

Knight Foundation School of Computing and Information Sciences

Course Title: Information Storage and Retrieval Concepts

Date: 11/19/09

Course Number: CGS 4366

Number of Credits: 3

Subject Area: Database	Subject Area Coordinator: Nagarajan Prabakar email: prabakar@cs.fiu.edu
Catalog Description: Introduction to information management and retrieval concepts. The design and implementation of a relational database using a commercial DBMS. Online information retrieval and manipulation. Not acceptable for credit for Computer Science majors.	
Textbook: Bundle: "Concepts of Database Management" (6th Ed) and "A Guide to SQL" (8th Ed) by Pratt Thompson Course Technology (ISBN: 0324825838)	
References: "Fundamentals of Database Systems" (5 th Ed) Elmasri and Navathe Addison Wesley (ISBN: 0321369572)	
Prerequisites Courses: COP 3804	
Corequisites Courses: None	

Type: Required

Prerequisites Topics:

- Java data types
- Design of Java classes
- Design of basic web pages

Course Outcomes:

1. Be familiar with database architecture
2. Master the design of retrieval queries
3. Master normalization principles
4. Be familiar with the design of a relational database
5. Be familiar with embedded SQL queries

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Outline

Topic	Number of Lecture Hours	Outcome
<ul style="list-style-type: none"> • Database systems <ul style="list-style-type: none"> ○ Data redundancy ○ Components of database systems ○ DBMS functions ○ Database architecture and data independence 	3	1
<ul style="list-style-type: none"> • Relational data model concepts <ul style="list-style-type: none"> ○ Relational model introduction ○ Query by example ○ Relational algebra 	6	2
<ul style="list-style-type: none"> • Structured query language <ul style="list-style-type: none"> ○ Simple retrieval queries ○ Multi-table queries ○ Nested queries ○ Insert, delete, update queries ○ Embedding SQL queries in a procedural language 	8	2,5
<ul style="list-style-type: none"> • Relational database design <ul style="list-style-type: none"> ○ Views, indexes ○ Integrity rules: entity, referential ○ Functional dependency ○ Normal forms (1NF, 2NF, BCNF) ○ Multivalued dependency (4NF) ○ Mapping conceptual schema to a relational schema 	8	3,4
<ul style="list-style-type: none"> • DBMS functions <ul style="list-style-type: none"> ○ Concurrency, deadlock ○ Two-phase locking, time stamping ○ Recovery, Security 	4	
<ul style="list-style-type: none"> • Database administration <ul style="list-style-type: none"> ○ Policies: access control, disaster planning, archiving, security ○ Administrative: DBMS evaluation, selection, maintenance, training ○ Technical: design, testing, tuning 	4	
<ul style="list-style-type: none"> • Database management approaches <ul style="list-style-type: none"> ○ Distributed DBMS, OODB ○ Data warehouse, data mining, OLAP 	3	

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Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Database query design (relational algebra) Outcomes: 2	2
2	Database query design (SQL) Outcomes: 2	2
3	Database query design (advanced SQL) Outcomes: 2	2
4	Mapping of a conceptual schema to a relational schema Outcomes: 3, 4	2
5	Embedding SQL queries in an application program Outcomes: 5	2

Oral and Written Communication: No significant coverage

Number of written reports:

Approximate number of pages for each report:

Number of required oral presentations:

Approximate time for each presentation:

Social and Ethical Implications of Computing Topics

No significant coverage

Topic	Class time	Student performance measures

Theoretical Contents

Topic	Class time
Set theory	0.5
Relational algebra	0.5

Problem Analysis Experiences

1.

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Solution Design Experiences

- | | |
|----|--|
| 1. | Mapping a conceptual schema to a relational schema |
| 2. | Design of database queries |

Assessment Plan for the Course & how Data in the Course are used to assess Program Outcomes

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: https://abet.cs.fiu.edu/csassessment/
