LESSON PLAN (Session 2022-23)

PGDCA

Subject: Operating System (Sem 1)

SESSION	TOPIC
August (Month 1)	Week 1 Windows Operating Systenm: features, history, hardware requirements and its installation SystemGrapnics interface: Benefits, Screen attributes: icons and bars. Working with fonts: changing, removing, adding, customizing mouse and keyboard use.
	Week 2 vs. keyboard input, Features and accessories or the Windows program. Objects and their properties. rolder and file management: Working with files, Naming files, Navigate to Folders with Windows Explorer Mouse, Copying and moving files, Deleting files, Managing folders, Creating,Viewing, Expanding and collapsing Backing up and restoring files.
	Week 3 Components of Windows: format of a window, moving windows, resizing windows, minimizing and maximizing windows. Control panel: Customizing screens, Screen colors, Patterns, Spacing icons, selecting time/date, setting the Sound, Concept of menu Using Help, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories, System restore.Customizing printing, changing the print queue, configuring the printer, Adding printers.
	Week 4 System properties and the device manager Management tools, Memory configuration, Safe mode Install and uninstall applications, Setup/troubleshooting issues. Maintaining and optimizing disks: Disk Cleanup, Disk defragmenter, Compressing and uncompressing folders and files. Encrypting and decrypting folders and files.
September (Month 2)	Mid semester Test-I
	Week 5 Introduction to MS Word, MS Word Documents: Creating a File, Saving and File Formats, File views.Font/Character Formatting: Styles and Character/Font Formatting, Character Formatting.
	Week 6 Styles: Styles Group, Styles Task Pane. Page Setup and Sections: Page Borders, Header and Footer Layer, Header and Footer Navigation and Design, Adding Header and
	Week 7 Understanding Animation and Transitions, Assigning Transitions to Slides, Using an Animation Preset. MS Outlook: Organizing Messages, Contents, and Time with Outlook: Setting up E-mail Accounts

October (Month 3)	Week 8 Cell Range Operations, Controlling the Worksheet View, Copying and Moving Ranges, Using Names to Work with Ranges, Introduction to MS PowerPoint, creating and editing slides, Week 9 Adding Comments to Cells. Formula and Functions, sorting and filtering data, graphs and chart
	Week 10 Mid semester Test-II
	Week 11 Mobile telephone, mobile telephone switching office.
November (Month 4)	Week 12 Footer Material. Tables and picture insertion. Introduction to MS Excel, Creating and Editing Worksheets and Workbooks Exploring the types of Data, Date and Time, Modifying Cell Contents, Applying Number Formatting,
	Week 13 Paragraph Formatting: Styles and Paragraph Formatting, Structural Formatting, Paragraph Decoration.
	Week 14 Introduction to MS PowerPoint, creating and editing slides, Inserting Content from External Sources, Using Content Placeholders, Creating Text Boxes Manually, Working with Text Boxes, Understanding layouts and Themes, Applying a Theme, Working with Preset Placeholders, Customizing and Creating Layouts, Managing Slide Masters, Managing Themes, PrintingSlides.
	Week 15 Revision

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Department of Computer Science (HEIS), Government College. Ropar

(2022-23)

Class PGDCA Sem. 1st Subject Programming in C- Language

Time Period	Topics to be Covered
Week 1	Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging.
Week 2	Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.
Week 3	Control statements: branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, goto), nested control structures.
Week 4	Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion. I/O functions: formatted & unformatted console I/O functions
Week 5	Storage Classes: automatic, external, static and register variables.
Week 6	Arrays: – One dimensional and two dimensional arrays
Week 7	Declaration, initialization, reading values into an array, displaying array contents Strings: input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat & strrev), table of strings.
Week 8	MST (Mid-Semester Test)
Week 9	MST (Mid-Semester Test)
Week 10	Structures and unions: using structures and unions, comparison of structure with arrays and union.
Week 11	Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers,
Week 12	pointers and arrays.
Week 13	revision
Week 14	Introduction to Files in C: opening and closing files.
Week 15	Basic I/O operation on files.
Week 16	Queries from students

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Department of Computer Science (HEIS), Government College. Ropar
(2022-23)
Class PGDCA Sem. 2nd Subject Web Technology

SESSION	TOPIC
Week 1	Internet basic: Networks protocols, TCP/IP protocols
Week 2	Networking hardware and software device, Internet address port socket, name resolution Firewalls
Week 3	Protocol tunneling Proxy Server, Internet Standards, Governing the Web HTTP,MIME, Inside URLs, Web Application
Week 4	Overview of Client/server web communication, comparison of web server, common gateway interface CGI.
Week 5	Presenting XML with CSS and XSLT, XML-DOM, What is HTML
Week 6	Web page designing: Introduction to markup language,HTML:list table, Image, Frame, Forms.
Week 7	Style Sheet CSS:XML:DTD,XML Namespace, XML Schemes.
Week 8	Mid semester Test-I
Week 9	. Mid semester Test-II
Week 10	Event and Event Handling: Browser and DOM,JQuery:Syntex,Selecters,Events And AJAX Methods
Week 11	Client side scripting: java Script: Introduction, Document,Forms,Statement, Functions,Objects
Week 12	Server side Programming:PHP:Introduction, Requirement, PHP Syntex, Data Type, Veriables, Strings, Operators,
Week 13	Condition Statement: If-else, control structure, Switch,Array, Function, File Handling
Week 14	Create Forms, sending emails, file upload, session/state management, error and exceptions, PHP database for dynamic web pages.
Week 15	Introduction to servlets: Servlet Basic Servlet Structure, Servlet life cycle
Week 16	Sevlet APIs,Writing Thread safe Servlets, Setting Cookies and Session Managments with Servlet API.

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Week 14	**Cost analysis of project:** Cost incurred on raw materials, different testing procedures, cost of instrumentation, downstream processing cost (wherever required); Cost of clinical trials
Week 15	**Research grants:** National/International funding agencies; Government and private bodies.
Week 16	**Documentation:** Techniques and importance of documentation; Role of internet, information technology and computers in research and documentation

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(2022-23)

Class PGDCA Sem. 2nd Subject :- Pyhton

Time Period	Topics to be Covered
Week 1	Introduction to Python: History of Python, Strength and Weakness, Different Versions, Installing Python
Week 2	Setting up in local environment, IDLE
Week 3	Executing from file, command line from interactive mode, Python Identifiers and reserved key words.
Week 4	Python syntax: Variables and Variables type, Data types
Week 5	Data Types Conversion, Operators (Arithmetic, Comparison, Assignment, Bitwise,
Week 6	Logical, Membership, Identity),
Week 7	Operators Precedence, Python Decision making (if, el if, else, nested if), Python loops (while, for, nested loopsKeywords and optional parameters
Week 8	MST
Week 9	MST
Week 10	Scope of variables (Global and comprehension. Local),Number operations, Break and continue statements. Python Collections or Sequence: Sequence introduction, String Operations, List, Tuple, Dictionary, Set. Python Functions: Function introduction, User defined functions, Functions with parameters
Week 11	Anonymous function Lambda, In-build function,
Week 12	Python Modules: Modules, Standard Modules (Sys, Math, Time
Week 13	Import Statement, from Python statement, Dir) functions.
Week 14	File handling: Sending Output to STDOUT Using the print() Method, Reading Input with the input) Method,
Week 15	Creating File Objects with the open() Method, Controlling File Access Modes, Working with File Object Attributes, Closing File Objects with the close() Method, Reading and Writing to File Objects with Using read() and write(), File Processing Functions from the OS Module.
Week 16	Queries from students

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LESSON PLAN (2022-23)

Class Pgdca 2nd sem

Subject OOP's (203)

SESSION	TOPIC	REFERENCES
Week 1	Evolution of OOP: Procedure Oriented Programming, OOP Paradigm. Advantages and disadvantages of OOP over its predecessor paradigms.	
Week 2	Characteristics of Object Oriented Programming. Introduction to C++: Identifier, Keywords, Constants.	
Week 3	Operators: Arithmetic, relational, logical, conditional and assignment. Size of operator, Operator precedence and associativity. Type conversion, Variable declaration, expressions, statements, manipulators.	
Week 4	Input and output statements, stream I/O, Conditional and Iterative statements, breaking control	
Week 5	**Mid semester Test-I**	
Week 6	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	
Week 7	, 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.	
Week 8	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,	
Week 9	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.	
Week 10	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:	
Week 11	**Mid semester Test-II**	

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Week 12	Methods of achieving polymorphic behavior. Operator overloading: overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function	
Week 13	Function overloading: early binding, Polymorphism with pointers, virtual functions	
Week 14	late binding, pure virtual functions and abstract base class. Difference between function overloading, redefining, and overriding. Templates: Generic Functions and Generic Classes,	
Week 15	Overloading of template functions. Exception Handling catching class types, handling derived class exceptions, catching exceptions, restricting exception.	
Week 16	Revision	

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SULLABUS PLAN
2022-23

Subject: Computer Graphics
Subject Code: M.Sc I(IT)

	WEEK	TOPIC
AUGUST (Month-1)	Week1	Soft Copy Devices: Touch Panel, Light Pens, Graphic Tablets, Joysticks,
	Week2	Trackball, Data Glove, Digitizer, Image Scanner, Mouse, Voice Systems.
	Week3	Hard Copy Devices: Impact And Non Impact Printers, Such As Line Printers, Dot Matrix Printers,
	Week4	Laser, Ink-Jet, Electrostatic, Flatbed And Drum Plotters.
September (Month-2)	Week5	Video Display Devices: Refresh Cathode–Ray Tube, Raster Scan Display, Random Scan Display
	Week6	
	WeeK7	Color CRT-Monitors, Direct View Storage Tube, Flat Panel Displays, 3-D Viewing Devices, Raster Scan Systems,
	Week8	Random Scan Systems, Graphic Monitors And Workstation
October (Month-3)	Week9	Scan Conversation Algorithm Line, Circle And Ellipse,
		MID SEMESTER TEST I
	Week10	Breshenham's Algorithm, Area Filling Techniques, Character Generation.
	Week11	2-Dimensional Graphics: Cartesian And Homogenous Co-Ordinate Systems, Geometrical Transformation
November (Month-4)	Week12	(Translation, Scaling, Rotation, Reflection, Shearing), Two Dimensional Viewing Transformation
	Week13	Clipping (Line, Polygon And Text)
	Week14	3-Dimensional Graphics: Geometrical Transformation (Translation, Scaling, Rotation, Reflection, Shearing),
	Week15	Shading Modeling Light Intensities
	Week -16	Revision

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Department of Computer Science (HEIS), Government College. Ropar
(2022-23)
Class MSc IT Sem. 3rd (LE) Subject Computer Network

Week	Topics to be covered
Week 1	Introduction to Computer Networks - Uses and significance of computer networks - Goals and applications of computer networks - Overview of computer network structure and architecture
Week 2	- Introduction to OSI model - Explanation of TCP/IP model - Comparative analysis of TCP/IP and OSI models - Introduction to Novell Netware and ARPANET
Week 3	- Static and dynamic channel allocation for LAN and MAN - Explanation of ALOHA protocols: Static ALOHA and Dynamic ALOHA
Week 4	- CSMA (Carrier Sense Multiple Access) - CSMA/CD (Carrier Sense Multiple Access with Collision Detection) - Collision-free protocols in LAN - Introduction to BRAP, MLMA, Binary Countdown, Limited Contention Protocol, Urn Protocol, Adaptive Tree Walk Protocol
Week 5	- Role and function of repeaters - Bridges: Types and usage - Routers: Principles and routing algorithms - Gateways and their significance - Introduction to network switches
Week 6	- Components of computer network hardware - Overview of network software: Protocols and services
Week 7	- Introduction to FDDI (Fiber Distributed Data Interface) - Fast Ethernet: Characteristics and benefits - Overview of HIPPI (High-Performance Parallel Interface) - Introduction to Fiber Channel technology
Week 8	-MST
Week 9	MST
Week 10	- Comparison between static and dynamic routing - Exploration of various routing algorithms, Explanation of Multiple Spanning Tree protocol
Week 11	- Causes of network congestion - Different strategies and algorithms for congestion control, - In-depth look at LAN IEEE 802.x standards
Week 12	- Introduction to mobile telephone technology - Functionality of Mobile Telephone Switching Office (MTSO)
Week 13	- Principles of internetworking - Introduction to connectionless internetworking

Week 14	- In-depth study of IPv6 protocol - Understanding IPv6 addressing
Week 15	- Security requirements for computer networks - Common network security attacks and countermeasures
Week 16	- Overview of encryption techniques - Public key encryption and digital signatures - Introduction to distributed applications: SNMP, SMTP, HTTP - Recap of the course and discussion of future trends in networking

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Department of Computer Science (HEIS), Government College. Ropar
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Class MSc IT Sem. 4th (LE) Subject RESEARCH METHODOLOGY(223)

SESSION	TOPICS
Week 1	**Objectives and types of research:** Definition and types of research (Descriptive and analytical research, applied and fundamental research, qualitative and quantitative research, conceptual and empirical research).
Week 2	**Research problem formulation:** Defining and formulating research problem and its necessity, selecting the problem, literature review and its importance; Primary and secondary data sources-library (books, journals, periodicals
Week 3	reference sources, abstracting and indexing sources, reviews, monographs), patents, web (search engines, online libraries, online journals, e-books, e-encyclopedia, institutional websites); Journals and books-standards of research journals (impact factor, ISSN, ISBN, online and print journals, indexed journals, peer reviewed journals), citation index, H-index; Identifying gaps areas from literature review.
Week 4	**Research design and methods:** Developing the research hypothesis; Research design – basic principles and need,
Week 5	**Reporting and thesis writing:** Structure and components of research report, types of report-monographs, review articles, research papers, thesis, books, technical reports and their significance;
Week 6	Important concepts; Observations and facts, laws and theories, prediction and explanation, induction, deduction; Development of models, developing a research plan, exploration, description, diagnosis, experimentation
Week 7	**Data collection:** Execution of research, observation and collection of data, methods of data collection, primary data, secondary data.
Week 8	Mid semester Test
Week 9	Mid semester Test
Week 10	**Presentation of research papers:** Poster presentations-layout and format; Oral presentation-planning, preparation, use of visual art, importance of effective communication.
Week 11	Different steps in preparation of a written scientific document- layout, structure and language of reports, illustrations and tables, bibliography, references, footnotes
Week 12	**Application of intellectual property rights:** Commercialization, copyright, royalty, intellectual property rights and patent law
Week 13	Plagiarism-concept and authentication of originality of research; Citation and acknowledgement; Reproducibility and accountability