# Course Syllabus

**Instructor**: Jiawei Yuan

**Location**: LB 171

**Office and Office Hours**: LB351, MWF 10:30AM – 11:45PM, or by appointment

Changes to office hours, due dates, or lecture changes will be posted online.

### Course Description

This course is intended to be an introduction to database systems. This includes database design and programming. Specifically, the course covers the following topics: The Entity-Relationship data modeling, XML, the relational model and algebra; the SQL database language, and functional dependencies and database programming.

### Course Learning Objectives

### Learning Objectives:

This is an introductory course in database systems. It will help students to develop an understanding of the role of data modeling and database systems in information systems. At the completion of this course, you will be able to:

- Be familiar with data modeling concepts (E-R and Class diagrams) used in database development.
- Know how to organize data and stored them into database.
- Be able to create databases and pose complex SQL queries of relational databases.
- Write SQL programming language for several DBMS's (MySQL, SQL Server, etc)
- Understand the database development activities during the System Development Life

Cycle (SDLC)

- Be familiar with a broad range of data management issues including data integrity and security.
- Be able to define, develop, and use a database system in a real-world project

**Topics** (not necessarily in that order)

- Introduction

- The Relational Data Model
- ER-Model
- Design Theory of Relational Database
- Relational Algebra
- SQL
- Constraints and Triggers
- Views, Indexes and Transactions
- Stored Routines
- XML Data
- JDBC
- Security in Database Systems
- Database for Big Data (If Time Available)

**Prerequisites:** CS 225, CS 222

**Text:**

- **Highly Suggested:** Jeffrey D. Ullman, Jennifer Widom, “A First Course in Database Systems”, Pearson; 3rd edition (2007), ISBN-10: 013600637X.

**Course Policies and Grading**

**Homework and Programming Assignments:**

There will be 6-8 total homework assignments. Typically, each topic will have one assignment, but some of them may have more. 3-4 programming assignments will also be assigned throughout the semester. Writing is an important part of all engineering and you may be asked to accompany your work with a brief report for your programming assignment.

**Attendance and In-class exercises:**

Attendance is important. Each lecture is comprised of small lecture periods with interactive activities between each. While **partial lecture notes** will be available online, you will lose out significantly if you fail to participate in these activities. Attendance will be taken before every class at the start of the class period. An absence may be excused with doctor’s note or if a reasonable arrangement has been made with the instructor **PRIOR** to the absence. **5 absence will lead to 0 for attendance**.

**Point Distribution:**

- Programming Assignments **30%**
- Homework / Quizzes **30%**
- Exam1 **20%**
- Exam2 **20%**

**Where course grades are assigned on the scale,**

- 90-100% **A**
- 80-89% **B**
- 70-79 % **C**
- 60-69% **D**
- < 60% **F**

**Makeup / Late Policy:**

Homework and programming assignments are expected to be turned in on time. Each assignment will specify when and where the assignment must be turned in. It is your job to read the assignment and make sure you know these details. A 20% late penalty will be given to late assignments that are turned in within 24 hours of the initial due date and time. After 24 hours, a 50% penalty will be assessed. Students have up to three days beyond the initial due date/time to turn in work for this 50% penalty.

Makeup quizzes and exams may be available only in the case of medical emergency (doctor's note required).

**Academic Misconduct:**

Academic misconduct will not be tolerated. See the accompanying document on academic integrity for further reference regarding course policy.

**Some frequent concerns with this class that should be noted include:**

- Unless explicitly stated homework and programming assignment work must be work done by the student who turned that work in. It is ok to discuss the assignments together, but **DO NOT COPY OTHERS' HOMEWORK**. I have zero-tolerance on this issue. The one who copy the homework will receive 0 point; and the one who is copied will get only 50% of the points that he/she should have received.
- If you reference any sites in the making of a programming assignment solution, you **MUST** cite it in the code comments AND include any appropriate headers and/or notations as per the license of the original source (GPL, LGPL, BSD, Creative Commons, etc.).