

SCHEME & SYLLABUS
PGDCA (Post Graduate Diploma In Computer
Application)
(Choice Based Credit System)



Department of Computer Science and Applications
UICAIS
Sant Baba Bhag Singh University
2019

Index

S.No	Subject Type	Subject Code	Subject	Semester	Page No.
Scheme				1-2(All)	1-3
1	FT	ENG 507*-19	Professional Communication Skill 1	1	5
2	CR-SD	PGC101-19	Basics of Programming Language (C)	1	6-7
3	CR-IT	PGC103-19	Fundamental of computer & IT	1	8
4	CR	PGC105-19	Operating System	1	9
5	CR	PGC107-19	Web Technology-I	1	10
6	SBM	MGT533-19	Essentials of Management	1	11
7	CR	PGC109-19	Fundamentals of Computer & IT Lab	1	12-14
8	CR	PGC111-19	Basics of Programming Language Lab	1	15
9	CR-SD	PGC102-19	Relational Database Management System	2	17-18
10	CR-SD	PGC104-19	Object Oriented Programming Structures with C++	2	19-20
11	CR	PGC106-19	Data Communication and Networks	2	21-22
12	CR	PGC108-19	Computer Architectures	2	23
13	CR-IT	PGC110-19	Software Engineering	2	24
14	CR	PGC112-19	Web Technology-II	2	25
15	CR	PGC114-19	OOPS Lab	2	26
16	CR	PGC116-19	RDBMS Lab	2	27

COURSE CLASSIFICATION					
1. Ability Enhancement Compulsory Course		L	T	P	Credits
1.	Professional Communication Skill 1	3	0	0	3
2.	Essentials of Management	3	0	0	3
Total Credits					6
2. Professional Core Courses (Theory)		L	T	P	Credits
1.	Basics of Programming Language (C)	4	1	0	5
2.	Fundamental of computer & IT	4	1	0	5
3.	Operating System	4	1	0	5
4.	Web Technology-I	4	1	0	5
5.	Relational Database Management System	4	1	0	5
6.	Object Oriented Programming Structures with C++	4	1	0	5
7.	Data Communication and Networks	4	1	0	5
8.	Computer Architectures	4	0	0	4
9.	Software Engineering	4	0	0	4
Total Credits					43
3. Professional Core Courses (Practical)		L	T	P	Credits
1.	Fundamentals of Computer & IT Lab	0	0	4	2
2.	Basics of Programming Language Lab	0	0	4	2
3.	OOPS Lab	0	0	4	2
4.	RDBMS Lab	0	0	4	2
Total Credits					8

Course Scheme (PGDCA)
Semester 1

I. Theory Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	FT	ENG 507*-19	Professional Communication Skill 1	3:0:0	3:0:0	3	3
2	CR-SD	PGC101-19	Basics of Programming Language (C)	4:1:0	4:1:0	5	5
3	CR-IT	PGC103-19	Fundamental of computer & IT	4:1:0	4:1:0	5	5
4	CR	PGC105-19	Operating System	4:1:0	4:1:0	5	5
5	CR	PGC107-19	Web Technology-I	4:1:0	4:1:0	5	5
6	SBM	MGT533-19	Essentials of Management	3:0:0	3:0:0	3	3

II. Practical Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CR	PGC109-19	Fundamentals of Computer & IT Lab	0:0:4	0:0:2	4	2
2	CR	PGC111-19	Basics of Programming Language Lab	0:0:4	0:0:2	4	2

Total Credits: 30

Total Contact Hours: 34

Semester 2

I. Theory Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CR-SD	PGC102-19	Relational Database Management System	4:1:0	4:1:0	5	5
2	CR-SD	PGC104-19	Object Oriented Programming Structures with C++	4:1:0	4:1:0	5	5
3	CR	PGC106-19	Data Communication and Networks	4:1:0	4:1:0	5	5
4	CR	PGC108-19	Computer Architectures	4:0:0	4:0:0	4	4
6	CR-IT	PGC110-19	Software Engineering	4:0:0	4:0:0	4	4
7	CR	PGC112-19	Web Technology-II	3:0:0	3:0:0	3	3

II. Practical Subjects

S No.	Course Type	Sub Code	Subject Name	Contact Hours (L:T:P)	Credits (L:T:P)	Total Contact Hours	Total Credit Hours
1	CR	PGC114-19	OOPS Lab	0:0:4	0:0:2	4	2
2	CR	PGC116-19	RDBMS Lab	0:0:4	0:0:2	4	2

Total Credits: 30

Total Contact Hours: 34

Summary of Scheme

Sem	L	T	P	Project/ Training /Seminar	Contact hrs per week	Credits
1	22	4	8	0	34	30
2	23	3	8	0	34	30
Total	45	7	16	0	68	60





***First
Semester***

Course Code	ENG507*-19
Course Title	Professional Communication Skills-I
Type of Course	Foundation
L T P	3 0 0
Credits	3
Course Prerequisites	Basic knowledge of the English language
Course Outcome (CO)	The students will be able to improve their communication skills

SYLLABUS

UNIT I

Basics of Technical Communication: Functions of Communication-Internal & External Functions, Models-Shannon & Weaver's model of communication, Flow, Networks and importance, Barriers to Communication, Essential of effective communication (9 C's and other principles), Non-verbal Communication.

UNIT II

Basic Technical Writing: Paragraph writing (descriptive, Imaginative etc.), Precise writing, reading and comprehension, Letters – Format & various types.

UNIT III

Advanced Technical Writing: Memos, Reports, E-Mails & Net etiquettes, Circulars, Press Release, Newsletters, and Notices. Resume Writing, Technical Proposals, Research Papers, Dissertation and Thesis, Technical Reports, Instruction Manuals and Technical Descriptions, Creating Indexes, List of References and Bibliography.

UNIT IV

Verbal Communication: Presentation Techniques, Interviews, Group Discussions, Extempore, Meetings and Conferences.

A novel: The Glass Palace by Amitav Ghosh, Harper Collins, 2002, ISBN 9780007427468

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	The Written Word	Vandana R Singh	Oxford University Press, New Delhi
2	Business Communication	KK Ramchandran,	Macmillan, New Delhi □ □
3	Business Communication and Communicative English	Swati Samantaray,	Sultan Chand, New Delhi.

Course Code	PGC101-19
Course Title	Basics of Programming Language(C)
Type of Course	Core
L T P	4 1 0
Credits	5
Course Prerequisites	Fundamentals of Computer
Course Outcome (CO)	By the end of this course, students are expected to understand different programming paradigms and be able to construct programs in several programming languages.

SYLLABUS

UNIT I

Introduction to Problem Solving: Flow charts, tracing flow charts, Problem solving methods, Need for computer Languages.

Language preliminaries: character set, Identifiers and keywords, Data types, Declarations, Expressions, statements and symbolic constants

UNIT II

Operators and expressions: Arithmetic, unary, logical, bit-wise, assignment and conditional operators.

Control statements: While, do-while, for statements, nested loops, if else, switch, break, Continue, and goto statements, comma operators

Functions: Defining and accessing, passing arguments, Function prototypes, Recursion, Library functions, Static functions

Arrays: Defining and processing, Passing arrays to a function, Multi dimensional arrays.

Strings: Defining and operations on strings.

UNIT III

Pointers: Declarations, Passing pointers to a function, Operations on pointers, Pointer Arithmetic, Pointers and arrays, Arrays of pointers function pointers.

Structures: Defining and processing, Passing to a function, Unions, typedef, array of structure, and pointer to structure

Input-Output: getchar, putchar, scanf, printf, gets, puts, functions. Pre-processor commands: #include,#define,#ifdef

UNIT IV

File structures: Definitions, concept of record, file operations: Storing, creating, retrieving, updating Sequential, relative, indexed and random access mode, Files with binary mode(Low level)

File Handling: File operation: creation, copy, delete, update, text file, binary file.

Storage types: Automatic, external, register and static variables.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Essentials of Programming Languages.,	Friedman, Wand and Haynes	Prentice-Hall International (PHI)
2	Principles of Programming Languages.	Tennant.	Prentice-Hall International (PHI)
3	Complete reference with C	E.Balagurusamy	Tata McGraw Hill



Course Code	PGC103-19
Course Title	Fundamentals of Computer &IT
Type of Course	Core
L T P	4 1 0
Credits	5
Course Prerequisites	Basic knowledge about Computer & internet
Course Outcome (CO)	Obtain understanding of the concepts of Information Technology and its applications.

SYLLABUS

UNIT-I

Introduction to Information Technology: Basic concepts of IT, Data Processing: Data and Information. Classification, History and Types of Computers. Elements of a Computer System: Block Diagram of The Computer System, Introduction to various units. CPU, Memory, Input and Output devices, storage devices. System and Application Software, Utility packages.

UNIT II

Applications of Information Technology: Wide range of applications in: Home, Education and Training, Entertainment, Science, Medicine, Engineering etc

Introduction to Information Technology Tools: Operating System, Programming Languages, HTML, Features and trends, Introduction to MS-DOS/WINDOWS, Difference between MS-DOS/WINDOWS.

UNIT-III

Office Automation Tools: MS-Office, introduction to MS word and its features, creating, editing, printing and saving documents, spell check, mail merge, creating power point presentations, creating spreadsheets and simple graphs, PowerPoint, Excel, Access.

Translators: Assembler, Compiler and Interpreter, Difference between Compiler, Assembler and Interpreter.

Business Files: Comparison of various types of file organization.

UNIT-IV

Computers and Communication: Introduction to Computer Networks, Internet and World Wide Web, FTP, Electronic Mail, Information Security and Integrity: Basic Concepts, Perverse Software, Preventive Measures and treatments.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Computer Today	Sanders, D.H	Mc-Graw Hill,
2	Fundamental of Computers	Raja Raman V	Prentice Hall of India
3	Fundamentals of Computers	R. S. Salaria	Salaria Publishing House

Course Code	PGC105-19
Course Title	Operating Systems
Type of Course	Core
L T P	4 1 0
Credits	5
Course Prerequisites	Basic understanding about computer
Course Outcome (CO)	This course provides the knowledge about the role of an operating system, issues in the management of resources and system software and utilities.

SYLLABUS

UNIT I

Introduction: Definition, Design Goals, Evolution; Structure and Functions of Operating System, Types of operating system: Batch processing, Multi-programming, Time sharing, Real Time Operating Systems etc.

UNIT II

Process Management: Process states, State Transitions, Process Control block, Process Scheduling, Preemptive and Non preemptive scheduling, Process Scheduling algorithms (FCFS, SJF, RR etc.), Threads.

Inter process synchronization and communication: need, Mutual exclusion, Semaphores, queuing implementation, and classical problem in concurrent programming, critical region, Monitors, Messages, Deadlock.

UNIT III

Memory Management: Address Binding, Dynamic Loading and Linking Concepts, Logical and Physical Addresses, Contiguous and Non contiguous memory Allocation, Fragmentation, Paging, Segmentation, Virtual Memory, Demand Paging, Page fault, Page replacement algorithms, Global Vs Local Allocation, Thrashing.

UNIT IV

Other System Softwares: Types of system softwares, Stages in processing of high level language programs, Compilers, Assemblers, Interpreters, Linkers & Loaders, Macro processor and Device Drivers.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Operating System Concepts	Silberschatz and Galvin	Addison Wesley6
2	Modern operating Systems	A S Tanenbaum	PHI.
3	Operating System Concepts	Peterson and Silberschatz	Addison Wesley.

Course Code	PGC107-19
Course Title	Web Technology-I
Type of Course	Core
L T P	3 0 0
Credits	3
Course Prerequisites	Basic knowledge of technology
Course Outcome (CO)	Basic design and implementation of websites, Client-side technologies including HTML5, CSS, JavaScript, ASP, and XML

SYLLABUS

UNIT I

Introduction to HTML: HTML Fundamentals HTML Browsers ,HTML tags, Elements and Attributes , Structure of HTML code , Languages and technologies for browsers: HTML, DHTML, XHTML, ASP, JavaScript Features and Applications

Lists , Ordered List , Unordered List Definition, List Nesting List ,Block Level Tags ,Block formatting, Heading, Paragraph, Comments, Text alignment, Font size , Text Level Tags , Bold, Italic, Underlined, Strikethrough, Subscript, superscript , Inserting graphics, Scaling images Frameset , Forms

UNIT II

An introduction to DHTML

Cascading Style Sheets:The usefulness of style sheets , Creating style sheets ,Common tasks with CSS , Font Family ,Font Metrics, CSS tags

Introduction to XML, XML Basics, XML Syntax and Editors, Elements, Attributes, Document Type Definitions (DTD), XML Schemas (XSD), XML Namespaces, XML Document Object Model, XSLT, Use of XSLT with XML.

UNIT III

Introduction to ASP: Working of ASP page ,Variables ,ASP forms ,Data types ,Operators Object hierarchies ,Request, Response Object collections , ASP Applications ,

UNIT IV

JavaScript: Introduction, Operators, Assignments and Comparisons, Reserved words

Starting with JavaScript ,Writing first JavaScript program ,Putting Comments Functions, Statements in JavaScript , Working with Objects ,Object Types, Date object, Math object, String object, Event object,Handling Events,

PHP Introduction, syntax, operators, Introduction to Ajax, Use of Ajax in Website

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Web Technologies	Achyut S. Godbole, Atul Kahate	Tata McGraw Hill
2	Web Tech. & Design	C.Xavier New Age	PHI
3	Multimedia & Web Technology	Ramesh Bangia	wiley

Course Code	MGT533-19
Course Title	Essentials of Management
Type of Course	SBM
L T P	3 0 0
Credits	3
Course Prerequisites	Basic knowledge of Management
Course Outcome (CO)	The objective of this course is to develop a basic understanding about the management concepts as well as of human in various managerial processes in organization.

SYLLABUS

UNIT I

Management : Science, Theory and Practice - The Evolution of Management Thought and the Patterns of Management Analysis - Management and Society : The External Environment, Social Responsibility and Ethics.

UNIT II

The Nature and Purpose of Planning - Objectives - Strategies, Policies and Planning Premises - Decision Making .

The Nature of Organizing and Entrepreneuring - Organizational Structure :Departmentation - Line/Staff Authority and Decentralization - Effective Organizing and Organizational Culture.

UNIT III

Co-ordination functions in Organisation - Human Factors and Motivation - Leadership - Committees and group Decision Making – Communication.

UNIT IV

The System and Process of Controlling - Control Techniques and Information Technology - Productivity and Operations Management - Overall Control and toward the Future through Preventive Control.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Essentials of Management	Koontz	Tata McGraw-Hill
2	Principles & Practices of Management	L.M. Prasad	S. Chand & Sons
3	Management: Concept and Strategies	J.S. Chandan	Vikas Publishing

PGC109-19 Fundamentals of Computers and IT Lab

L T P
0 0 4

Learning objective: This subject will give students basic information about computer concepts like MS-Word, MS-Excel etc.

1. Familiarization with the Computer System:

- To explain the part of the computer system such as system unit, input devices, output devices connected to the computer.
- To explore the outside view of the system unit that includes the panels on front and ports at the rear
- To explore the inside view of the system unit that includes the motherboard, processor, expansion slots, various add-on cards, storage devices, power supply, fans.
- To understand the booting process that includes switching on the system, execution of POST routine, then bootstrap loader, and loading of the operating system, and getting it ready for use.
- To introduce the graphical user interface (desktop) of Windows operating system
- to explain the various elements of the desktop such as taskbar, icons (My Computer, Recycle Bin, etc.), short cuts, notification area.
- To configure the desktop that include selecting the wall paper, selecting the screen saver with or without password protection, selecting the screen resolution and color quality.

2. Navigating with Window Explorer:

- To navigate with the drives
- To create new folders
- To move folders from one drive to another drive
- To move files from one folder to another folder
- To search files and folders
- To share files and folders
- To view and/or change the attributes of the files and folders

3. Working with Control Panel:

- To work with date and time
- To create new user accounts
- To install new hardware and configuring existing hardware
- To install new software or remove existing installed software
- To configure network connections
- To managesecurity profil

4. Miscellaneous Features

- To work at the command prompt
- To open an application, folder, document or internet resource from the Run command
- To initialize storage media (formatting)
- To understand the menace of viruses
- To understand the working of virus guards and antivirus software

5. Exploring the Internet:

- To understand the working of the internet that include the use of protocols, domains, IP addresses, URLs, web browsers, web servers, mail-servers, etc.
- To create email-account, sending mails, receiving mails, sending files as attachments, etc.
- To login to a remote computer
- To search information using search engines

6. Microsoft Word:

- To familiarize with parts of Word window
- To create and save a document
- To set page settings, create headers and footers
- To edit a document and resave it
- To use copy, cut and paste features
- To use various formatting features such as bold face, italicize, underline, subscript, superscript, line spacing, etc.
- To use spelling and grammar checking feature
- To preview print a document

7. Microsoft Word continued:

- To create a table with specified rows and columns
- To enter data in a table
- To select a table, a row, a column or a cell
- To inset new row and/or a column
- To delete a row and/or a column
- To split and merge a row, column or a cell
- To understand the mail-merge and to use mail merge feature of MS-Word

8. Microsoft Excel:

- To familiarize with parts of Excel window
- To create and save a workbook with single and/or multiple worksheets
- To edit and format text as well numbers
- To apply operations on range of cells using built-in formulae

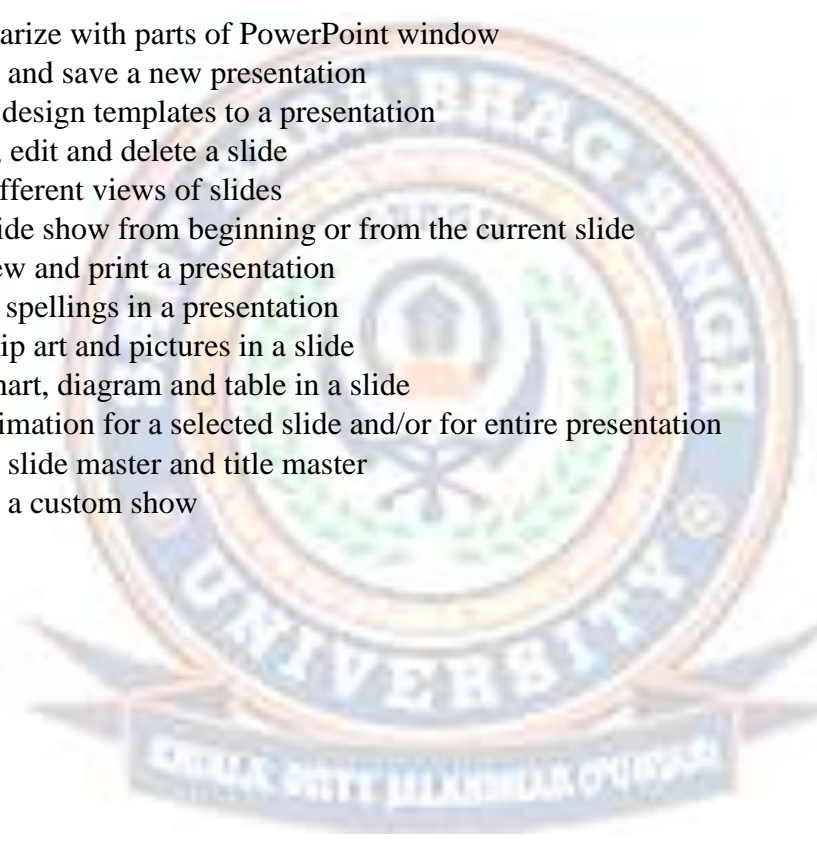
- To preview and print a worksheet

9. Microsoft Excel continued:

- To insert new row and/or column in a worksheet
- To delete a row and/or column in a worksheet
- To create a variety of charts
- To import and export data to or from worksheet

10. Microsoft PowerPoint:

- To familiarize with parts of PowerPoint window
- To create and save a new presentation
- To apply design templates to a presentation
- To insert, edit and delete a slide
- To use different views of slides
- To use slide show from beginning or from the current slide
- To preview and print a presentation
- To check spellings in a presentation
- To add clip art and pictures in a slide
- To add chart, diagram and table in a slide
- To set animation for a selected slide and/or for entire presentation
- To create slide master and title master
- To create a custom show



PGC111-19 Basics of Programming Language Lab

L T P
0 0 4

Learning objective: This subject will give students basic information about programming concepts using C language.

1. Simple programs to understand concept of programming language.
2. Programs to illustrate the use of control statements.
3. Programs to illustrate the use of loops
4. Programs to illustrate the use of function.
5. Programs to illustrate the use of string function.
6. Programs to illustrate the use of array
7. Programs to illustrate the use of function & array.
8. Programs to illustrate the use of pointer.
9. Programs to illustrate the use of pointer & function.
10. Programs to illustrate the use of pointer & array.
11. Programs to illustrate the use of structure.
12. Programs to illustrate the use of structure & pointer.
13. Programs to illustrate the use of union.
14. Programs to illustrate the use of file.
15. Programs to illustrate the use of random access file.





***Second
Semester***

Course Code	PGC102-19
Course Title	Relational Database Management System
Type of Course	Core
L T P	4 1 0
Credits	5
Course Prerequisites	Information Systems Analysis of Organizational System
Course Outcome (CO)	The purpose if this course is to equip the participants with the relevant quantitative tools and techniques for application in solving managerial problems. The focus of this course will be on applications of quantitative methods in business situations

SYLLABUS

UNIT I

Basic Concepts: Database Management System , File based system , Advantages of DBMS over file based system , Database Approach , Logical DBMS Architecture ,Three level architecture of DBMS or logical DBMS architecture , Need for three level architecture , Physical DBMS Architecture , Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models : Data Models , Relational Model , Domains , Tuple and Relation ,Super keys, Candidate keys , Primary keys and foreign key for the Relations , Relational Constraints , Domain Constraint, Key Constraint , Integrity Constraint , Update Operations and Dealing with Constraint Violations , Relational Operations , Entity Relationship (ER) Model , Entities , Attributes , Relationships , E-R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT II

Database Entegrity and Normalisation :Relational Database Integrity , The Keys , Referential Integrity , Entity Integrity , Redundancy and Associated Problems , Single Valued Dependencies , Normalisation , Rules of Data Normalisation , The First Normal Form , The Second Normal Form , The Third Normal Form , Boyce Codd Normal Form , Attribute Preservation

UNIT III

Structures Query Language (SQL): Meaning , SQL commands , Data Definition Language , Data Manipulation Language , Data Control Language , Transaction Control Language - Queries using Order by , Where , Group by , Nested Queries , Joins , Views , Sequences , Indexes , Table Handling.

Transactions and Concurrency Management: Transactions , Concurrent Transactions , Locking Protocol , Serialisable Schedules , Locks Two Phase Locking (2PL) , Deadlock and its Prevention , Optimistic Concurrency Control.

UNIT IV

Database Recovery and Security: Database Recovery meaning , Kinds of failures , Failure controlling methods, Database errors , Backup & Recovery Techniques , Security & Integrity , Database Security, Authorization.

Distributed and Client Server Databases: Need for Distributed Database Systems , Structure of Distributed Database , Advantages and Disadvantages of DDBMS, Advantages of Data Distribution, Disadvantages of Data Distribution , Data Replication , Data Fragmentation.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Data Base Systems	Peter Rob Carlos Coronel	Cengage Learning
2	An Introduction To Database Systems	Bipin C. Desai,	Golgotha Publication
3	Database System Concepts	Henry F. korth, Abraham	McGraw-Hill



Course Code	PGC104-19
Course Title	Object Oriented Programming Structures with C++
Type of Course	Core
L T P	4 1 0
Credits	5.
Course Prerequisites	Basic knowledge of C language
Course Outcome (CO)	This course offers the modern programming language C++ that shall help the students to implement the various concept of object orientation practically.

SYLLABUS

UNIT I

Object-Oriented Programming Concepts: Introduction, procedural programming paradigm and object-oriented programming paradigm, comparison, concepts of object-oriented programming — concepts of an object and a class, interface and implementation of a class, operations on objects, relationships among objects, abstraction, encapsulation, data hiding, inheritance, overloading, polymorphism, Messaging.

Standard Input/output: Concept of streams, hierarchy of console stream classes, input/output using overloaded operators >> and << and member functions of i/o stream classes, formatting output, formatting using ios class functions and flags, formatting using manipulators.

UNIT II

Classes and Objects: Specifying a class, creating class objects, accessing class members, access specifiers, static members, use of *const* keyword, friends of a class, empty classes, nested classes, local classes, abstract classes, container classes, bit fields and classes.

Pointers and Dynamic Memory Management: Declaring and initializing pointers, accessing data through pointers, pointer arithmetic, memory allocation (static and dynamic), dynamic memory management using *new* and *delete* operators, pointer to an object, *this* pointer, pointer related problems - dangling/wild pointers, null pointer assignment, memory leak and allocation failures.

UNIT III

Constructors and Destructors: Need for constructors and destructors, copy constructor, dynamic constructors, explicit constructors, destructors, constructors and destructors with static members.

Operator Overloading and Type Conversion: Overloading operators, rules for overloading operators, overloading of various operators, type conversion - basic type to class type, class type to basic type, class type to another class type.

Inheritance: Introduction, defining derived classes, forms of inheritance, ambiguity in multiple and multipath inheritance, virtual base class, object slicing, overriding member functions, object composition and delegation , order of execution of constructors and destructors.

UNIT IV

Exception Handling: Review of traditional error handling, basics of exception handling, exception handling mechanism, throwing mechanism, catching mechanism, rethrowing an exception, specifying exceptions.

Virtual functions & Polymorphism: Concept of binding - early binding and late binding, virtual functions, pure virtual functions, abstract classes, virtual destructors.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Object Oriented Programming in Turbo C++	Robert Lafore	Galgotia Publications
2	The C++ Programming Language	Bjarne	Wesley Publications
3	Object Oriented Programming with C++	E.Balagurusamy	Tata McGraw Hill



Course Code	PGC106-19
Course Title	Data Communication and Networks
Type of Course	Core
L T P	4 1 0
Credits	5
Course Prerequisites	Basic understanding about networking hardware knowledge
Course Outcome (CO)	This course on Data Communication and Networks provides an introduction to the fundamental concepts on data communication and the design, deployment, and management of computer networks.

SYLLABUS

UNIT I

Introduction to Data Communication: Components of Data Communication, Data Representation, Transmission Impairments, Switching, Multiplexing. Review of Network Hardware: LAN, MAN, WAN, Wireless networks, Internetworks. Review of Network Software: Layer, Protocols, Interfaces and Services. Review of Reference Models: OSI, TCP/IP and their comparison.

UNIT II

Physical Layer

Transmission Media: Twisted pair, Coaxial cable, and Fiber optics, Wireless transmission (Radio, Microwave, and Infrared).

Data Link Layer

Services provided by DLL: FRAMING, ERROR CONTROL, FLOW CONTROL, MEDIUM ACCESS.

UNIT III

Medium Access Sub layer

Channel Allocation, MAC protocols – ALOHA, CSMA protocols, Collision free protocols, Limited Contention Protocols, Wireless LAN protocols, IEEE 802.3, 802.4, 802.5 standards and their comparison

Network Layer

Design Issues, Routing Algorithms (Shortest Path, Flooding, Distance Vector, Hierarchical, Broadcast, Multicast). Congestion Control Algorithms (Leaky bucket, Token bucket, Load shedding), Internetworking, IP Protocol, ARP, RARP. IPv4 and IPv6.

UNIT IV

Transport Layer

Addressing, Establishing and Releasing Connection, Buffering, Internet Transport Protocol (TCP and UDP).

Application Layer

Domain name system, E-mail, File transfer protocol, HTTP, HTTPS, World Wide Web.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Computer Networks	Tanenbaum, Andrew S	PHI
2	Data Communications and Networking	Forouzan, B. A	Tata McGraw-Hill.
3	Internetworking with TCP/IP	DouglasE.Comer	CPE



Course Code	PGC108-19
Course Title	Computer Architectures
Type of Course	Core
L T P	4 0 0
Credits	4
Course Prerequisites	Students will understand the organization of the Intel processors, be able to work in binary and hexadecimal number bases.
Course Outcome (CO)	This course covers the basics of computer organization with emphasis on the lower level abstraction of a computer system.

SYLLABUS

UNIT I

Register transfer language, Bus and memory transfer, Arithmetic, micro operation, Logic micro operation, Shift micro operation, Arithmetic logic shift unit, Instruction codes, Computer registers, Computer instructions, Timing and control, Instruction cycle, Memory reference instruction, I/O and interrupt, Design of basic computer and Accumulator logic.

UNIT II

Machine language, assembly language, Assembler programming, arithmetic and logic operation, I/O programming. Micro programmed and hardwired control unit, General register organization of C.P.U, Stack organization, Instruction format, Addressing modes, Program control, RISC v/s CISC.

UNIT III

Peripheral devices, I/O interfaces, Asynchronous Data transfer DMA, Priority Interrupt, I/O processor, Multiprocessor system organization and Data communication processor. Auxiliary memory, Microcomputer, memory, Memory hierarchy, Associative memory, Virtual memory, Cache memory, Memory management hardware.

UNIT IV

Parallel processing, Pipelining, Arithmetic pipelining, Instruction pipeline, RISC pipeline, Vector processing, Memory interleaving, Array processor, multiprocessor.

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Computer Organization	Car Hamacher, ZvonksVranesic, Safwat Z	McGraw Hill
2	Computer System Architecture	Mano, M.M.,	Prentice Hall of India
3	Computer Architecture and Organization	John Paul Hayes	McGraw-Hill

Course Code	PGC110-19
Course Title	Software Engineering
Type of Course	Core
L T P	4 0 0
Credits	4
Course Prerequisites	Knowledge about System Analysis Design
Course Outcome (CO)	This course aims at apprising the students with the concepts and techniques used in the process of project conception, feasibility study, evaluation, implementation and control and thereby develop necessary skill for project planning and management.

SYLLABUS

UNIT I

Software Engineering: The software problem, Evolution of Software Engineering, Principles of software engineering, Software Development vs. Software Engineering.

Software Process: Software Process, Selection of appropriate process model, Software Process Models- Waterfall, Spiral, Prototyping, Agile Methodology- Scrum and XP.

UNIT II

Advanced Requirement Analysis & Design: Analysis Principles, SRS, Requirement Elicitation Techniques- FAST and QFD, Design Principles, Design Concepts, Data Design, Architectural Design-Architectural Styles, Procedural Design.

UNIT III

Software Project Management: The Management Spectrum, Software Project Planning and its characteristics, Types of metrics, Effort Estimation- FP, LOC, FP vs. LOC, Schedule & Cost Estimation Models- Activity Networks- PERT/CPM, COCOMO-I, COCOMO-II, Risk Assessment-Probability Matrix, Risk Management.

Software Testing: Testing Fundamentals- Error/Fault/Failure, Testing Principles, Test Cases, Testing Techniques-White Box & Black Box, Unit Testing, Integration Testing, System Testing, Verification and Validation Testing, Acceptance Testing.

UNIT IV

Software Quality Management: S/W Quality, Importance of S/W Quality, Quality Metrics, Quality Standards- ISO 9126, Change Control, Change Control Process.

Advanced S/W Engineering: CASE Tools, Reverse Engineering, Re-engineering, Web Engineering.

RECOMMENDED BOOKS			
S. no.	Name	AUTHOR(S)	PUBLISHER
1	Software Engineering: A Practitioner's Approach	R.S. Pressman	McGraw- Hill
2	An Integrated Approach to Software Engineering	P. Jalote	Narosa Publishing House
3	Software Engineering	K.K. Aggarwal and Y. Singh	New Age International Publishers,

Course Code	PGC112-19
Course Title	Web Technology-II
Type of Course	Core
L T P	3 0 0
Credits	3
Course Prerequisites	Basic understanding about E-Commerce & Application Programming
Course Outcome (CO)	Basic design and implementation of websites, Client-side technologies including HTML5, CSS, JavaScript, ASP, and XML

SYLLABUS

UNIT I:

Introduction to XML: Overview, document tree structure, DTD, Concept of Well Formed XML and valid XML, parser, XSLT

Overview of Internet Technology: Concept of protocol, HTTP,FTP,SMTP, web server, Client side Scripting, Server side scripting

UNIT II:

Server side Scripting with PHP: Introduction to PHP, client data handling, String manipulation, Array, File handling, functions

Introduction to HTML5: Overview New Elements Canvas Video and Audio 8 Web Storage Geolocation Offline Web Pages Microdata HTML5 APIs Migrating From HTML4 to HTML5

UNIT III:

Advanced CSS: Introduction to CSS3, Differences between CSS3 and earlier CSS, CSS3 Selectors: Selectors Overview Explore specific selectors Designing and Developing with CSS3: 10 Background and color Typography CSS3 Box Model Page layout, Media Queries Implementing CSS3, Advantages and limitations of working with CSS3

UNIT IV:

Getting Started with AJAX: Introduction to AJAX, Overview of Traditional Web Communication Processes and Technologies, Interacting with the Web Server Using the XMLHttpRequest Object, Create an XMLHttpRequest Object , Interact with the Web Server, Working with PHP and AJAX: Introduction Process Client Requests ,Accessing Files Using PHP, Applying Basic

RECOMMENDED BOOKS			
Sr. no.	Name	AUTHOR(S)	PUBLISHER
1	Web Technologies	Achyut S. Godbole, Atul Kahate	Tata McGraw Hill
2	Web Tech. & Design	C.Xavier New Age	PHI
3	Javascript Bible	Goodman danny	Wiley

CSAPGC114-19 OOPS Lab

L T P
0 0 4

Learning Objectives: This course will introduce the basic concepts of programming using C++.

1. Write a program to calculate average marks scored by a student for 3 subjects.
2. Write a program to find the area and perimeter of a circle and rectangle.
3. Write a program to swap two numbers.
4. Write a program to find largest of three numbers.
5. Write a program to find the maximum number among three numbers.
6. Write a program to generate Fibonacci series.
7. Write a program to perform string manipulation.
8. Find the length of a string. Compare two strings, concatenate two strings, and Reverse a string, Copy a string to another location.
9. Write a program to find quotient and remainder of 2 numbers.
10. Write a program to manipulate the class account using classes and function. A user should be able to perform the following functions. a. Deposit money. b. Withdraw money, c. Calculate the interest d. Check the total balance in his account.
11. Write a program to generate Prime numbers between 1 and 50.
12. Write a program to perform matrix addition and multiplication.
13. Write a program to check whether the given matrix is a sparse matrix or not.
14. Write a program to overload unary minus operator.
15. Write a program to calculate total sales and average sales made by a salesman.
16. Write a programs to for construction in Derived Class to produce the report a employee in a company.
17. Write a program to display the student details using pointers.
18. Write a program to convert ASCII value to its equivalent character.
19. Write a program to overload a function to calculate volume of cube, cylinder and rectangular box

PGC116-19 Relational Database Management System Lab

L T P
0 0 4

Learning Objectives: this course will introduce the basic concepts of database and SQL queries.

1. Comparative study of various Database Management Systems
2. Data Definition Language (DDL), Data Manipulation Language (DML), and Data Control Language(DCL)
3. How to apply Constraints at various levels.
4. View data in the required form using Operators, Functions and Joins.
5. Creating different types of Views for tailored presentation of data
6. How to apply Conditional Controls in PL/SQL
7. Error Handling using Internal Exceptions and External Exceptions
8. Using various types of Cursors
9. How to run Stored Procedures and Functions
10. Creating Packages and applying Triggers
11. .Creating Arrays and Nested Tables.

