

LESSON PLAN	
BCA Sem-III	
Subject- DBMS	
August 2021 to November 2021	
Month	Topic
August (Month-1)	WEEK-1:- Introduction: Database Approach, Characteristics of a Database Approach, Database System Environment.Roles in Database Environment:
	WEEK-2:- Database Administrators, Database Designers, End Users, Application Developers. Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach.
	WEEK-3:- Classification of DBMSs.Architecture: Data Models, Categories of Data Models- Conceptual Data Models, Physical data Models, Representational Data Models,
	WEEK-4:-Object Based Models, Record Based Models, Database Schema and Instance, Three Schema Architecture, Data Independence – Physical and Logical data Independence.
September (Month-2)	WEEK-1:- Database Conceptual Modelling by E-R model: Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram.
	WEEK-2:- Weak Entity Sets, Strong Entity Sets.Enhanced E-R Modelling: Aggregation, Generalization, Converting ER Diagrams to Tables.
	WEEK-3:-Relational Data Model: Concepts and Terminology, Characteristics of Relations.Constraints: Integrity Constraints- Entity and Referential Integrity constraints.
	WEEK-4:-Keys- Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys.
October (Month-3)	WEEK-1:- Relational Algebra: Basic Operations, Additional Operations, Example Queries.
	WEEK-2:-Database Design: Informal Design Guidelines for Relation Schemas, Problems of Bad DatabaseDesign.
	WEEK-3:- Normalization: Functional Dependency, Full Functional Dependency Partial Dependency, Transitive Dependency,
	WEEK-4:- (MST - From 24-10-2018 to 31-10-2018)
November (Month-4)	WEEK:-1 Normal Forms– 1NF, 2NF, 3NF, Boyce-Codd NF,
	WEEK-2:- MS-ACCESS: introduction to MS-ACCESS, working with databases and tables, queries in Access,
	WEEK-3:Applying integrity constraints, Introduction to forms, sorting and filtering, controls, Reports and Macro: creating reports, using Macros.
	WEEK-4:- Quaries from students

  
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**H.E.I.S Department**

**SYLLABUS PLAN**

**Bca sem 3**

**Subject : Fundamentals of Database Management System**

**Session 2021-2022**

Month	Topic
Aug (Month 1)	<b>Week 1 Introduction:</b> Database Approach, Characteristics of a Database Approach, Database System Environment.
	<b>Week 2 Roles in Database Environment:</b> Database Administrators, Database Designers, End Users, Application Developers.
	<b>Week 3 Database Management Systems:</b> Definition, Characteristics, Advantages of Using DBMS Approach
	<b>Week 4 Classification of DBMSs</b>
Sep (Month 2)	<b>Week 1 Architecture:</b> Data Models, Categories of Data Models- Conceptual Data Models, Physical data Models, Representational Data Model
	<b>Week 2 Object Based Models, Record Based Models, Database Schema and Instance, Three Schema Architecture</b>
	<b>Week 3 Data Independence – Physical and Logical data Independence</b>
	<b>Week 4 MST</b>
Oct (Month 3)	<b>Week 1 Database Conceptual Modelling by E-R model:</b> Concepts, Entities and Entity Sets, Attributes, Mapping Constraints
	<b>Week 2 E-R Diagram, Weak Entity Sets, Strong Entity Sets. Enhanced E-R Modelling:</b> Aggregation, Generalization
	<b>Week 3 Converting ER Diagrams to Tables. Relational Data Model:</b> Concepts and Terminology, Characteristics of Relations
	<b>Week 4 Integrity Constraints-</b> Entity and Referential Integrity constraints, Keys- Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign, <b>Relational Algebra:</b> Basic Operations, Additional Operations, Example Queries.
Nov (Month 4)	<b>Week 1 Database Design:</b> Informal Design Guidelines for Relation Schemas, Problems of Bad Database Design
	<b>Week 2 Normalization:</b> Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency,
	<b>Week 3 Normal Forms– 1NF, 2NF, 3NF, Boyce-Codd NF</b>
	<b>Week 4 MS-ACCESS:</b> introduction to MS-ACCESS, working with databases and tables, queries in Access, Applying integrity constraints, Introduction to forms, sorting and filtering,

Teacher

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Department of Computer Science (HEIS), Government College, Ropar (2021-22)  
Class BCANsem. 4<sup>th</sup> Subject Computer Network

Week	Topics
Week 1	Introduction to Computer Networks, Definition and importance of computer networks, Types of networks: LAN, MAN, WAN, Network structure: point-to-point, multicast, broadcast
Week 2	Network Architecture and Design, Network architecture models, OSI and TCP/IP reference models, Design considerations for network layers
Week 3	OSI Model and Protocol Hierarchies, Detailed study of the OSI model layers, Functions and protocols at each OSI layer
Week 4	TCP/IP Model and Comparison, Overview of the TCP/IP model layers, Comparison between OSI and TCP/IP models
Week 5	Data Link Layer and Framing, Data Link Layer functions and services, Framing techniques: character stuffing, bit stuffing
Week 6	Error Control and Flow Control, Error control mechanisms: parity, CRC, Flow control methods: stop-and-wait, sliding window
Week 7	Network Layer Services and Routing, Network Layer functions and design considerations, Routing algorithms: static and dynamic routing
Week 8	Congestion Control Algorithms, Introduction to congestion control, Leaky bucket and token bucket algorithms
Week 9	Transport Layer and Connection Management, Transport Layer functions and services, Connection establishment, addressing, and release
Week 10	Transport Layer Protocols, TCP: reliable, connection-oriented protocol, UDP: connectionless, lightweight protocol
Week 11	Application Layer and DNS, Application Layer overview and services, DNS: domain hierarchy, resolution process
Week 12	Electronic Mail and SMTP, Architecture of electronic mail, Simple Mail Transfer Protocol (SMTP)
Week 13	World Wide Web and HTTP, The World Wide Web: concepts and components, Hypertext Transfer Protocol (HTTP)
Week 14	Introduction to Network Security, Importance of network security, Basics of cryptography: substitution and transposition ciphers
Week 15	Public-Key Cryptography and RSA, Fundamental cryptographic principles, Public-key algorithms: RSA and its working
Week 16	Digital Signatures and Recap, Digital signatures: symmetric-key and public-key signatures, Message digests and their role in security

  
Teacher's Signature

  
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LESSON PLAN	
BCA Sem-IV	
Subject- RDBMS	
January 2022 to April 2022	
Month	Topic
January (Month-1)	WEEK-4: Introduction to RDBMS Product and their Features, Difference between DBMS and RDBMS, Relationship among application programs, RDBMS,
February (Month-2)	WEEK-1: Basic File Operations: Opening Files, Closing Files, Reading and Writing, Seeking, File Organization: Field and Record structure in file, Record Types, Types of file organization, Sequential, Indexed, and Hashed.
	WEEK-2: Transaction Management: Transaction Concept, Properties, Transaction States, Concurrent Execution, Serializability, Conflict Serializability
	WEEK-3: -View Serializability, Recoverability, Recoverable Schedule; Cascadless Schedule, Concurrency Control: Lock Based Protocol, Locks, Granting of Locks, Two Phase Locking Protocol, Timestamp Based Protocol, Timestamp, Timestamp ordering protocol, Thomas's Write Rule, Validation Based Protocol, Deadlock Handling, Deadlock Prevention, Deadlock Detection, Deadlock Recovery
	WEEK-4 :- MST
March (Month-3)	WEEK-1: Recovery System: Failure Classification, Transaction Failure, System Crash, Disk Failure, Storage Structures, Storage Types, Data Access, Recovery & Atomicity, Log based Recovery
	WEEK-2: Deferred Database Modification, Immediate Database Modification, Checkpoints, Recovery with Concurrent Transaction, Transaction Rollback, Restart Recovery, Remote Backup System
	WEEK-3: Relational Query Language: DDL, DML, DCL. Introduction to Oracle: Oracle as client/server architecture, getting started, creating, modifying
	WEEK-4: dropping databases. Inserting, updating, deleting data from databases, SELECT statement, Data constraints ( Null values, Default values, primary, unique and foreign key concepts)
April (Month-4)	WEEK-1: Computing expressions, renaming columns, logical operators, range searching, pattern matching, Oracle functions, grouping data from tables in SQL, manipulating dates.
	WEEK-2: Working with SQL: triggers, use of data base triggers, database triggers Vs. SQL*forms, types of triggers, how to apply database triggers, BEFORE vs. AFTER triggers, combinations, syntax for creating and dropping triggers.

  
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Syllabus Plan

Bca Sem 4

Subject : Management Information Systems

Session 2021-2022

Month	Topic
Jan (Month 1)	<b>Week 1</b> Management Information system: Meaning and definition, Role of information system
	<b>Week 2</b> Nature and scope of MIS
	<b>Week 3</b> Information and system concepts: Definition and types of information, Information quality, dimensions of information, value of information
	<b>Week 4</b> general model of human as an information processor. System related concepts, elements of a system, and types of system
Feb (Month 2)	<b>Week 1</b> Role and importance of Management: Introduction, levels and functions of management.
	<b>Week 2</b> Structure and classification of MIS
	<b>Week 3</b> Components of MIS, Framework for understanding MIS
	<b>Week 4</b> Robert Anthony's hierarchy of management activity
March (Month 3)	<b>Week 1</b> Information requirements and levels of management, Decision making concept.
	<b>Week 2</b> types of decisions, methods of choosing among alternatives, Role of MIS in decision making.
	<b>Week 3</b> Simon's model of decision making
	<b>Week 4</b> Structured and unstructured decisions.
April (Month 4)	<b>Week 1</b> Development of MIS: Stages in the development of MIS
	<b>Week 2</b> System development approaches: Waterfall model, Prototyping, Iterative enhancement model, Spiral model.
	<b>Week 3</b> Applications of information systems in Functional areas: Marketing MIS; Financial MIS, Production MIS, Personnel MIS.

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