**Oakland University**

**School of Engineering and Computer Science**

**Computer Science and Engineering Department**

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**Course** : Database Design & Implementation, CSI 3450, CRN 11615.202510

**Credits**: 4.0 credits

**Semester:** Winter 2025, Jan 06, 2024 - April 26, 2025

**Class time and place:** Tuesday & Thursday, 3:00 PM - 4:47 PM , EC 281

**Instructor:** Dr. Hadeel Mohammed Jawad

**Email:** hjawad@oakland.edu

**Office:** 128 Dodge Hall

**Office Hours:** by email. You can also ask after the class.

**Teaching Assistant:** Marouene Addhoum, maroueneaddhoum@oakland.edu

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**Course Description**

Introduction to the design and implementation of database systems. Include designing a practical database for an application using normal forms, understanding relational database schemas, planning and implementing a database using software such as Oracle and Microsoft SQL Server, advanced database topics in redundancy, replication, load balancing, compatibility, ODBC and JDBC, and database systems administration. Major standing in CS/IT required. Required course for CS and IT major

**Textbook :** Murach's MySQL, 2nd Edition by Joel Murach.

**Software: MySQL Workbench, https://www.mysql.com/products/workbench/**

**Learning Objective**

After the completion of the course, the student will learn about:

1- The concepts, terms, and tools related to MySQL and relational databases.
2- Apply theoretical knowledge to develop database applications using DBMS and SQL language.
3- MySQL statements such as Select, Delete, Insert and Update and how to manipulate data in a single table.
4- Effectively use the Entity Relationship diagram for the representation of conceptual schemas.
5- Skills that can be used to work with an existing database.

6- Summarize retrieved data, coding subqueries, MySQL data types and functions
7- Design and create Databases that are used for testing and production
8- Database administrator (DBA) responsibilities and how to maintain existing databases
9- Skills that are needed for a database designer, a database administrator, and SQL programmer.
10- Identify functional dependencies and apply normalization algorithms.
11- How to use Data Definition Language (DDL) statements to define database schemas and how to create and maintain views.

**Grading**

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|---|---|
| • Attendance (50 points) | 5% |
| • Two Quizzes (160 points) | 16% |
| • Assignment (250 points) | 25% |
| • Midterm Exams (170 points) | 17% |
| • Final Exam (170 points) | 17% |
| • Final Project (200 points) | 20% |
| Total (1000 points) | 100% |

**Assignments:** The assignments will be available on Moodle (https://moodle.oakland.edu) and the due dates will be clearly stated. All assignments must be submitted electronically through Moodle. Copied assignment for two or more students is considered cheating and will received zero. Students may not submit an assignment beyond the due date. However, late submission is accepted in 3 days with 5% deduction for each day after the due date. For example if you submit your assignment after 3 days, 15% will be deducted before correcting the assignment. Also note that a submitted assignment will not be corrected twice.

**Exams:** There are two quizzes and two exams in this course midterm and final exams. Both exams will be conducted in class (closed book, closed notes). Missed exams will result in a grade of zero for the exam. Exceptional circumstances should be discussed with the instructor in advance. Absence for any reason should be supported with appropriate documents (e.g. medical certificate, etc).

**Final Project**: Using what you learn in the course, you will need to build your final project. You will present your project to the class at the end of the semester. Final project should be done in a group of four.

**Grading Scale**

| Total Points | Semester Grade |
|---|---|
| 93 -100 | A |
| 90 - 92.99 | A- |
| 86 - 89.99 | B+ |
| 80 - 85.99 | B |
| 77 - 79.99 | B- |
| 73 - 76.99 | C+ |
| 70 - 72.99 | C |
| 67 - 69.99 | C- |
| 63 – 66.99 | D+ |
| 60 – 62.99 | D |
| 0 - 59.00 | F |

**Policies and Expectations**

**Academic Dishonesty:**

Academic dishonesty, including all forms of cheating, falsification, and/or plagiarism, will not be tolerated in this course. Penalties for an act of academic dishonesty may range from receiving a failing grade for a particular assignment to receiving a failing grade for the entire course. In addition to any sanction(s) imposed by the Academic Conduct Committee.

It is expected that all work you submit for a grade will be your own. If this is not the case, a failing grade will be assigned for the submitted assignment. Each student must submit his/her own assignment. If two or more of you submit identical or substantially identical assignments, then it will be assumed that one (or more) of you copied from the other(s) regardless of how the project was copied/obtained. In such a circumstance, every student involved will receive a failing grade for the course. Students are also responsible for keeping their assignment away from others. Emailing your assignment or writing down code for others is not permitted. Additional sanctions may be pursued in accordance with University rules and regulations. The instructor reserves the right to test your knowledge of the code and grade your assignment based on your

understanding of it. For more information, review OU's Academic Conduct Regulations at https://www.oakland.edu/deanofstudents/policies/

**Classroom Management:**

Students are expected to abide by the Student Conduct Code and assist in creating an environment that is conducive to learning and protects the rights of all members of the University Community. Incivility and disruptive behavior will not be tolerated and may result in a request to leave class and will be considered a violation of the Code of Student Conduct and Academic Conduct Regulations. Examples of inappropriate classroom conduct include repeatedly arriving late to class, continuously using a mobile /cellular phone while in the class session, or talking while others are speaking. For more information, you may access the Student Code of Conduct (SCC) webpage at: https://www.oakland.edu/deanofstudents/student-code-of-conduct/

**Technology Help**

- For help using Moodle, use the Get Help link at the top of the Moodle page (https://moodle.oakland.edu ).
- For access to technology and in-person assistance, call or visit the Student Technology Center (Link to Student Technology Center: https://www.oakland.edu/stc/ ).
- For general technology assistance, consult the OU Help Desk (Link to Help Desk: https://www.oakland.edu/helpdesk/ ).

**Other Links**

- University Calendar https://www.oakland.edu/registrar/important-dates/
  - Final Exams https://docs.google.com/document/d/19R1nflplRk0utAATBWe94qe9VL2SK9dWi_t7k6qo4QU/edit
- Tuition and refund policy: https://www.oakland.edu/registrar/registration/tuition-refund-policy/
- Student support: https://www.oakland.edu/deanofstudents/ or contact the OU Counseling Center at Graham Health at (248) 370-3465.
- Department: https://oakland.edu/secs/departments/cse/

**Topics:**

Section 1: An introduction to MySQL, Chapter 1, 2, 3, 4, & 5.

Section 2: More SQL skills Chapter 6, 7, 8, & 9.

Section 3: Database design and implementation Chapter 10, 11, & 12.

**Course Plan**

**This plan may be subjected to minor changes.*

**Midterm Exam, quizzes and assignments dates are subjected to change*

| | Date | Topic | Due Dates |
|---|---|---|---|
| Week 1 | Jan 7, 9 | Introduction, Syllabus | |
| Week 2 | Jan 14, 16 | Ch1: An introduction to relational databases and SQL | |
| Week 3 | Jan 21, 23 | Ch2: How to use MySQL Workbench and other development tools<br>Ch3: How to retrieve data from a single table | Assignment 1 |
| Week 4 | Jan 28, 30* | Ch3: How to retrieve data from a single table | Quiz 1* |
| Week 5 | Feb 4, 6 | Ch4: How to retrieve data from two or more tables | Assignment 2 |
| Week 6 | Feb 11, 13 | Ch5: How to insert, update, and delete data | Assignment 3 |
| Week 7 | Feb 18, 20 | Midterm* | |
| Week 8 | Feb 25, 27 | No Classes - Winter recess | |
| Week 9 | Mar 4*, 6 | Ch6: How to code summary queries | *Group formation for the final project |
| Week 10 | Mar 11, 13 | Ch10: How to design a database | |
| Week 11 | Mar 18, 20 | Ch9: How to use functions<br>Ch11: Foreign Key | Assignment 4 |
| Week 12 | Mar 25, 27* | Ch9: How to use functions | Quiz 2* |
| Week 13 | April 1, 3 | Ch7: How to code subqueries | Assignment 5 |
| Week 14 | Apr 8, 10 | Ch7: How to code subqueries | |

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| Week 15 | Apr 15, 17 | Project Presentation | Note: Apr 19 study day |
| Week 16 | Apr 22 | Final Exam | Noon - 3 PM |