CS 374: Database Systems
James Madison University, Spring 2020 Semester, 3 Credits

Home Page:
http://w3.cs.jmu.edu/mayfiecs/cs374

Class Times:
Section 1: Tu/Th, 9:30 AM – 10:45 AM
Section 2: Tu/Th, 11:00 AM – 12:15 PM

Location:
ISAT/CS 246

Prerequisite:
C– or better in either CS 240 or CS 345

Your Instructor
Dr. Chris Mayfield
mayfiecs@jmu.edu

Office: ISAT/CS 208
Phone: 540-568-3314

Office Hours:
Mo/We, 1:15 PM – 2:45 PM
and other times by appointment

Goals and Objectives
By the end of this course, you should be able to:

• Summarize features of the relational model including structured data, relational operations, and integrity constraints.

• Construct a conceptual model (E/R diagram) and a physical model (relational design) from a general data description.

• Illustrate anomalies and inconsistencies that can occur within a database design and how to correct them.

• Write analytical queries in SQL (select, project, inner/outer join, grouping, aggregation, sorting, distinct, subqueries).

• Design and implement a substantial three-tier application, both individually and with others.

• Manage a successful semester-long team project (communication, source control, frequent code reviews).

Last but not least, you should have fun exploring and working with several exciting database technologies this semester!
Nature of Course Content

Required Textbook


http://www.pdbmbook.com/
https://www.cambridge.org/9781107186125

“This comprehensive textbook teaches the fundamentals of database design, modeling, systems, data storage, and the evolving world of data warehousing, governance and more.”

Course Schedule

We will primarily study chapters 1–3 (fundamentals), 6–7 (relational/SQL), 10–11 (XML/NoSQL), 15 (applications), and 19 (big data) of the required textbook. A detailed schedule with readings and assignment due dates will be maintained on the course home page as the semester progresses. You are strongly encouraged to read the textbook and other assigned readings, even if material is not covered in class.

Other Resources

The pdbmbook.com site includes video lectures for each chapter, a playground environment for writing queries, and multiple choice quizzes based on questions included in the book.

Methods of Evaluation

Assignments

To help prepare you for the exams, we will have 6–8 individual assignments. Some of them will be based on textbook exercises, and others will help you develop skills for completing the group project. Written homework must be submitted electronically via Canvas.

Group Project

Throughout the semester, you will work in a group of four students to design, implement, and demonstrate a three-tier application that uses a database management system. You are free to choose your own group members or have them assigned by the instructor. The project will require six deliverables and two performance evaluations. Each group will present their application and other results during finals week.

Midterm Exams

We will have midterms during the 7th and 14th week of the semester. Each exam will be two days: one for written problems, and one for coding problems. If you must be absent during an exam for a legitimate reason, you must contact me at least one week beforehand to make special arrangements. Failure to make prior arrangements for a missed exam will result in a zero grade.
Grading Details

Your final grade will be based on:

- 30% Group Project
- 20% Assignments
- 25% Midterm #1
- 25% Midterm #2

Letter grades will be assigned on the scale A=90–100, B=80–89, C=70–79, D=60–69, F=0–59, with potential minor adjustments after considering the overall performance of the class and actual distribution of numeric scores. I will use “+” and “−” grades at my discretion. I do not assign WP or WF grades except in extreme circumstances.

University Policies

Academic Honesty

If you violate the University’s Honor Code (http://www.jmu.edu/honorcode/code.shtml), you will receive a reduced or failing grade in the course, other penalties may be imposed, and the violation will be reported to the Honor Council. Automated tools may be used on any assignment, at any time, to detect inappropriate collaboration and to determine the originality of submissions.

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MyMadison. The deadline for adding a semester course is Thursday, 01/30/2020 (signatures required after Tuesday, 01/21/2020). The last day to withdraw from a course with a W grade is Friday, 03/20/2020.

Disability Services

If you have a documented disability and need accommodations in this course, please register with the Office of Disability Services (http://www.jmu.edu/ods, Student Success Center, Room 1202, 540-568-6705). They will provide you with an Access Plan Letter to verify your need for services and make recommendations for the course. I will be happy to discuss your access plan with you.

Diversity and Inclusion

Learning environments should be built on mutual respect and support a diversity of thoughts, perspectives, experiences, and identities. Please advise me regarding any concerns or personal circumstances (including your name's proper pronunciation, any name or gender pronouns not reflected on MyMadison, or significant extracurricular commitments) that may be relevant to your full participation in this course.
Excused Absences

Students who are unable to attend class due to JMU sponsored activities (such as sports, band, academic competition, field trips, etc.) or personal religious observances may request reasonable accommodations. Please notify me during the first week of class regarding potential absences so that we can determine alternative methods for you to complete the required work.

Late Work Policy

Late work will not be accepted for unexcused absences. There will be no make-up opportunities and no extra credit assignments. In extreme, documented circumstances (e.g., hospitalization), the instructor will make reasonable accommodations after consulting with the student.

Professional Conduct

The ACM Code of Ethics and Professional Conduct (https://www.acm.org/code-of-ethics) forbids discrimination and harassment of all types. If you feel someone is violating these principles (e.g., by making inappropriate or demeaning remarks), it is your responsibility to take action by informing me or, if you feel comfortable doing so, addressing the individual directly. I will do my best to preserve your confidentiality while addressing the issue.

University Closings

For severe weather and other unexpected circumstances, watch for announcements relating to make-up work. See http://www.jmu.edu/JMUpolicy/1309.shtml for JMU’s cancellation policy. Although the schedule may adapt to canceled classes, assignment deadlines generally do not change.

Your Well-Being

As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. If you or someone you know is experiencing mental health challenges at James Madison University, please connect with the Counseling Center located within the Student Success Center on the 3rd floor. You can learn more about available services by visiting https://www.jmu.edu/counselingctr or calling 540-568-6552. Their services are free and confidential. Other available support resources to consider include, but are not limited to, the Office of the Dean of Students, the Health Center, and Learning Strategies Instruction.