INEG 5833 Introduction to Database Concepts for Industrial Engineers

Instructor

Manuel D. Rossetti, PhD, P. E., Professor   Phone: (479) 575 - 6756
Department of Industrial Engineering   Fax: (479) 575 - 8431
Office: 4164 Bell Engineering Center   Email: rossetti@uark.edu

The most effective way to contact me is through electronic mail using ***rossetti@uark.edu***

Course Description

An introduction to the basic principles of database modeling and technologies for industrial engineers. Coverage includes analyzing user requirements, representing data using conceptual modeling techniques (e.g. UML, ERD), converting conceptual models to relational implementations via database design methodologies, extracting data via structured query language processing, and understanding the role of database technology in industrial engineering application areas such as inventory systems, manufacturing control, etc. The application of a desktop database application such as Access will be emphasized. Prerequisite: CSCE 2004 or equivalent.

Required Text(s)

Kroenke, D. M., Auer, D. J., Vandenberg, S.L., Yoder, R.C. (2020) Database Concepts 9th edition.

Additional readings may be made available through UA's Blackboard System. The introductory ability to program in a general-purpose language such as C, C++, Java, or VB is assumed. Familiarity with spreadsheets and other office productivity software is assumed.

Course Objectives

This course will cover the basic principles of database modeling with an emphasis on representing and analyzing systems with standard database design and modeling techniques. In addition, the development of database application systems from the relational-model will be examined. After completing this course the student should be able to:

- Apply data modeling techniques and diagrams to represent, document, communicate and analyze situations involving information
- Translate data models and designs into database applications
- Develop and execute SQL statements for processing a database
- Recognize, discuss, and describe database management systems and applications to engineering
- Recognize, discuss, and describe database processing and business intelligence systems

Email and Web Page

A web course page has been established for this course on UA's Blackboard system: learn.uark.edu
I will use email and discussion lists within the course. You are responsible for logging into and working with Blackboard on a regular basis.

Course Outline

Week	Topic	Reading Assignment
1	Introduction to Databases	Chapter 1
1	Relational Model and Normalization	Chapter 2
2	Structured Query Language, Advanced SQL, Relational Algebra	Chapter 3, Notes
4	Data Modeling and the Entity Relationship Model	Chapter 4
5	UML Modeling	Notes
6	Database Design	Chapter 5
8	Database Administration & DBMS Functions Database Processing Using Internet Technology Database Processing for Business Intelligence Systems	Chapter 6, 7, 8

Grading and Assignments

Textbook reading assignments are indicated in the course topic outlined above. The grade for this course will be based on the following:

Chapter Quizzes	50%	On-line quizzes on Chapter material
Practice Assignments	10%	Access practice
Homework Assignments	40%	
Total	100.00%	

Graduate students	
[100 – 90%]	A
(90 – 80%]	B
(80 – 70%]	C
(70 – 60%]	D
(60 - 0]	F

Quizzes – This portion of the grade will be based on quizzes covering chapter material, lecture, and homework concepts. No collaboration on quizzes is permitted.

Practice Assignments – Practice assignments are designed to ensure that students are working with the material on a regular basis. Students will be asked to prove that they worked on the assignment by taking short on-line quizzes that may ask questions or require the submission files representing their work. Students must take the quizzes individually with no assistance from others during the quiz. Any files that students submit must be based solely on their own work.

Homework Assignments - Homework assignments cover topics of the course in more depth and may require students to submit work in written (typed) form for grading or to take on-line quizzes over the assignments.

Your final grade will be based your weighted score across the grading categories. Items within each grading category are weighted proportionally to their individual point values. Different items within each category may have different point values. If you have any questions concerning a grade, contact the instructor **within 48 hours** after the assignment was returned. No grade will be revised after that time. Unless the proposed revision is immediately clear, you should submit a **typed explanation** for any proposed grade revision.

Academic Integrity

As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University's Academic Integrity Policy, which may be found at http://provost.uark.edu/. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

On-Line Testing

This course requires the use of LockDown Browser and a webcam for some online exams. The webcam can be built into your computer or can be the type that plugs in with a USB cable. Please see the items describing the use of this technology within the Blackboard course content.

Weather Policy

Unless conditions require the University to close, students should make every attempt to get to class within the bounds of their personal safety. For information concerning the University's weather related closings see: http://emergency.uark.edu/14701.php I will make every attempt to post a message to Blackboard and/or to student email concerning the cancellation of class. Your responsibility is to check for such messages to the best of your ability.

Emergency Procedures

Many types of emergencies can occur on campus; instructions for specific emergencies such as severe weather, active shooter, or fire can be found at **emergency.uark.edu**.

Severe Weather (Tornado Warning):
- Follow the directions of the instructor or emergency personnel
- Seek shelter in the basement or interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building
- Stay in the center of the room, away from exterior walls, windows, and doors

Violence / Active Shooter (CADD):
- **CALL-** 9-1-1
- **AVOID-** If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY-** Barricade the door with desk, chairs, bookcases or any items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it's safe.
- **DEFEND-** Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.