King Fahd University of Petroleum and Minerals

Department of Information and Computer Science

Second Semester 2007-2008 (072)

ICS 324: Database Systems (4-3-3) - (Section 02)

Syllabus

Instructor	Dr. Talal H. Maghrabi	**Office:** 22-308	**Phone:** 2083

Class Time: 10:00-10:50   S. M. W.   **Room:** 24-128

Office Hours: 09:00-09:50 & 11:00 – 11:30 AM   S. M. W.   (Or by appointment)

E-Mail: maghrabi@kfupm.edu.sa   **WebCT:** http://webcourses.kfupm.edu.sa

Course Homepage: http://faculty.kfupm.edu.sa/ics/maghrabi/Teaching_Folder/Database/ics324.htm

Catalog Course Description:

Basic database concepts. Conceptual modeling. Relational data model. Relational theory and languages. Database design. Database security and integrity. Introduction to query processing and optimization. Introduction to concurrency and recovery.   **Prerequisite:** ICS 202

Course Objectives

1. [**Basic Concepts & Features of Database Systems**]
   To introduce the basic concepts and main features of Database Systems.
2. [**Database Design Models & Methodology**]
   To introduce the various database models and database design methodology.
3. [**Database Languages**]
   To expose the students to major database languages and their features
4. [**Practice with A Real Database Management System**]
   To allow the students obtain a first hand experience in using ORACLE DBMS through team projects.

Course Learning Outcomes

Upon completion of the course, students will be able to:

1. understand the basic concepts of databases, RDBMS and database theory.
2. understand and apply database design, development, and implementation.
3. understand advanced topics like query processing and optimization, concurrency and database recovery.
4. get an experience to work in a team environment

Textbook

Fundamentals of Database Systems, by Ramez Elmasri and Shamkant Navathe, Addison Wesley, 5th Edition, 2007.

Grading Policy:

Participation & Assignments			**8%**
Quizzes (**5**)			**12%**
Major Exam I	(Monday, March 17, 2008	at 6:10 PM)	**15%**
Major Exam II	(Monday, May 5, 2007	at 6:30 PM)	**15%**
Final Exam	(Thursday, June 12, 2008	at 7:30 AM)	**25%**
Lab Work			**25%**

Course Outline (Tentative)

Main Topic	Sub-Topic	Chapter	# Of Lectures
Introduction	0. Information Systems	Handout	Self Study
	1. Databases and Database Users	[1]	2
	2. Database Systems Concepts and Architecture	[2]	3
			5
Data Models	3. Entity-Relationship Model	[3]	3
	4. Enhanced Entity-Relationship Model	[4]	2
	5. The Relational Data Model	[5.1 - 5.3]	2
	6. ER and EER Mapping	[7.1 - 7.2]	2
			9
Relational Database Languages	7. Relational Algebra	[6.1 – 6.5]	3.5
	8. Relational Calculus	[6.6 – 6.7]	2.5
	9. SQL	[8]	6
			12
Database Design	10. Functional Dependencies and Normalization	[10]	3
	11. Practical Database Design	[12.1,12.2]	1
	12. File Organization	[13.5 – 13.7]	1
	13. Indexing Structures for Files	[14.1 – 14.3]	2
	14. Physical Database Design and Tuning	[16]	1
			8
System Implementation Techniques	15. Query Processing & Optimization	[15.1, 15.7]	2
	16. Transaction Processing	[17.1 – 17.3]	1.5
	17. Concurrency Control	[18.1]	1.5
	18. Database Recovery	[19.1]	1
			6
	Total Number of Lectures		**40**

General Policies

Attendance

- Regular attendance is the university requirement. Attendance will be taken at the beginning of every class. A **0.5 mark** will be deducted for **every** absence. A student who comes after 15 minutes from the beginning of the class is not welcome and will be considered absent.
- **Two** late attendances are considered as **one** absence. A student who comes after 5 minutes and before 15 minutes from the beginning of the class is considered late.
- Official excuse for any absence of a class must be presented **not later than a week** after that class.
- As soon as the number of absences goes beyond **20%** of the held classes a written warning will be given by the instructor. **DN** grade will be given on the **10th** unexcused absence.

Class Discussion

- Participation in class discussion is very much encouraged. Asking questions during lectures helps both the instructor and the student. The instructor gets the feedback and the students get the point clarified.

Assignments

- Assignments should be submitted before or during the class time on the due date. **No Late** submissions are allowed.

Exams & Quizzes

- **No make up** quizzes or exams will be given.
- Final exam will be selective comprehensive. List of selected topics will be given well ahead of the final exam.

Grading Issues

- After the return of graded material, all grading issues must be resolved within **one week**.

Tips to Students

In order to perform well in this course the following points are recommended to be considered

- Your attitude *to learn and the effort you put in for this course alone* will be the primary agents that guide you in this course.
- For a 4-credit course, in addition to 3 hours of class work, it is required that student will put 6-hours of effort per week. Keeping a log of time devoted to study ICS 323 material can give you a very realistic picture.
- Emphasis is on reasoning and planned-regular work towards this course and **not on memorization**.
- Taking notes is important. Take a note of what you consider to be important. Write down bits and pieces of important information in your notes. On the same day after the class, review the relevant material and then prepare detailed notes. Such regular recollection, review, revision, and documentation will turn out to be very important in grasping the material and doing well in quizzes and examinations.
- Regular interaction during the class and during the instructor's office hours is encouraged. There is nothing like a silly question. By raising doubts and posing questions, you will be helping yourself, others in the class, and the instructor in steering the coverage towards the weak points. So keep one thing in mind during this course:
  - ➢ *It is better to raise a doubt or pose a question, rather than suppressing it and face difficulties later on.*
- If you do not follow the instructor's pace/language, request him to slow down. Likewise, when you do not understand certain words or sentences, request for an alternative explanation.
- Reading assignments, written homework's, quizzes and examinations are part and parcel of the learning process. They are expected to supplement the coverage in the class. So treat them as learning tools rather than just as tools for evaluating your performance.
- There is no substitute for a regular (daily) preparation for this course. It will be far less effective, even if you spend two times more effort just before the examination days.

Important Note:

Plagiarism, copying and other anti-intellectual behavior are prohibited by the university regulations. Violators may have to face serious consequences. See the attached clip from the university rules in Arabic.

Good luck and best wishes for a good semester

(Prepared by Dr. Talal Maghrabi; 12 February 2008)