Course Name: Database Management Systems Course Code: ITEC212

General Information						
Course Code	**ITEC 212**	**Level/Year**		**Required (R) / Selected Elective (SE)**		**R**
Credit Hours	**Theory**	**2**	**Lab**	**1**	**Total**	**3**
Prerequisites	**ITEC 211**	**Course Coordinator**		**Afsana Anjum**		
Corequisites	**-**	**Track Leader**		**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: On completion of the course, the student will be able to:

- 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
CH 1: *Storage system and File Structure*	1,2
CH 2: *Indexing and hashing*	3, 4, 5
CH 3: *Transaction processing*	5, 6, 7
CH 4: *Concurrency control and deadlock*	8, 9, 10
CH 5: *Backup and recovery*	10, 11, 12
CH6: *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	Description	Mapped PI
CLO#01	**Define** the basic concepts of DBMS like data storage, indexing, transaction processing, distributed database architectures and Security.	PI 1.1
CLO#02	**Describe** various problems that occur in distributed database, parallel processing, database security etc.	PI 1.2
CLO#03	**Identify** various controls and recovery techniques to remedy various database problems.	PI 1.3
CLO#04	**Applying** various database concepts to remedy situations related to concurrency, starvation, Deadlock and security.	PI 2.2
CLO#05	**Implement** sample database applications using PL/SQL.	PI 2.3
CLO#06	**Draft** professional documentation that clearly represents technical topics.	PI 3.1
CLO#07	**Deliver** effective oral presentations on technical topics, using appropriate visual aids	PI 3.2

CLO-PI-SO Mapping

	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			