ITEC 212 (Database Management Systems)

General Information

Course Code	ITEC 212		Required (R)/Selected Elective (SE)			R
Credit Hours	Theory	2	Lab	1	Total	3
Prerequisites	ITEC-211					
Course Coordinator	Dr. Yasir Ahmad					

Course Description

The primary goal of this course is to discuss some of the important topics related to database management systems (DBMS) like database storage and management, formatting of records, files and disk space management. The course will also discuss on file organization, indexing, properties of indexing, types of indexing. Moreover, transaction management which includes schedules, concurrent execution of transaction, lock-based concurrency control and crash recovery will be discussed in detail. It explains some advanced topics related to database tuning, query evaluation, optimization and management, query processing in distributed transactions and concurrency control, and recovery process. It also discusses few topics related to database security, ethical and privacy issues associated with DBMS.

Course Objectives

- Learn the concepts of Storage media, records, and files, as well as the different techniques for placing file records on disk.
- Understanding how data needs to be indexed using different indexing technique.
- Learn how two-phase commit protocols are used to deal with commit transaction.
- Understand the deadlock prevention, avoidance, recovery and starvation.
- Learn the concept, types and different architectures of distributed database.
- Understand the concepts of database security managements.
- Develop SQL queries by applying DBMS concepts.

Course Contents

List of Topics	Weeks
Theory Unit 1-Storage system and File Structure	*1,2*
Lab Unit 1 –PL/SQL Introduction	
Theory Unit 2-Indexing and hashing	*3, 4, 5*
Lab Unit 2 - PL/SQL Loop	
Theory Unit -Transaction processing	*5, 6, 7*
Lab Unit 3 - Control Statements	
Theory Unit 4-Concurrency control and deadlock	*8, 9, 10*
Lab Unit 4 - Procedures and Functions	
Theory Unit 5-Backup and recovery	*10, 11, 12*
Lab Unit 5 - Cursors and Triggers	
Theory Unit 6 - Distributed database and Database Security	*13, 14, 15*

Textbook

Elmasri, R., Navathe, S., and Navathe, B., “Fundamentals of Database Systems" , Pearson New International Edition, 7th Edition, ISBN-10: 0133970779 | ISBN-13: 9780133970777, 2016

Reference Materials

Raghu Rama Kirshna, Johannes Gchrke, Database Management System, Third Edition, TATA MC Graw Hill, 2003

Course Learning Outcomes

CLO-IDs	Course Learning Objective (CLOs)	Level of Learning (LoL)	Mapped PIs
CLO#01	**Define** the basic concepts of DBMS like data storage, indexing, transaction processing, distributed database architectures and Security.	Knowledge	PI 1.1

CLO#02	**Describe** various problems that occur in distributed database, parallel processing, database security etc.	Comprehension	PI 1.2
CLO#03	**Identify** various controls and recovery techniques to remedy various database problems.	Analyse	PI 1.3
CLO#04	**Applying** various database concepts to remedy situations related to concurrency, starvation, Deadlock and security.	Applying	PI 2.2
CLO#05	**Implement** sample database applications using PL/SQL.	Applying	PI 2.3
CLO#06	**Draft** professional documentation that clearly represents technical topics.	Create	PI 3.1
CLO#07	**Deliver** effective oral presentations on technical topics, using appropriate visual aids	Applying	PI 3.2

CLO-SO-PI Mapping

	SO-IDs					
CLO IDs	**SO-1**	**SO-2**	**SO-3**	**SO-4**	**SO-5**	**SO-6**
CLO#01	PI 1.1	-	-	-	-	-
CLO#02	PI 1.2	-	-	-	-	-
CLO#03	PI 1.3					
CLO#04	-	PI 2.2	-	-	-	-
CLO#05	-	PI 2.3		-	-	-
CLO#06			PI 3.1			
CLO#07			PI 3.2			

Approvals

Prepared by CC	Dr. Yasir Ahmad
Approved by TL	Dr. Siva Malar
Last updated	