CPIS-240 Syllabus

Catalog Description

CPIS-240   Database Management Systems (I)
Credit: 3 (Theory: 3, Lab: 1, Practical: 1)
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, such as Oracle or MS SQL Server. The course introduces students to the concepts of databases and database modeling and design. It, in particular, provides students with a three-stage methodology for designing relational database applications, namely, conceptual, logical, and physical database modeling and design. In the first stage students will build a conceptual data model that is independent of all physical considerations. They will then transform this model in the second stage into the relational database logical model. In the third stage, students will translate the logical data model into a physical design for the target DBMS. Topics include basic concepts of databases, the 3-stage modeling and design methodology, the concepts of the relational database, conceptual data modeling using ERD, from ERD to RDB and reverse engineering, data normalization, SQL:DDL, SQL: manipulation and query languages, and relational algebra for querying.

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; 5 edition (2006-03)

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

Grade Distribution

Week	Assessment	Grade %
6	Exam 1	15
12	Exam 2	15
12	Homework Assignments	8
14	Group Project	20
15	Graded Lab Work	12
16	Exam	30

Last Articulated

February 13, 2018

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j
x	x	x						x	x

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. Demonstrate the problems entailed in file-based information systems design and that motivates the use of a database system (j)
2. Define database environment and fundamental concepts (develop an understanding of essential DBMS concepts) (j)
3. Identify the fundamental concepts underlying database management system (b)
4. Describe the 3-stage database design methodology (b)
5. Collect data and analyze a statement of data requirements (b)
6. Describe conecptual data modleing through Entity Relationship Diagrams (ERD) (a)
7. **Develop the conceptual data model using ERD by identifying its different constituents from the given data (a)**
8. Identify the relational database model and its components (a)
9. **Transform a conceptual data model into a relational database model (c)**
10. Examine a relational database schema to identify its different constituents, such as primary keys, foreign keys, and integrity constraints (c)
11. Analyze relational database design and understand different type of anomalies (c)
12. **Apply normalization techniques to logical database designs up to the third normal form (i)**
13. **Build a Internal database schema using the standard SQL's DDL and DML (c)**
14. **Construct SQL queries to respond to a specific information request using data aggregation, calculations, views, sub-queries, embedded queries, manipulation, and report generation (a)**

Coordinator(s)

Prof. Khaled Alyoubi, Professor

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Topics Coverage Durations

Topics	Weeks
Introduction to Database System	1
overview of DB langueages and design	1
The Relational data Model	2
SQL Data Definition, Constraints, and Basic Queries and updates	2
Database Query Languages	3
Database Design Fundamentals	1
conceptual data modeling	1
Mapping conceptual data modeling to relational data modeling	1
Database Anomalies & Normalization	1
Normalization	1