Course title and number	CSCE 310 – Database Systems
Term	Fall 2022
Meeting times and location	Monday, Wednesday, & Friday: 3:00– 3:50 PM, ZACH 310

Instructor Information

Name	Christopher I. G. Lanclos
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Office hours	Monday: 9:00 AM – 2:00 PM
Office location	PETR 111

Course Description and Prerequisites

File structures and access methods; database modeling, design and user interface; components of database management systems; information storage and retrieval, query languages, high-level language interface with database systems.

Prerequisites: CSCE 221 with a grade of C or better; junior or senior classification.

Learning Outcomes & Course Objectives

At the end of this class, the successful student will:

- have a broad understanding of database concepts and database management system software
- have a high-level understanding of major DBMS components and their function
- be able to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
- be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
- be able to program a data-intensive application using DBMS APIs.

More specifically,
- To demonstrate understanding of the relational model of data, you should be able to:
  - express queries using relational algebra
  - create tables using SQL DDL
  - specify primary key and foreign key constraints in CREATE TABLE statements
- To demonstrate understanding of query languages for databases, you should be able to:
  - use relational algebra operators including extended operators under both set and bag semantics
  - express queries using relational algebra
- To demonstrate proficiency in SQL, you should be able to:
  - write single block SQL queries
  - compose SQL queries using set (and bag) operators
  - write SQL queries with correlated subqueries
  - write SQL aggregation queries involving GROUP BY and HAVING clauses

- o translate a query in English to SQL
- To demonstrate understanding of data Models, you should be able to:
  - o use data modeling tools like Entity-Relationship Diagrams
  - o translate data models into relational table schema
- To demonstrate understanding of data normalization, you should be able to:
  - o find keys given a set of functional dependencies
  - o identify tables that are not normalized
  - o decompose unnormalized tables into BCNF and/or 3NF compliant tables
- To demonstrate understanding of constraints, views, triggers, and indexes, you should be able to:
  - o specify appropriate constraints
  - o define and use views
  - o define and use triggers
  - o decide what indexes to create for a given workload
- To demonstrate understanding of client server computing in the context of DBMSs, you should be able to:
  - o write a program that interacts with a DBMS server via the JDBC API
  - o design, develop and test a DBMS-backed web application to address a problem

Textbook and/or Resource Material

- Textbook: Database Systems, The Complete Book, 2nd Edition, Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom, Prentice Hall, 2009. ISBN-13: 9780133002010
- Supplementary Textbook: Database Systems: Design, Implementation, & Management, 13th Edition, Carlos Coronel and Steven Morris, Cengage Learning, 2018. ISBN: 9781337670562, 1337670561
- Instructor will provide lecture videos, copies of lecture slides, and links to resources via Canvas.

Grading Policies

The course grade will be assigned based on exams (25%), quizzes (25%), homework/discussion Board (25%) and a project (25%).

All homework, and project artifacts will be submitted by uploading them into Canvas unless otherwise specified. Late homework and project artifacts are accepted with 10% penalty for each day late up to a maximum of 3 days. (The penalty will be waived for unexpected, excused absences in accordance with Student Rule 7.)

Quizzes and exams will be administered in person unless otherwise specified.

Grading Scale

Standard Letter Grading Scale:
A = 100-90%   B = 89-80%   C = 79-70%   D = 69-60%   F =< 59%

Attendance / Make-up Work Policies

Attendance will be measured through quizzes and submission of assignments. The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused/unexcused absences and make-up work are located on-line at http://student-rules.tamu.edu/rule07.

Major Assignment and Important Dates

Assignment	Date
Last Day to Drop Course	08/30
Labor Day	09/05
Exam 1	09/30
Exam 2	11/04
Mid-Semester Grades Due	11/10
Q-Drop & Withdraw Last Day	11/18
Reading Day & Thanksgiving Break	11/23-11/25
Last Day of Class	12/07
Final Exam	12/13

Americans with Disabilities Act (ADA)

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructor as soon as possible.

Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu.

Academic Integrity

For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."