

## Knight Foundation School of Computing and Information Sciences

**Course Title:** Information Storage and Retrieval Concepts

**Date:** 3/23/2012

**Course Number:** COP 4703

**Number of Credits:** 3

<b>Subject Area:</b> Database	<b>Subject Area Coordinator:</b> Antonio Bajuelos <b>email:</b> abajuelo@fiu.edu
<b>Catalog Description:</b> 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.	
<b>Textbook:</b> Bundle: "Concepts of Database Management" (7th Ed) and "A Guide to SQL" (8th Ed) by Pratt Thompson Course Technology (ISBN: 0324825838)	
<b>References:</b> "Fundamentals of Database Systems" (6 <sup>th</sup> Ed) Elmasri and Navathe Addison Wesley (ISBN: 0136086209)	
<b>Prerequisites Courses:</b> <a href="#">COP 3804</a> or <a href="#">COP 3337</a>	
<b>Corequisites Courses:</b> None	

Type: Required (CY, IT)

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**

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

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**Course Outcomes Emphasized in Laboratory Projects / Assignments**

	<b>Outcome</b>	<b>Number of Weeks</b>
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

<b>Topic</b>	<b>Class time</b>	<b>Student performance measures</b>

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**Theoretical Contents**

<b>Topic</b>	<b>Class time</b>
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
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**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: <a href="https://abet.cs.fiu.edu/csassessment/">https://abet.cs.fiu.edu/csassessment/</a>
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