CS 361 Database System & Design
Spring 2012
Tuesday, 4:00 pm – 6:45 pm
SCIT 215

The schedule, together with assignments and lectures, is subject to change in the progress of the course. Announcements made in the class override the schedule in case of conflicts.

Instructor: Dr Victor Govindaswamy
Email: victor.govindaswamy@tamut.edu

Office Location: SCIT 114
Office Hours: Monday 10:45 am – 3:30 pm, Tuesday 2:00 pm – 4:00 pm, Tuesday 6:45 pm – 7:00 pm, Thursday 10:45 am – 1:45 pm.
Phone: 903.334.6657

Required Textbook/Resources:

None

Software & Hardware:

1) Oracle Database software

2) Students must keep copies of all assignments and projects sent by e-mail.

3) Assignments are to be word-processed. Continuing and regular use of e-mail is expected.

Course Description:

This course provides the basic concepts of management of database systems. Major emphasis is placed on understanding the various database management functions and providing database support for the organization. Topics covered include: types of database models, database design: Entity-Relationship diagram, normalization, database management systems, administration of database security, error recovery, concurrency control, and distributed database systems. This course focuses on the design of a database starting from the conceptual design to the implementation of a database schema and user interfaces to the database.

The course is heavily design oriented. In most of the projects, students have to design and implement a database using a commercial database management system and associated development tools. Students will in particular learn the database query language SQL and the development of applications using PL/SQL. The database software used in this course is Oracle 10g (SQL, PL/SQL) and SQL Server 2005. Laboratory exercises provide practice in writing programs and reinforce concepts. The prerequisite for this course is CS/EE 332 C++ Programming or Instructor Permission.

Justification:

Engineers, especially electrical and software, and computer scientists need to know at least one database system and its language implementation if they want to succeed in their chosen field. Oracle database is a dominant language in the industry today. Thus there is a need for this course. Having this course will provide the basics behind the all the other required senior courses in electrical engineering and computer and information sciences, and encourage students to pursue computer science or software or electrical engineering as a profession and for further studies. This course will inspire the students with basic programming skills into developing database projects as a team and help our state as well as our nation in dealing with the shortage of engineers and computer scientists by generating students' interest in this field.

Special Considerations:

The material in this course is far more challenging than that in your first few programming courses and the pace is faster. To have the best chance of succeeding in the course, you must plan to devote at least two hours outside of class for every hour spent in class. You must read the assignments before coming to class and work through examples and problems given as homework. You should be aware that missing even one lecture will put you significantly behind your classmates. If you must be absent, arrange to obtain the lecture notes of someone who is an accomplished note-taker.

Course Objectives and Outcomes:

Upon completion of the course, students will be able to

o Demonstrate and understand database theory and design related to engineering, including a clear understanding of a broad coverage of models and real systems, and modern database technologies.

o Understand and implement data models including and not limited to relational, object-oriented and entity-relationship.

o Write programs in relational databases languages such as SQL.

o Implement relational database design and database programming.

o Implement, manipulate and query relational databases.

o Create efficient database system using ER diagram, normalization techniques, SQL, and QBE.

Course Outline:

Each of the following topics will be covered in this course:

- Introduction to Databases and Database Users
- Database System Concepts and Architecture
- Data Modeling Using the Entity-Relationship (ER) Model
- The Enhanced Entity-Relationship (EER) Model
- The Relational Data Model and Relational Database Constraints
- The Relational Algebra and Relational Calculus
- Relational Database Design by ER and EER-to-Relational Mapping
- SQL-99: Schema Definition, Constraints, Queries, and Views
- Introduction to SQL Programming Techniques

Course Requirements and Etiquette:

Email: Students are responsible for checking their email frequently for updates and notices relative to class materials and schedule. Email may be used occasionally to send notices of an advisory nature, but should NOT be relied upon as the official means of communication to the class. Subject line of email should indicate "CS 361" and include the student's full name. It is the student's responsibility to ensure that I have your email address in my address book, and that the provided address is available and operational.

The course schedule is achievable. However, if necessary, the schedule will be modified during the semester to allow coverage of the most critical topics. I will attempt to provide advance notice of changes in class.

Participation: Participation extends beyond mere attendance. Expect your instructor to keep track of how often you contribute to class discussion (as a whole), particularly during the panel discussion section. The only exceptions to this rule are severe illness (doctor's note required) and A&M-Texarkana's approved trips/activities.

Appropriate documentation for absences beyond the first three is necessary the class day directly before or after the one you miss. In general: this class is intensive and interactive. Missing class could seriously affect your grade! Students are reminded not to approach the instructor for copies of the previous week's materials during immediately before, during, or immediately after class. Students are expected to collect materials from their classmates or see the instructor during office hours.

Homework (Labs/Paper/Quizzes): Homework in the form of the labs and quizzes will be given frequently throughout the semester to measure learning progress. The schedule for these labs may be adjusted at the discretion of the instructor based on the pace of topics covered. Each lab is due on the day indicated during lecture. It is usually due a week after it has been assigned. Homework assignments will be due and collected, in the form of emailed softcopies with subject header "CS 361 D Spring 2012 Lab 1", at the beginning of the class

period on the required due date. Work submitted after the end of class will be considered late and will receive a score of zero.

Note: Save your work frequently on different disks and start your work early. A computer crash is no excuse for a late delivery, nor is non-working printer for last minute printouts.

Exams: Two examinations will be taken, covering all course content up the week before the each exam. There will be two subject matter exams covering the key sections of the text, lectures and labs, and course content up to the week before the each exam. Exam format may combine a mixture one or two short questions and/or algorithmic or programming questions covering *all* readings, lecture, hand-out and class discussion content. Two-hours will be allotted for these exams, and they will begin promptly at the beginning of the class period during which they are scheduled. These exams will be open class notes and labs.

NO early exams will be given. Failure to appear for a scheduled exam at the appointed time, unless due to a dire emergency will result in the assignment of a zero grade.

Grade Challenges: Discussion or challenges of individual grades will not be entertained in the classroom before, during or immediately following class. Normal office hours are available for this purpose. Solutions/keys for assignments will be discussed in class, but will generally not be posted or made available for general distribution. In the case of dispute concerning submission/grade on an assignment, it is the student's responsibility to produce papers as proof. Tests/Exams/Papers/Projects will not be returned to the students permanently.

Method of Instruction:

It is essential that to read the assigned material from the lecture notes and work through the problems in each assigned lab for that given lecture. Otherwise, you may find future lectures difficult as all lectures are dependent on the prior lectures.

Class Attendance Policy:

Rolls may be taken on a regular basis. It is your responsibility to take notes, obtain assignments, and turn in work on time. Your absence from class does not relieve you of any of these responsibilities. .A grade of zero will be assigned on any missed assignments/examinations/ labs/homework/paper unless the instructor is notified in advance and arrangements are made to take the quiz at another time.

Incompletes:

A grade of I will be given only in exceptional circumstances.

Grading Policy:

Name	Description	Weight
Exam 1	This exam will assess your understanding of the material covered in class during the first half of the semester.	15%
Exam 2	This exam will assess your understanding of the material covered in class during the second half of the semester. While no specific emphasis will be placed on the topics already included in the first exam, you will be expected to have and, whenever relevant, show an in-depth understanding of those topics when discussing the new material in the second half of the semester.	25%
Homework	Frequent exercises will be given to assess your understanding of the material covered in class.	60%

The instructor reserves the right to make other assignments that are not part of the published schedule.

Grading Scale:

In general, semester grades will be determined as follows:

A 90 to 100
B 80 to 89
C 70 to 79
D 60 to 69
F 59 and below

Final grades **may** be curved based on overall class performance. Grades are final once submitted, and are not changed unless a grading error has been made.

Late / Makeup Policy:

There is a 100% penalty for any late submissions.

Program Grading:

1. Programs are due, hardcopies as well as emailed softcopies, at the beginning of class on the date specified. Late programs (submitted after the beginning of lecture on the due date) will NOT be accepted. Emailed assignments will not be graded. Only hardcopies will be graded.
2. A copy of your source program and its output should be submitted in hard copy form as well as an email zipped file. Program output should be labeled (by the program) so that it is understandable to the reader, with the assignment number, date, and your name. Program output and disks without proper labeling will not be graded.

3. Testing is a critical part of the programming process. The burden of proof that a program works always rests with the programmer. Whether or not test data are provided, you must adequately test your program to insure that it works correctly in all reasonable cases.
DO NOT WAIT UNTIL THE LAST MINUTE TO START THESE ASSIGNMENTS.
4. Programming assignments may specify that a particular approach be used. Read the assignment carefully to be sure that you understand how the problem should be solved. If you use the wrong approach, the fact that your program produces the correct output is immaterial.
5. Programs must be well-structured, readable, and efficient. Use meaningful names, indentation, comments, and other elements of style discussed in the course. An unreadable program is not maintainable and is worthless even if it produces the correct result.
6. Output should be neat, properly aligned and have useful headings. Requests for interactive input should be preceded by a prompting message.
7. Do not jeopardize your grade by allowing others to copy your work. The penalties for giving and receiving help are the same.

In general, the following point system will be used for grading of code:
Overall Deductions:

- 20% Not using the provided test data
- 20% Improper use of advanced features (see 4)
- 20% Not following the instructions regarding the required approach (see 4)
- 30% Your name and assignment number does not appear in your code and/or output

50% Performance

- 0 Program runs correctly and produces the correct output
- 10 Program has minor error (e.g. typo in formula or text)
- 20 Program has major error or many minor errors
- 30 Program does not run due to syntax error
- 40 Only program fragments turned in

30% Maintenance

- 10 Poor naming of variables/functions
- 5 Improper indentation
- 10 Poor program structure
- 20 No documentation in code

20% Input/Output

- 5 No prompting for input
- 5 No headings
- 5 Alignment problems
- 20 No proof of output provided

Cheating: You are expected to turn in your own original work. Getting help in finding an error is encouraged, but copying other students work or code from other sources is

forbidden and will result in a grade of zero for that assignment or for the entire course. You need to be able to explain your program.

Email usage:

Upon application to Texas A&M University-Texarkana an individual will be assigned an A&M-Texarkana email account. This email account will be used to deliver official university correspondence. Each individual is responsible for information sent and received via the university email account and is expected to check the official A&M-Texarkana email account on a frequent and consistent basis. Faculty and students are required to utilize the university email account when communicating about coursework.

Academic Integrity:

Academic honesty is expected of students enrolled in this course. Cheating on examinations, unauthorized collaboration, falsification of research data, plagiarism, and undocumented use of materials from any source, constitute academic dishonesty, and may be grounds for a grade of "F" in the course and/or disciplinary actions." For additional information see the university policy manual.

University Drop Policy:

To drop this course after the 12th class day, a student must complete the Drop/Withdrawal Request Form, located on the University website http://tamut.edu/Registrar/droppingwithdrawing-from-classes.html) or obtained in the Registrar's Office. The student must submit the signed and completed form to the instructor of each course indicated on the form to be dropped for his/her signature. The signature is not an "approval" to drop, but rather confirmation that the student has discussed the drop/withdrawal with the faculty member. The form must be submitted to the Registrar's office for processing in person, email Registrar@tamut.edu, mail (P. O. Box 5518, Texarkana, TX 75505) or fax (903-223-3140). Drop/withdraw forms missing any of the required information will not be accepted by the Registrar's Office for processing. It is the student's responsibility to ensure that the form is completed properly before submission. If a student stops participating in class (attending and submitting assignments) but does not

complete and submit the drop/withdrawal form, a final grade based on work completed as outlined in the syllabus will be assigned.

Disability Accommodations:

Students with disabilities may request reasonable accommodations through the A&M-Texarkana Disability Services Office by calling 903-223-3062.

ABET Outcomes Coverage:

This course supports the following program outcomes as required by ABET

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multi-disciplinary teams.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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