Southern Arkansas University
Course Syllabus

Course Information

Course Number and Title: MCIS 5133 Database Management Systems
College and Department: College of Science and Engineering, Department of Mathematics and Computer Science
Term: Summer 2023
Format: Hybrid (0-24% Face-to-Face)
Course day(s) and time:
- Asynchronous delivery
- Class Q&A hours. Wednesday from 1 PM to 4 PM on <u>Zoom.</u>

Course Location: Online via Blackboard
Weeks in length: 9
Class meetings per term: 8
Hours per class session: 3
Credit hours awarded: 3

Instructor Information

Instructor: Dr. Islam Akef Ebeid
Contact Number: 870 235 4952
E-mail: iaebeid@saumag.edu
General Office Hours: Tuesday, Wednesday, and Thursday from 10 AM to 1 PM

Office: WIL 104

Course Description
The course introduces fundamental database concepts and implementation. Data models such as relational and object-oriented models are covered. The connection between DBMS, Web applications, and a popular DBMS system like Oracle will also be addressed.

Related courses: MCIS 5023 Computer Science Fundamentals

Course Objectives and Learning Outcomes
The main objectives of this course are to introduce the student to the internals of database management systems, database application design and development, and the logical design, conceptual modeling, and physical modeling of a database application. The relational data model and query languages (SQL) will be covered. In addition to the normalization process to relational databases, transaction management, concurrency control, and some introduction to Object-oriented data modeling, Distributed Databases, and Data warehousing.

By the end of the course, the student will have learned the following:

1- Differentiate database systems from file systems by enumerating the features provided by database systems and describing each in both function and benefit.
2- Define database systems' terminology, features, classifications, and characteristics.
3- Analyze an information storage problem and derive an information model as an entity relationship diagram.
4- Demonstrate an understanding of the relational data model.
5- Transform an information model into a relational database schema and use a data definition language and utilities to implement the schema using a DBMS.
6- Formulate, using SQL, solutions to a broad range of query and data update problems.
7- Able to distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability.
8- Be familiar with the fundamental issues of transaction processing and concurrency control.
9- Use an SQL interface of a DBMS package to create, secure, populate, maintain, and query a database.
10- Master working successfully on a team by designing and developing a database application system as part of a team.

Course Format
The course will be delivered through recorded lectures with slides and accompanied by assignments. The assignments and the quizzes will be drawn from various sources, including the required textbook and the HackerRank platform. Each week I will provide a recording of me explaining several chapters from the book, followed by additional content that I call the lab. During the weekly meeting, the student will review the recording and discuss any questions about the contents or the assignments. The course consists of 4 assignments and 4 quizzes. The assignments will be direct hands-on applications to the course content. The student in each assignment will be asked to submit a shell script containing their solution to that week's assignment. In addition, starting the 3rd week, the students will be asked to answer a short Multiple-Choice Question-based quiz. The final exam will be like the quizzes Multiple Choice Questions. There will also be a final project where students demonstrate their practical knowledge of database management systems.

Course Material
Modern Database Management, 12/E Jeffrey A. Hoffer, V. Ramesh, Heikki Topi, Pearson Education, Inc. Publishing as Prentice Hall.

The HackerRank database and SQL question bank:

https://www.hackerrank.com/domains/databases

https://www.hackerrank.com/domains/sql

https://leetcode.com/problemset/database/

Grade Structure

Criteria	Number of Weeks	Points per Week	Total Points	Percentage of Total
Assignments	4/9	10	40	33.33%
Quizzes	4/9	10	40	33.33%
Final Project	1/9	20	20	16.66%
Final Exam	1/9	20	20	16.66%
Total	9/9	-	120	100%

Grade Policy

A	Above 90%
B	Above 80%
C	Above 70%
D	Above 60%
F	Above 50%

Course Plan

Week	Readings and material	Topic	Assignments and Quizzes
1 (May 31)	1 Slide deck	Introduction	
2 (June 7)	Chapter 1 1 Slide deck 1 Recording	The database environment and development process	Assignment 1 is due Friday, June 16, by midnight
3 (June 14)	Chapters 2 and 3 2 Slide decks 2 Recordings 1 Lecture	Modeling data in the organization using the Entity-Relationship model	Assignment 2 is due Friday, June 30, by midnight. Quiz 1 is due Friday, June 30, by midnight
4 (June 21)	Chapters 4 and 5 2 Slide decks 2 Recordings 1 Lecture	Logical, Relational, and Physical Database model	Assignment 3 is due Friday, July 7, by midnight. Quiz 2 is due Friday, July 7, by midnight
5 (June 28)	Appendix B 1 Slide deck 1 Recording 1 Lecture	Database Normalization	Quiz 3 is due Friday, July 7, by midnight
6 (July 5)	Chapters 6 and 7 2 Slide decks 1 Recording 1 Lecture	Structured Query Language (SQL) and Object Relational Mapping	Assignment 4 is due Friday, July 15, by midnight. Quiz 4 is due Friday, July 15, by midnight
7 (July 12)	Chapters 9 and 10 2 Slide decks 2 Recordings 1 Lecture	Database Security Data Warehousing	Final Project due Friday, July 30, by midnight
8 (July 19)	Chapters 11 and 12 2 Slide decks 2 Recordings	Big Data Hadoop	Final Project due Friday, July 30, by midnight

9 (July 26)	1 Slide deck	Course Recap	Final Exam Wednesday, August 2, all-day Final Project due Friday, July 30, by midnight

University Policies
For general university policies, please refer to: https://web.saumag.edu/academics.

Academic Dishonesty
Southern Arkansas University affirms its commitment to academic integrity and expects all University community members to accept shared responsibility for maintaining academic integrity. Therefore, students in this course are subject to the provisions of the University's Academic Integrity Policy, approved by the president and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment or a failing grade in the class. Continued enrollment in this course affirms a student's acceptance of this University policy.

Code is like writing. It only belongs to its author. The author can refer to somebody else's work, but they must cite them and give them credit for it. When you take someone else's code, you rob that person of the time they spent authoring that piece of code. If you are facing a problem in programming, it is ok to go online and search for a solution, but you must mention where you got that piece of code from. The whole point is not to trick people into thinking you wrote something you did not. That is your measure. Keep it in mind.

And finally, the goal of this class is to teach you a skill. If you plagiarize, copy, cheat, or fabricate, you hurt yourself before others.

In the context of this class, here is a list of what I consider academic dishonesty:

1- While in class, you looked at your colleague's screen and copied the same code they had written

2- I suggest you continue your in-class assignments at home. So, you went home and asked your software engineer sibling to do it for you.

3- You copied code from the internet without citing it

4- During an MCQ exam, you copied the whole question and pasted it on Google in the hopes of finding the correct answer

Please refer to https://web.saumag.edu/academics/dishonesty-and-integrity/

Disability Support Services
It is the policy of SAU to accommodate students with disabilities under federal law, state law, and the University's commitment to equal education opportunities. Therefore, any student with a disability who needs accommodation should inform the instructor at the beginning of the course. Students with disabilities are also encouraged to contact the Office of Disability Support Services, Reynolds Center, Room 216, 870-235-4145. More information can also be found at https://web.saumag.edu/testing/disability-support-services/.

Instructor Policies
Holidays
The instructor will follow the federally and state-recognized holiday schedule by the University, which can be found here:

https://web.saumag.edu/human-resources/holiday-schedule/

However, if you need unique accommodation for religious or other types of holidays that you observe, please let the instructor know beforehand.

Diversity
The instructor is committed to diversity, inclusion, and equality in the classroom and accordance with the university policies regardless of cultural background, country of origin, religion, race, ethnicity, and sexual orientation.

Please let the instructor know how you would like to be addressed. During the first lecture, the instructor will ask the students about their names, pronouns, and other forms of addressing they want to be referred to. Please notify the instructor if that changes or if you were addressed mistakenly.

Office Hours
- First come, first served.

- Maximum 15 minutes if people are waiting,

- If two or more students come simultaneously, it will be in the order of the last name.

- Please come prepared to office hours with questions.

Conflict
In case of conflict between students in the classroom, the instructor will act as a mediator until proper university authorities are notified.

How to Succeed in this Class
You will receive it if you work hard, put in the effort, and use all your resources to achieve the highest grade in this class. In that regard, I recommend the following to succeed in this class:

1- Please attend all classes and let the instructor know if you need help.

2- Please work separately and independently during the in-class and homework assignments unless otherwise made clear.

3- Using internet resources is allowed with restrictions that the instructor will mention during the classroom. Yet please don't copy and paste code or answers for any questions.

4- If you are having trouble finishing an in-class assignment, that will NOT automatically result in a lousy grade. On the contrary, a good grade could be achieved if you showed effort and explained your thought process.

5- Complete all your assignments to the best of your abilities.

6- See your errors and mistakes as opportunities to learn more.

7- Please ask questions if things need to be clarified.

8- Use email as the preferred way of communicating.

Academic Resources
Mental Health
If you need help with any issue that is affecting your academic performance, please refer to:

https://web.saumag.edu/counseling/

Writing
If you have difficulty communicating in written English language, please let the instructor know, and please refer to the following:

https://web.saumag.edu/writing-center/

Tutoring
If you would like additional help for the class or any other classes, please notify the instructor and refer to:

https://web.saumag.edu/support/tutoring/