

School of Computing and Information Sciences

Course Title: Information Storage and Retrieval
Concepts

Date: 3/23/12

Course Number: COP 4703

Number of Credits: 3

Subject Area: Database	Subject Area Coordinator: Antonio Bajuelos email: abajuelo@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" (7th Ed) and "A Guide to SQL" (8th Ed) by Pratt Thompson Course Technology (ISBN: 0324825838)	
References: "Fundamentals of Database Systems" (6 th Ed) Elmasri and Navathe Addison Wesley (ISBN: 0136086209)	
Prerequisites Courses: COP-3804 or COP-3337	
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

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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
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2.

Design of database queries
