PES

Computer Science and Engineering
(Jan – May 2019)

UE17CS252: DATABASE MANAGEMENT SYSTEMS (4-0-0-0-4)

# of Credits: 4 **# of Hours: 52**

CLASS #	CHAPTER TITLE / REFERENCE LITERATURE	TOPIC TO BE COVERED	% OF PORTIONS COVERED	
			REFERENCE CHAPTER	CUMULATIVE
Unit #: 1 – Introduction to Database and Conceptual Design using ERD				
1	T1: Chapter 1.1 – 1.8, 2.1 - 2.3, 3.1 - 3.7, 3.9 3.10	Introduction to Databases (Ch. 1.1 – 1.5)	19	19
2		Introduction to Databases, (Ch. 1.6 – 1.8)		
3		Data models, Three-Schema Architecture, Data Abstraction and Data Independence, Database Languages and Interfaces (Ch 2.1 – 2.3)		
4		Conceptual Data Modeling – ER Model (Ch 3.1 – 3.2)		
5		Entity Relationship Model (Ch 3.3 - 3.4)		
6		Entity Relationship Model (Ch 3.5 -3.6)		
7		Revision with Company database. Entity Relationship Model (Ch 3.7)		
8		Entity Relationship Model (3.9),		
9		ER Model Exercises (University schema) (3.10)		
10		ER Model Exercises (Student Project)		
Unit #: 2 – The Relational Data Model, Constraints, and Basic SQL				
11	T1: 5.1, 5.2, 5.3, 9.1, 6.1, 6.2, 6.3, 6.4, 7.4	Relational Model Concepts , Constraints and Schema (Ch 5.1, 5.2)	19	38
12		Update Operations, Transactions and Dealing with Constraint Violations (Ch 5.3)		
13		Relational Database Design Using ER-to Relational Mapping (Ch 9.1)		
14		ER to Relational mapping examples (Ch 9.1)		
15		Introduction to SQL commands. SQL Data Definition, Primary Data Types and Advanced Data Types like CLOB, BLOB, (Ch 6.1)		
16		Specifying Constraints in SQL, (Ch 6.2)		

17		Schema Change Statements in SQL, (Ch 7.4)		
18		Insert, Delete, Update, Basic Retrieval Queries, (Ch 6.4, 6.3)		
19		Relational Model, SQL Exercises (University schema)		
20		Relational Model, SQL Exercises (Student Project)		
Unit #:3 – Advanced SQL Queries, Relational Algebra				
21	**T1: 7.1 - 7.3, 8.1 – 8.5 Summary of Ch 10 & 11**	Advanced SQL Queries, NULL values, Nested Queries. (7.1.1 – 7.1.2)	**19**	**57**
22		Advanced SQL Queries, Correlated Nested Queries (7.1.3)		
23		Advanced SQL Queries, Outer Joins (7.1.4 – 7.1.6)		
24		Advanced SQL Queries, Aggregate Functions (7.1.7 – 7.1.8)		
25		Views, Specifying General Constraints as Assertions and Triggers, (7.2, 7.3)		
26		Relational Algebra, Unary Relational Operations: SELECT and PROJECT (8.1)		
27		Set Theory Operations and Examples (8.2)		
28		Binary Relational Operations: JOIN. (8.3 - 8.3.3)		
29		DIVISION, Aggregate functions and grouping, Examples (8.3.4 - 8.5)		
30		Database Programming, PL/ SQL. (Summary of Ch 10 and 11)		
Unit #:4 – Relational Database Design				
31	**T1: 14.1 - 14.5, 15.1**	Informal Design Guidelines for Schema, (Ch 14.1)	**19**	**76**
32		Functional Dependencies (FD) Definitions and examples, Inference Rules. (Ch 14.2)		
33		FD: Closure, Equivalence, Minimal Cover, (Ch 15.1)		
34		Exercise for Closure, Equivalence, Minimal Cover, (Ch 15.1)		

35		Normal Forms Based on Primary Keys (1st, 2nd and 3rd NF). (Ch 14.3)		
36		General Definitions of Normal Forms, Boyce-Codd Normal Form (Ch 14.4, 14.5)		
37		Exercises on Normal Forms.		
38		Overview of Higher Normal Forms. (Fourth Normal Form) (14.6)		
39		Properties of Relational Decompositions, (Ch 15.)		
40		Relational Database Design (Student Project)		
Unit #: 5 - Transaction Management and Database Security				
41		DBMS Modules (2.4), Database Security, Access Control.	24	100
42		ACID Properties, Transactions and Schedules,		
43		Serializability and Recoverability,		
44		Concurrency, Lock-Based Protocols, 2PL, Strict 2PL Protocols, Timestamp-Based Protocols,		
45		Deadlocks - Detection and Prevention, Precedence Graphs,		
46		Introduction to Crash Recovery,		
47		Crash Recovery - Write Ahead Log, ARIES Protocol		
48		Crash Recovery, Examples		
49		Crash Recovery, Exercises		
50		NoSQL databases.		
51		Advanced Topics,		
52		Guest Lecture		

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Book Type	Code	Title & Author	Publication Info		
			Edition	Publisher	Year
Text	T1	Fundamentals of Database Systems, Ramez Elamsri, Shamkant B Navathe	7th	Pearson	2017
Text	T2	"Database Management Systems", Johannes Gehrke, Raghu Ramakrishnan	3rd	McGraw-Hill	2003.
Reference	R1	"Database Systems: The Complete Book", Garcia-Molina, J D Ullman, Widom J	2nd	Prentice-Hall	2008
Reference	R2	"Database System Concepts", Silberschatz, H Korth, S Sudarshan,	6th	McGraw-Hill	2010

UE17CS253: MICROPROCESSOR AND COMPUTER ARCHITECTURE (4-0-0-0-4)

# of Credits: 4 **# of Hours: 52**

Class #	Chapter Title / Reference Literature	Topics to be Covered	% of portions covered	
			Reference Chapter	Cumulative
UNIT 1: Introduction to Microprocessor, & ISA (10 hours)				
1	1.6 , 2.3 of T3, A-3 of T1, pg no: 51-55 of T3 Chapter 3.1 to 3.5 of T4 6.8 , 5.6 of T3	Introduction Case study -ARM/MIPS/x86 processor.Overview of Microprocessor : Evolution and Introduction to INTEL Processor	20%	20%
2		ISA – Classification		
3		Introduction to RISC and CISC Processors RISC Architecture		
4		Instruction Set-Addressing Modes		
5		Data Processing Flow, Control Flow instructions		
6		Data Processing Instructions		
7		Conditional Execution Instructions		
8		Branch Instructions & Functions		
9		Interrupt Instructions		
10		Instruction encoding,		
UNIT 2 Pipelining (12 hours)				