

**SUMMARY OF LESSON PLAN OF COLLEGE FACULTY (Dr. Rahul Hooda)**

NAME OF THE COLLEGE- GOVT. COLLEGE, Alewa ACADEMIC SESSION 2023-24 ODD SEMESTER FOR THE MONTH OF August 2023 to December 2023

Sr. NO	Name of the Assistant / Associate Professor / Class	Subject/week/month	Topic/ Chapters to be covered
1	Dr. Rahul Hooda	Computer Science	<b>Major: Logical Organization of Computer</b>
	B.Sc 1st Sem	August	Number Systems: Binary, Octal, Hexadecimal etc. Conversions from one number system to another, BCD Number
			System. BCD Codes: Natural Binary Code, Weighted Code, Self-Complimenting Code, Cyclic Code.
			Error Detecting and Correcting Codes. Character representations: ASCII, EBCDIC and Unicode.
			Number Representations: Integer numbers - sign-magnitude, 1's & 2's complement representation. RealNumbers normalized floating point representations.
		last week of August	(I-Assignment)
		September	Binary Arithmetic: Binary Addition, Binary Subtraction, Binary Multiplication,
			Binary Division using 1's and 2's Compliment representations, Addition and subtraction with BCD representations.
			Boolean Algebra: Boolean Algebra Postulates, basic Boolean Theorems, Boolean Expressions, Boolean Functions, Truth Tables, Canonical Representation of Boolean Expressions: SOP and POS, Simplification of Boolean Expressions using Boolean Postulates & Theorems, Karnaugh-Maps (upto four variables), Handling Don't Care conditions.
			Boolean Expressions using Boolean Postulates & Theorems, Karnaugh-Maps (upto four variables), Handling Don't Care conditions.
		Last week of September	(Unit test)
		October	Logic Gates: Basic Logic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR,
			XNOR etc. Their symbols, truth tables and Boolean expressions.
			Combinational Circuits: Design Procedures, Half Adder, Full Adder, Half Subtractor, Full Subtracor,
			Multiplexers, Demultiplexers, Decoder, Encoder, Comparators, Code Converters.
		November	Sequential Circuits: Basic Flip- Flops and their working. Synchronous and Asynchronous Flip –Flops,
			Triggering of Flip-Flops, Clocked RS, D Type, JK, T type and Master-Slave Flip-Flops. State Table, State Diagram and State Equations.
			Flip-flops characteristics & Excitation Tables.Sequential Circuits: Designing registers –Serial-In Serial-Out (SISO),
			Serial-In Parallel-Out (SIPO), Parallel-In Serial-Out(PISO) Parallel-In Parallel-Out (PIPO) and shift registers.
		December	Revision
2	Dr. Rahul Hooda	Computer Science	<b>Data Strucutres /Software Engineering</b>
	B.Sc 3rd Sem		Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations,
			Applications of data structures, Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, strings, String operations, Pattern matching algorithms

		August	Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse matrix. Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory,
			Traversal, Insertion, Deletion, Searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithm of insertion/ deletion in SLL.
		last week of August	(I-Assignment)-DS
		September	Stack: primitive operation on stack, algorithms for push and pop. Representation of Stack as Linked List and array, Stacks applications : polish notation, recursion. Introduction to queues, Primitive Operations on the Queues,
			Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue. Algorithm on insertion and deletion in simple queue and circular queue.
			Trees - Basic Terminology, representation, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree.
			Algorithm of tree traversal with and without recursion. Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs
		Last week of September	(II- Assignment)-DS
		1st week of October	(Unit test)-DS
		October	Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes, Phases in Software development: Requirement Analysis, Software Design, Coding,
			Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.
			Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS, Problem Analysis,
			Information gathering tools, Organising and structuring information, Requirement specification, validation and metrics.
		second week of October	(I-Assignment)-SE
		Last week of October	(II- Assignment)-SE
		November	Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision trees, Structured English, Entity-Relationship diagrams .Software Project Planning: Cost estimation: COCOMO model,
			Project scheduling, Staffing and personnel planning, team structure, Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management.
			Software testing strategies: unit testing, integration testing, V and V , System testing, Alpha and Beta testing. Black box, white box testing. Cyclomatic Complexity.
			Software Implementation and Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance characteristics.
		second week of November	(Unit test)-SE

		December	Revision
<b>3</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>Web Design/ Fundamentals of Database Systems</b>
	B.Sc 5th Sem	August	Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic Features; Web Browsers;
			Web Servers; Hypertext Transfer Protocol; URLs; Searching and WebCasting Techniques; Search Engines and Search Tools
			Steps for Developing Website; Choosing the Contents; Home Page; Domain Names;
			Internet Service Provider; Planning and Designing Web Site; Creating a Website; Web Publishing: Hosting Site;
		last week of August	(I-Assignment)-WD
		September	Introduction to HTML; Hypertext and HTML; HTML Document Features; HTML Tags; Header, Title, Body, Paragraph, Ordered/Unordered Line, Creating Links;
			Headers; Text Styles; Text Structuring; Text Colors and Background; Formatting Text; Page layouts; Insertion of Text, Movement of Text
			Images: Types of Images, Insertion of Image, Movement of Image, Ordered and Unordered lists; Inserting Graphics; Table Handling Functions like Columns, Rows, Width, Colours;
			Frame Creation and Layouts; Working with Forms and Menus; Working with Buttons like Radio, Check Box;
		Last week of September	(II- Assignment)-WD
		1st week of October	(Unit test)-WD
		October	Basic Concepts – Data, Information, Records and files. Traditional file Based Approach Limitations of Traditional File Based Approach, Database Approach-Characteristics of Database Approach,
			Database Management System (DBMS), Components of DBMS Environment, DBMS Functions and Components, Advantages and Disadvantages of DBMS.
			Actors on the Scene - Data and Database Administrator, Database Designers, End users Applications Developers and Workers behind the Scene. Database System Architecture – Three Levels of Architecture,
			Schemas – External, Conceptual and Internal Level, Database Languages – VDL, DDL, SDL, DML, SQL, Mappings – External/ Conceptual and Conceptual/Internal, Instances, Data Independence – Logical and Physical Data Independence
		second week of October	(I-Assignment)-DBMS
		Last week of October	(II- Assignment)-DBMS
		November	Data Models: High Level, Low Level and Representational – Records-based Data Models, Object-based Data Models, Physical Data Models and Conceptual Models Entity-Relationship Model – Concepts, Entity Types, Entity Sets,
			Attributes, Relationships, Constraints, Keys , Degree, Cardinality etc. ER Diagrams of any Database Organization- Inventory System, Payroll System, Reservation System, Online Book Store etc.
			Classification of Database Management System, Centralized and Client Server architecture Relational Data Model:-Brief History, Terminology in Relational Data Structure,
			Relations, Properties of Relations, Keys – Primary, Secondary, Composite, Candidate, Alternate and Foreign Key, Domains, Integrity Constraints over Relations.

		second week of November	(Unit test)-DBMS
		December	Revision
<b>4</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>LOC Lab</b>
	B.Sc 1st Sem	August-	Program 1
			Program 2
			Program 3
		September	Program 4
			Program 5
			Program 6
		October	Program 7
			Program 8
			Program 9
		November-December	Program 10
			Practice & Viva
<b>5</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>Data Structure Lab</b>
	B.Sc 3rd Sem	August-	Program 1
			Program 2
			Program 3
		September	Program 4
			Program 5
			Program 6
		October	Program 7
			Program 8
			Program 9
		November-December	Program 10
			Practice & Viva
<b>6</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>Web Design Lab</b>
	B.Sc 5th Sem	August-	Program 1
			Program 2
			Program 3
		September	Program 4
			Program 5
			Program 6
		October	Program 7
			Program 8
			Program 9
		November-December	Program 10
			Practice & Viva
<b>7</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>Minor: Basic of Computer Science</b>
	B.Sc 1st Sem	August	Introduction to Computers: Definition of Computers,
			History and Generations of Computers,
			Characteristics of computer, Classification of Computers.
			Fundamental Block diagram of Computer: CPU, Input & Output Unit.
		last week of August	(I-Assignment)
		September	Software: Definition of Software, Types of Software-System software,
			Application software and Utility software.
			Types of Computer Languages,

			Assemblers, Interpreters, Compiler.
		October	Introduction to Operating Systems: Types of Operating System, Functions of Operating System.
			Windows: Introduction to Windows, Starting Windows, Desk Top, Task Bar, Opening and closing applications,
			icons- creating, renaming and removing. Date and Time setting, Working with files and folders-creating,
			deleting, opening, finding, copying, moving, and renaming.
		November	Networking: Concept, Basic Elements of a Communication System,
			Data Transmission Media, LAN, MAN, WAN.
			Introduction of Internet and WWW,
			Basic working of a Web Browser, Introduction to popular web browsers.
		December	Revision
<b>8</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>MDC: Fundamentals of Computer Science</b>
	B.A./B.Com 1st Sem	August	Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers,
			Strengths and Limitations of Computers, Classification of Computers,
			Functional Components of a Computer System, Applications of computers in Various Fields.
			Types of Software: System software, Application software, Utility Software.
		last week of August	(I-Assignment)
		September	Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, measuring units of storage capacity, access time, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM.
			Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk, Flash Memory.
			I/O Devices: I/O Ports of a Desk Top Computer, Device Controller, Device Driver. Input Devices: classification and use, keyboard, pointing devices - mouse, touch pad and track ball,
			joystick, magnetic stripes, scanner, digital camera, and microphone Output Devices: speaker, monitor, printers: classification, laser, ink jet, dot-matrix. Plotter.
		October	Introduction to Operating System: Definition, Functions, Features of Operating System, Icon,
			Folder, File, Start Button, Task Bar, Status Buttons,
			Folders, Shortcuts, Recycle Bin, Desktop,
			My Computer, My Documents, Windows Explorer, Control Panel.
		November	The Internet: Introduction to networks and internet, history, Internet, Working of the Internet, Modes of Connecting to Internet.
			Electronic Mail: Introduction, advantages and disadvantages, User Ids, Passwords, e-mail addresses,
			message components, message composition, mailer features. Browsers and search engines.
			December
<b>9</b>	<b>Dr. Rahul Hooda</b>	<b>Computer Science</b>	<b>SEC: Office and spreadsheet Tools Learning</b>
	B.Sc/B.Com 1st Sem	August	Operating System - Definition, Functions, Types of Operating System,
			Basics of Popular Operating Systems, The User Interface, Exploring Computer,
			Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders, Control panel – display properties, add/remove software and hardware, Common utilities.

		last week of August	(I-Assignment)
		September	Word Processing - Introduction to Word Processing, Menus, Creating, Editing & Formatting Document,
			Spell Checking, Printing, Views, Tables, Word Art, Inserting hyperlinks, Searching for text,
			Mail Merge, Macros,
			Modifying page setup, Applying document themes, Applying document style sets, Inserting headers and footers.
		October	Spread Sheet: Elements of Electronics Spread Sheet, Applications,
			Creating and Opening of Spread Sheet, Menus, Manipulation of cells: Enter texts numbers and dates,
			Cell Height and Widths, Copying of cells, Mathematical, Statistical and Financial function,
			Drawing different types of charts, Sort and Filter Data.
		November	Presentation Software: Creating, Modifying and enhancing a presentation,
			Type of presentation views,
			Using sound, Animation,
			Working with Objects, Printing.
		December	Revision