

### CIT 312– Database Management Systems

<b>Course Name</b>	Database Management Systems
<b>Course Code</b>	CIT 312
<b>Course Type</b>	Compulsory Course
<b>Course Level</b>	Undergraduate
<b>AKTS Credit</b>	5 ECTS
<b>Course hours per week (Institutional)</b>	2
<b>Practice hours per week</b>	-
<b>Laboratory hours per week</b>	2
<b>Academic Semester</b>	Spring
<b>Course coordinator(s)</b>	
<b>Instruction system</b>	
<b>Medium language</b>	English
<b>Prerequisite</b>	-
<b>Suggestions related to course</b>	N/A
<b>Training required</b>	N/A
<b>Aim of the course</b>	<ol style="list-style-type: none"> <li>1. learn techniques required to implement good database design both in theory and in practice</li> <li>2. Gaining a general perspective on most recent databases used in today's computing world: MySQL, SQL Server, Oracle, IBMDB2, Ms Access etc</li> <li>3. Understand and use relational database design and Structured Query Language (SQL) used with relational databases.</li> <li>4. Skill to understand and use Entity-Relationship diagrams and normalization of data.</li> <li>5. Overview the functions of database management systems (DBMS) and of a database administrator (DBA)</li> </ol>
<b>Learning outcomes</b>	<ol style="list-style-type: none"> <li>1. Use SQL to create and modify tables in relational databases</li> <li>2. Work in groups on a project to design and create a database for an application requiring a small to average number of tables</li> <li>3. Merge normalized relations from each user view into a complete set of normalized relations for a simple business application</li> <li>4. Prepare an Entity Relationship Diagram for a simple business application</li> <li>5. Use SQL to retrieve data from relational databases</li> <li>6. Prepare the physical relational database schema for a simple business application</li> <li>7. Identify user views for an application</li> <li>8. Normalize a user view to 3rd Normal Form</li> <li>9. Describe the basic differences between relational, hierarchical and network databases</li> <li>10. Describe the basic functions of a Database Management System</li> <li>11. Describe the responsibilities of a Database</li> </ol>

		Administrator in an organization	
<b>Course Content</b>			
<b>Course content per week</b>	<b>Week</b>	<b>Topics</b>	
		<b>Theory</b>	<b>Practice</b>
	1	Introduction to Databases, What are the advantages and Disadvantages? Example of Database Systems	Introduction to Microsoft Access
	2	Introduction to Relational Databases: Entities, Attributes, Relationships, Primary Keys and Foreign Keys	Creating tables in Microsoft Access, defining relations between tables
	3	Entity - Relationship diagram, defining entities and relationships	Apply entity-relationship model in Ms Access 2010
	4	Metadata. Relational Database systems in detail	Apply metadata, relational schema in Ms Access 2010
	5	Quiz	Quiz Solution and more exercises
	6	Converting database tables into entity-relationship diagrams (ERDs)and defining database schema	Drawing entity-relationship diagrams (ERDs)from actual tables and relationships defined in a database
	7	Midterm	
	8	Introduction to SQL : DML Statements : Create Database, Create Table, Select	Access Forms and using SQL commands in Microsoft Access (create database, create table)
	9	SQL : More DML Statements : Insert, Delete and Update operations, Alter table etc.	Access Forms and using SQL commands in Microsoft Access (insert, delete, update, alter table etc.)
	10	Introduction to Normalization: UNF, 1NF, 2NF Dependencies, 3NF	Normalization exercises
	11	Database project presentation	
	12	Normalization and de-normalization	Normalization exercises and using normalized tables in Microsoft Access
	13	Quiz	Quiz solution
14	Review	-	
15	Final exam		

<b>Course book and references :</b>	<p><b>Course book:</b></p> <p><b>Database Systems: Design, Implementation, and Management</b> by Peter Rob (Author), Carlos Coronel (Author) <b>Publisher:</b> Course Technology; 8 edition (December 20, 2007)</p> <p><b>References:</b></p> <p><b>Fundamentals of Database Systems (5th Edition)</b> Ramez Elmasri, <i>University of Texas at Arlington</i> Shamkant B. Navathe, <i>Georgia Institute of Technology</i> <b>Publisher:</b> Addison Wesley; 5 edition (March 17, 2006)</p>
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<b>Evaluation</b>		
Quizzes	10%	
Project:	25%	
Midterm exam:	25%	
Final exam:	40%	
<b>Semester Activities</b>	<b>Number</b>	<b>Contribution percentage to course mark %</b>
Midterm Exam	1	25
Project	1	25
Final Exam	1	40
Quizzes	2	10
<b>TOTAL</b>		

<b>Calculation work load within the framework of learning, teaching and evaluation activities</b>			
<b>Activities</b>	<b>Number</b>	<b>Time (hour)</b>	<b>Total work load (hour)</b>
Weekly theory hour	14	2	28
Weekly practice hour	14	2	28
Class exercise review per week	14	2	28
Term Project	1	20	20
Research Report on Databases and their differences	1	14	14
MidTerm	1	2	2
a) Exam	1	12	12
b) Individual study			
Final	1	2	2
a) Exam	1	14	14
b) Individual study			
<b>TOTAL WORK LOAD(hour)= 148</b>			
<b>COURSE ECTS CREDIT= Total work load(hour)/(30 hours/ECTS)= 148/ 30 = 4.9 = 5</b>			

## Programme and learning outcomes

Learning outcomes (LO)	Programme Output (PO)																
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16	PO 17
L01	3	3	4	4							3	5	5			4	
L02	3	3	4	4							3	5	5			4	
L03	3	5	4	4							3	4	5				
L04	3	5	4	4				3			4		3				
L05	3	5	4	4				3	5		4		3				
L06	3	5	5	5					5		5		3				
L07	3	3	5	5							5		3				
L08	3	3	5	5							5		3				
L09	3	5	5	5				5			5	5	3			4	
L10	3	5	5	5				5	5		5	5	5			4	
L11	3	5	5	5				5	5			5	5			4	

\*Contribution Level:

- 1 very low
- 2 low
- 3 medium
- 4 high
- 5 very high