom Adelstein and Bill Lubanovic, Linux System Administration, O'Reilly Media, Inc.
2. Harvey M. Deitel, Operating Systems, Prentice Hall.
3. Andrew S. Tanenbaum, Modern Operating System, Prentice Hall.

PGDCA-103: Problem Solving Using ‘C’

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabus, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section C is Compulsory.

UNIT-I

Programming Process: Problem definition, Program design, Coding, Compilation and Debugging, Program Development.

Basic Constructs: Identifiers, Keywords, Tokens, Constants, Data Types, Input and Output in C, Type Conversions, Operators and Expressions, Hierarchy of Operators, Precedence & Associativity, Control Statements: Branching, Looping and Jumping.

Functions: Definition, Prototype, Different types of functions based on arguments and return type, Parameter passing mechanisms, concept of recursive function.

Storage Classes: Different Storage Classes (static, auto, extern, register), Global and Local variables.

UNIT-II

Arrays: Definition, accessing elements, initialization, Passing Arrays to functions, Multi-dimensional arrays, String handling.

Applications of linear arrays: Linear and Binary Search, Bubble Sort and Selection Sort.

Pointers: Address and Dereferencing Operators, Declaration, Assignment, Passing addresses to functions, Using Pointer Arrays to sort n strings.

Structures and Unions: Variables, Accessing members, Nested Structures, Pointer to Structures, Concept of self-referential structures, Difference between a Union and Structure.

File Handling in C: Processing a text file through C program.

Text Books:

1. Byron Gottfried , Jitendra Chhabra, “Programming with C, 3rd Edition, Schaum’ s Outline Series, Tata McGraw Hill.
2. Shubhnandan S. Jamwal, Programming in C, Pearson Publications, 2017.

Reference Books:

1. E. Balagurusamy, “Programming in C”, Tata McGraw Hill.
2. Ram Kumar and Rakesh Aggarwal: Programming in ANSI C, TMH.

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3. Brian W. Kernighan / Dennis Ritchie, "The C Programming Language", 2nd edition, PHI.

PGDCA-104: Software Lab-I
(Office Automation & Productivity Tools)

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 2.5 (5H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 75

This laboratory course will comprise as exercises based on Office Automation and Productivity Tools. Students are required to practice following activities:

Word Processor: Introduction to Word Processing, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing a Document, Previewing documents, Printing documents, Formatting Documents, Checking the grammar and spelling, Formatting via find and replace, Using the Thesaurus, Using Auto Correct, Auto Complete and Auto Text, word count, Hyphenating, Mail merge, mailing Labels Wizards and Templates, Handling Graphics, Drawings, tables and charts, Converting a word document into various formats.

Presentation Tools: Creating slides, Applying transitions and sound effects, setting up slide shows, Animation, **Adding Graphics:** Inserting Pictures, tables, movies etc. **Effects to Presentation:** Setting Animation and Transition Effects, Adding Audio and Video.

Spreadsheet: Creating worksheet, entering data into worksheet, heading information, data, text, dates, alphanumeric, values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, keyboard shortcuts, Working with single and multiple workbook, Formatting of worksheet, Working with formulas, Inserting & deleting of data ,cell, row or column, Mathematical operations, cell referencing, Spread Sheet referencing, Creating Charts.

***The breakup of marks for the External Examination will be as under:**

I. Lab Record	20 Marks
II. Viva-Voce	20 Marks
III. Problem Solving and Execution	30 Marks

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**PGDCA-105: Software Lab-II
(BASED ON PGDCA-103)**

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 2.5 (5H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 75

This laboratory course will comprise as exercises to supplement what is learnt under Paper PGDCA-103: Problem Solving Using 'C'. Students are required to develop programs based upon:

1. Various data types in C language
2. Various constructs in the C language
3. Reading/ Writing text files.

***The breakup of marks for the External Examination will be as under:**

- | | |
|---------------------------------------------|-----------------|
| 1. Lab Record | 20 Marks |
| 2. Viva-Voce | 20 Marks |
| 3. Program Development and Execution | 30 Marks |

PGDCA-106 E1: Computer Oriented Statistical Methods

Maximum Marks: 50

External Examination: NIL

Internal Assessment: 50 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabus, respectively) will have four questions each from the respective units and will carry 5 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section C is Compulsory.

UNIT-I

Statistics: Diagrammatic and Graphical representation of Numerical Data, Formation of frequency distribution, Histogram, Cumulative Frequency - Polygon and Ogives.

Measures of Central tendency: Mean, Median, Mode. Measures of Dispersion: Mean deviation, Standard deviation, variance, Quartile deviation and coefficient of variation, Moments (upto 4th), Measures of Skewness and Kurtosis for grouped and ungrouped data.

UNIT - II

Correlation: Meaning and types of correlation, correlation and causation, Methods of correlation: product moment correlation coefficient - rank correlation coefficient.

Regression analysis: Linear regression - method of least squares for estimation of regression coefficient.

Concept of sampling and Sampling distributions: Chi square tests for goodness of fit and test for independence of attributes in contingency table.

References:

1. Rajaraman, "Computer Oriented Numerical Methods", PHI, New Delhi.
2. Murray R Spiegel, Larry J. Stephens - "Statistics" Schaum's Outlines
3. J.H. Mathews," Numerical Methods for Computer Science, Engineering and Mathematics", PHI
4. M K. Jain, S.R.K. Iyengar and R.K. Jain," Numerical Methods for Scientific and Engineering Computation", Wiley Eastern Limited, New Delhi.

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PGDCA-106 E2: Quantitative Aptitude & Reasoning

Maximum Marks: 50

External Examination: NIL

Internal Assessment: 50 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The question paper will consist of two Sections with Multiple Choice Questions. Section A & B will have 25 Multiple Choice Questions from each respective section of the syllabus. Candidates are required to attempt all the questions.

UNIT-I

Data Interpretation

1. Sources, Acquisition and Classification of data
2. Quantitative and Qualitative Data
3. Graphical Representation (Bar Charts, Histograms, Pie-Chart, Table –Chart and Line-Chart)
4. Data Interpretation
5. Data and Governance

UNIT-II

Mathematical Reasoning

1. Number Series, Letter Series, Codes and Relationships
2. Mathematical Aptitude (Fraction, Time and Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discount, Averages etc.)

Logical Reasoning

1. Evaluating and distinguishing Deductive and Inductive Series
2. Analogies
3. Venn Diagrams: Simple and Multiple use for establishing validity of arguments
4. Indian Logic: Means of Logic
5. Pramanas: Perception, Inference, Comparison, Verbal Testimony, Implication, Non-apprehension
6. Structure and kinds of Inference, Invariable Relation, Fallacies of Inference

References:

1. Aggarwal, R. S. A Modern Approach to Verbal & Non Verbal Reasoning.
2. Aggarwal, R.S. Quantitative Aptitude

PGDCA-201: Database Management System

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabi, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section-C is Compulsory.

UNIT-I

Database Management System: Characteristics, Database: Definition, components, definition, characteristics, advantages over traditional file processing system, User of database, DBA and its responsibilities, Database schema, instance. DBMS Architecture, data independence.

Database Languages: DDL, DML, DCL. Database utilities, Data Models, Keys: Super, candidate, primary, unique, foreign.

Entity Relationship model: Concepts, mapping cardinalities, entity relationship diagram, weak entity sets, strong entity set, aggregation, generalization, converting ER diagrams to tables, Overview of Network and Hierarchical model.

Relational Data Model: concepts, constraints. Relational algebra: Basic operations, additional operations.

UNIT-II

Database Design: Functional dependency, normalization, data base recovery, database integrity, Definition and problems arising out of concurrency, Authentication, authorization, methods of implementing security.

SQL: Basic SQL Query, Creating Table and Views

Text Books:

1. C.J. Date, "An Introduction to Data Base Systems", Narosa Publishers.

Reference Books:

1. Henry F. Korth, "Database System Concepts", McGraw Hill. Inc..
2. Naveen Prakash, "Introduction to Database Management", TMH.
3. Elmisry Nawathy, "Introduction to database System", Pearson Education India

PGDCA-202: Introduction to Computer Networks & E-Commerce

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabi, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section-C is Compulsory.

UNIT-I

Networking: Basic, elements in networking, network topology, different types of network LAN, MAN, WAN, GAN, PAN, Network connecting devices. Data Communication: Relays, Repeaters, Bridges, Routers, Gateways, Open system interconnection model (OSI) Different layers, TCP/IP model and layers, Introduction to intranet and extranet.

Internet Concepts: History of the internet, advantages and disadvantages of internet, WWW, IP addressing, domain name system, introduction and working of e-mail.

Introduction to Web Browsers and Search Engines: Definition features and types: internet explorer, Mozilla Firefox, Microsoft Edge and Google Chrome, search engine (types, features etc.), Electronic meeting system (Audio conferencing, video conferencing, groupware).

UNIT-II

Overview of E-Commerce Technologies: Ecommerce: Definition, difference with traditional commerce applications, 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: Business to Business, Business to customers, Customers to Customers, Business to Government, Business to Employee

Electronic Payment System: Introduction, Online payment systems –prepaid and postpaid payment systems, e-cash, e-cheque, Smart Card, Credit Card, Debit Card, Electronic purse, UPI payments.

Security issues on electronic payment system: Solutions to security issues: Biometrics –Types of biometrics.

Gateways: Idea of SMS, Email and Payment Gateway Integration.

Text Books:

1. Tannanbum, A.S.: Computer Networks, Prentice Hall.
2. Stallings, William: Local Networks: An Introduction: Macmillan Publishing Co.
3. Turban, Efraim, and David King, “Electronic Commerce: A Managerial Perspective”, 2010, Pearson Education Asia, Delhi.
4. Rayport, Jeffrey F. and Jaworksi, Bernard J, “Introduction to E-Commerce”, Tata McGraw Hill, New Delhi.

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Reference Books:

1. Kalakota, Ravi, "Frontiers of Electronic Commerce", Addison-Wesley, Delhi.
2. Stallings, William: Data Computer Communication, Macmillan Publishing Co.

PGDCA-203: Object Oriented Programming Using C++

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 4 (3L+1T)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 60

Instructions for Paper Setter/Examiners

The Question paper will consist of three sections-A, B & C. Section A and B (Consist of unit I and II of the syllabi, respectively) will have four questions each from the respective units and will carry 10 marks each. Candidates are required to attempt two questions each from section A and B. Section C will consist of 10 short answer type questions covering entire syllabus and will carry 3 marks each. Section-C is Compulsory.

UNIT-I

Evolution of OOP: Procedure Oriented Programming, OOP Paradigm, Advantages and disadvantages of OOP over its predecessor paradigms. Characteristics of Object Oriented Programming.

Introduction to C++: Identifier, Keywords, Constants. Operators: Arithmetic, relational, logical, conditional and assignment, Size of operator, Operator precedence and associativity, Type conversion, Variable declaration, expressions, statements, manipulators, Input and output statements, stream I/O, Conditional and Iterative statements, breaking control statements, Storage Classes, Arrays, Arrays as Character Strings, Structures, Unions, Bit fields, Enumerations and User defined types.

Pointers: Pointer Operations, Pointer Arithmetic, Pointers and Arrays, Multiple indirections, Pointer to functions.

Functions: Prototyping, Definition and Call, Scope Rules, Parameter Passing by value, by address and by reference, Functions returning references, Const functions, recursion, function overloading, Default Arguments, Const arguments, Pre-processor, Type casting.

UNIT-II

Classes and Objects: Class Declaration and Class Definition, Defining member functions, making functions inline, nesting of member functions, Members access control. THIS pointer.

Objects: Object as function arguments, array of objects, functions returning objects, Const member, Static data members and Static member functions, Friend functions and Friend classes.

Constructors: Properties, types of constructors, Dynamic constructors, multiple constructors in classes, **Destructors:** Properties, Virtual destructors. Destroying objects, Rules for constructors and destructors, Array of objects, Dynamic memory allocation using new and delete operators, Nested and container classes, Scopes: Local, Global, Namespace and Class.

Inheritance: Defining derived classes, inheriting private members, single inheritance, types of derivation, function redefining, constructors in derived class, Types of inheritance, Types of base classes, Code Reusability. **Polymorphism:** Methods of achieving polymorphic behavior.

Operator overloading: overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function.

Function overloading: early binding, Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class.

Difference between function overloading, redefining and overriding.

Text Books:

1. E. Balagurusamy, “Object Oriented Programming with C++”, Tata McGraw-Hill.

Reference Books:

1. Herbert Schildt, “The Complete Reference C++”, Tata McGraw-Hill.
2. Deitel and Deitel, “C++ How to Program”, Pearson Education.
3. Robert Lafore, “Object Oriented Programming in C++”, Galgotia Publications.

**PGDCA-204: Software Lab-III
(BASED ON PGDCA-201)**

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 2.5 (5H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 75

This laboratory course will comprise as exercises based on PGDCA-201 Database Management System. Students are required to practice following activities:

1. Working with database & tables, Queries
2. Applying Integrity constraints
3. Introduction to Forms
4. Sorting & Filtering
5. Controls
6. Reports & Macros: Creating Reports using Macros
7. Usage of DDL, DML & DCL Commands in RDBMS
8. Creating Tables & Views using SQL Commands

***The breakup of marks for the External Examination will be as under:**

- | | |
|---------------------------------------------|-----------------|
| 1. Lab Record | 20 Marks |
| 2. Viva-Voce | 20 Marks |
| 3. Program Development and Execution | 30 Marks |

**PGDCA-205: Software Lab-IV
(BASED ON PGDCA-203)**

Maximum Marks: 100

External Examination: 70 Marks

Internal Assessment: 30 Marks

Credits: 2.5 (5H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures: 75

This laboratory course will comprise as exercises based on PGDCA-203 Object Oriented Programming Using C++. Students are required to develop the following programs:

1. Write a Program to check whether a number is even or odd.
2. Write a Program to demonstrate scope and lifetime of variables.
3. Write a Program to implement the concept of ternary operator.
4. Write a Program to implement the concept of recursive function and arrays.
5. Write a Program to implement the concept of constructor.
6. Write a Program to demonstrate the concept of method overloading.
7. Write a Program to implement nesting of methods.
8. Write a Program to implement the concept of destructor
9. Write a Program to implement the concept of abstract class.
10. Write a Program to implement the concept of string methods.
11. Write a Program to implement the concept of hierarchical inheritance.
12. Write a Program to implement the concept of multilevel inheritances.
13. Write a Program to define an interface.
14. Write a Program to define final class.

***The breakup of marks for the External Examination will be as under:**

I.	Lab Record	20 Marks
II.	Viva-Voce	20 Marks
III.	Program Development and Execution	30 Marks

PGDCA-206 E1: Workshop on Corel Draw

Maximum Marks: 50

External Examination: Nil

Internal Assessment: 50 Marks

Credits: 4 (4H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures:60

UNIT-I

Introduction to Corel Draw: Creating your first new document, Exploring the user interface of Corel Draw, Device Central, Working with Templates, Import, Export, Tools of Corel Draw, Pick tool, Crop tool, Freehand tool, rectangular tool (circle, star, polygon), Interactive tool, Eyedropper tool, Outline tool, Fill tool, Interactive Fill tool.

Working with Text and Lines in Corel Draw: Artistic Text, Formatting text, changing shape of the text, Paragraph text, Working with lines, Fitting text to a path, Applying effects to text.

Working with shapes in Corel Draw: Creating Rectangles and Squares, Creating Circles and Ellipses, Drawing Polygons, Creating Star, Rotating Shapes, Selecting Fill and Outline Color.

Working with object in Corel Draw: Handling Objects in Corel Draw, Positioning Objects, Aligning and distributing objects, Sizing and Scaling objects, Rotating and Mirroring objects, combining and Breaking objects, Grouping, Creating Graphical special effects.

UNIT-II

Working with Curves in Corel Draw: Drawing with Freehand tool, Drawing Closed Curves, Bezier tool, Drawing with the Artistic media tool, Pen tool, 3-Point curve tool, Special effects of Corel draw, Blending tool, Contouring the object, Distorting Object, Envelope tool, Extruding of the object, Drop shadow, Applying Transparency effect.

Working with Colors and Bitmaps: Color Slider, Color Viewers, Fixed Palettes, Color Pallets Browser docker, Using color style docker, Converting Objects to Bitmaps, 3D effects, Art effect, Blur effect, Color Transformation effects, Contour effect, Creative effect, Distort effect, Noise effect.

Working with Tables in Corel Draw: Selecting, Moving and navigating table components, Inserting and deleting table rows and columns, Resizing table cells, rows and columns, Formatting tables and cells, Working with text in tables, Merging and splitting tables and cells. **Corel Draw and Web:** Saving the file and web page, publishing your drawing as a webpage, Creating Rollover Buttons.

***The breakup of marks for the Internal Evaluation will be as under:**

I.	Lab Record	15 Marks
II.	Viva-Voce	15 Marks
III.	Problem solving and Execution	20 Marks

References:

1. Corel Draw X5 in simple steps by Kogent Learning Solutions.
2. Corel Draw X5 The Official Guide by Tata McGraw Hill written by Gary David Bouton.

PGDCA-206 E2: Workshop on Adobe Photoshop

Maximum Marks: 50

External Examination: Nil

Internal Assessment: 50 Marks

Credits: 4 (4H P)

Time Allowed: 3 Hours

Pass Percentage: 35%

Number of Lectures:60

UNIT-I

Introduction to Photoshop: Basics of Adobe Photoshop. Understanding pixels & resolution. Exploring menus, panels and toolbox. Creating new image files and opening existing files in Photoshop. Understanding and handling different image file formats, changing the resolution, color, greyscales and size of the images. Zooming & panning an image. Working with multiple images, rulers, guides & grids. Creating multicolor images and using brushes, adjusting color using the panel. Cropping, rotating, overlapping and superimposing photos on a page. Undoing Steps with History.

UNIT-II

Working with selections, layers and channels: Understanding selection tools, refining the selection and edges. Understanding layers, creating, selecting, editing, locking and grouping layers. Layer styles, consolidating layers. Manipulating layer mask. Understanding color channels, working with channels panel.

Working with filters: Basics of Filters, constructive filters, blur filters, destructive filters, effects filters, render filters, liquify filter and other filters required for artistic effects.

Creating images for the web: understanding web image formats, preparing and slicing images for the web use. Adding transparency to the web, previewing images in a browser.

References:

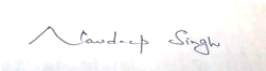
1. Adobe Photoshop CS6, Bible the comprehensive, tutorial resource – Lisa Danae Dayley, Brad Dayley - Wiley India
2. Photoshop 7 Savvy – Steve Romaniello – BPB Publications.

***The breakup of marks for the Internal Evaluation will be as under:**

I.	Lab Record	15 Marks
II.	Viva-Voce	15 Marks
III.	Program Development and Execution	20 Marks

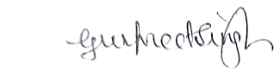
Members of Board of Studies

1. Dr. Surender Kumar



4. Dr. Navdeep Singh

7. Prof. Tajinder Kaur



2. Dr. Gurpreet Singh Lehal



5. Mr. Upkar Singh

8. Prof. Paramjit Kaur



3. Dr. Gurvinder Singh

6. Mr. Sachin Kumar

9. Prof. Amandeep Kaur

APPROVED

Board of Studies Meeting held on 23rd June 2021