Department of Mathematics
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Course	**Course Name**	**: Database System**
	Course Code	**: KM184722**
	Credit	**: 2**
	Semester	**: 7**

Description of Course	
This course is the basis for software development, both desktop and web based. In the course students are given the understanding and mastery of the concept of database systems, management in storage media, designing and modeling data based on user needs analysis and implement it in a DBMS.	
Learning Outcome	
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 4	[C5] Students are able to work on a simple and clearly defined scientific task and explain the results, both written and verbally either on the area of pure mathematics or applied mathematics or computing sciences
PLO 5	[C3] Students are able to make use of the principles of long life learning to improve knowledge and current issues on mathematics
Course Learning Outcome	
1. Able to understand and describe the concept of database system 2. Able to understand the concept of data management in storage (storage organizations) 3. Be able to identify and analyze user needs related to data 4. Able to design and model data with good database structure and implement it in RDBMS	

5. Able to understand and implement queries in the database

Main Subject

1. Understanding the basic concepts of database systems
a. Why database is needed
b. Data Viewpoint
c. Instance and schema
d. Database Administration
e. Database Users
2. Able to understand the concept of relational model
a. The Relational Model Concept
b. Constraints and schemes on relational models and Constraint integrity
3. Data modeling using ER Model
a. Data design using Conceptual Data Model
b. Entity, Attribute and Key, Weak entity
c. Examples of other ER diagram notations
d. Mapping ER scheme into a Relational Database Schema.
4. Structured Query Language (SQL)
a. Data Definition Languager (DDL)
b. Data Manipulation Language (DML)
5. Introduction of database design theory and normalization
a. Functional Dependency
b. Normalization

Prerequisites

Object Oriented Programming

Reference

1. Ramez A. Elmasri, Shamkant B. Navathe, "**Fundamentals of Database Systems**", ADDISON WESLEY Publishing Company Incorporated, 2011
2. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "**DATABASE SYSTEM CONCEPTS, SIXTH EDITION",** McGraw-Hill Companies, 2011

Supporting Reference

1. Ramakrishnan, Raghu, Gehrke, Johannes, Database Management Systems, 3rd Edition, New York: The McGraw-Hill Companies, Inc., 2003