CPIT-240 Syllabus

Catalog Description

CPIT-240 Databases (I)
Credit: 3 (Theory: 3, Lab: 1, Practical: 3)
Prerequisite: CPCS-204
Classification: Department Required

This course is the first in a series of courses on designing and implementing database information systems. The objective of this course is to prepare students to become able to implement a working database system using one of the popular commercial DBMSs. Topics include data and information, file system, database and database users, database system concepts and architecture, data modeling using the entity relationship (ER) model, the relational data model and relational database constraints, functional dependencies and normalization for relational databases, relational algebra and relational calculus, relational database design by ER and EER to relational mapping, disk storage, basic file structure and hashing, SQL-99 schema definition, constraints, queries, and views.

Class Schedule

Lab/Tutorial 90 minutes 1 times/week

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

Textbook

Ramez Elmasri, Shamkant B. Navathe, , "Database Systems", Addison-Wesley Longman; 7 edition (2006-03)

ISBN-13 9780321369574   **ISBN-10** 0321369572

Grade Distribution

Week	Assessment	Grade %
3	Quiz 1	2.5
4	Homework Assignments 1	2.5
7	Graded Lab Work	10
8	Exam 1	20
9	Quiz 2	2.5
9	Homework Assignments 2	2.5
11	Group Project 1	5
13	Group Project 2	5
14	Group Project 3	5
15	Group Project 4	5
16	Comprehensive Final Exam	40

Last Articulated

December 18, 2017

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j	k	l	m	n
x								x	x				

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. **Define a Database, characteristics and functions of Database Management System and types of Database Users (j)**
2. Compare the advantages and disadvantages of Database System with traditional File system (j)
3. Describe Data Models, Schemas, Instances, Three Schema Architecture and DBMS Component Modules (j)
4. Describe the Entity–Relationship (ER) modeling tool using Unified Modeling Language (UML). (j)
5. **Model the real world database systems using Entity Relationship Diagrams (ERD) from the requirements specification. (a)**
6. Define the Relational Data Model, its Constraints and the Relational Database Schemas (j)
7. Illustrate the Definition of Functional Dependencies , Inference Rules, Equivalence of Sets of Functional Dependencies FDs, Minimal Sets of FDs (j)
8. Apply normalization techniques to normalize a database. (a)
9. Identify the data integrity and security requirements of the database (i)
10. Apply the concept of Relational Algebra and the Relational Operations from Set Theory (j)
11. Apply Binary Relational Operations and Additional Relational Operations on database (a)
12. **Convert a conceptual data model such as ER diagram into a relational logical schema using various mapping algorithms. (a)**
13. Define disk storage devices, files of records, unordered files, ordered files and hashed files. (j)
14. Demonstrate the use of SQL for database creation and maintenance (a)
15. **Use SQL queries for data aggregation, calculations, views, sub-queries, embedded queries, manipulation, and report generation. (i)**
16. **Design and implement a full real size database system (a)**

Coordinator(s)

Dr. Ahmad A Alzahrani, Associate Professor

CPIT-240 Syllabus

Topics Coverage Durations

Topics	Weeks
Data, Information, File System, Database and Database Users	1
Database System Concepts and Architecture	1
Data Modeling using the Entity Relationship (ER) Model	1
The Relational Data Model and Relational Database Constraints	2
Functional Dependencies and Normalization for Relational Databases	3
The Relational Algebra and Relational Calculus	2
Relational Database Design by ER and EER to Relational Mapping	1
Disk Storage, Basic File Structure and Hashing (13.1 and 13.2)	1
SQL-99 Schema Definition, Constraints, Queries and Views (DDL and DML)	2