

## COURSE OUTLINE OF RECORD

<b>Dept., Number</b>	CSC 4355	<b>Course Title</b>	Database Management System Design
<b>Semester Hours</b>	3		
<b>Year</b>	2006	<b>URL (if any):</b>	

### **Current Catalog Description:**

This course covers advanced topics of database management system design. Students will gain practical experience in planning, evaluating, and using database management system technology. Prerequisite: CSC 3355. (formerly 3392)

### **Textbook:**

Raghu Ramakrishnan, Johannes Gehrke (2002). Database Management Systems. Third Edition. McGraw Hill.

### **Course Goal:**

To develop competence in database design at both logical and physical levels, with an emphasis on the relational model, and to discuss current trends, such as distributed systems and object-oriented databases.

### **Prerequisites by Topic:**

1. Familiarity with the fundamentals of database management, including the principal data models, as covered in CSC 3355.
2. Proficiency with a widespread programming language, such as C, and knowledge of basic data structures. Knowledge of computer architecture and operating systems.

### **Major Topics Covered in the Course (number of weeks):**

- Overview of database management systems (Chapters 1, 2) 6 hours.
- Ethical issues (Chapter 2 and notes) - 1.5 hours.
- Overview of the relational model and SQL (Chapters 3, 4) – 6 hours.
- Normalization (Chapter 6) – 3 hours.
- Database design goals, methodology, and examples (Chapter 7) – 7.5 hours.
- The entity-relationship model and other advanced database design topics (Chapter 8) – 6 hours.
- Physical database design (Chapter 10) – 3 hours.
- Fourth generation languages and prototyping (Chapter 11) – 3 hours.
- Current trends: Distributed systems, database computers, object-oriented systems, knowledge-based systems (Chapter 13) – 4.5 hours.

### **Laboratory Projects:**

A structured lab on SQL (1).

A significant term project and a corresponding class presentation will be required (10).

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**Estimate Curriculum Category Content (Semester hours)**

<b>Area</b>	<b>Core</b>	<b>Advanced</b>	<b>Area</b>	<b>Core</b>	<b>Advanced</b>
Algorithms			Data Structures		
Software Design	2		Prog. Languages		
Comp. Arch.	1				

**Oral and Written Communication:**

Term-papers written and presented by students.

**Social and Ethical Issues:**

Students are required to read at least 2 different articles for class review and discussion. Open class discussion is lead by instructor and all students are required to give input.

**Theoretical Content:**

Analog and digital signaling concepts, data Encoding techniques, circuit multiplexing methods, circuit and packet switching concepts, network systems and data routing, protocols and architectures.

**Problem Analysis:**

Students are asked to analyze the differences between asynchronous and synchronous communication models, circuit and packet switching systems, data encoding methods, error detection and correction methods, protocols, transmission media, and basic computer network technology.

**Open-Ended Design:**

None is required for this course.