

# **CENG 352 Database Management Systems Syllabus**

Spring 2021

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## **Catalog Description**

Relational model of data, relational algebra, SQL, query optimization, entity-relationship data model, normalization, physical database design, concurrency control in DBMSs, crash recovery, client-server architectures, an introduction to web data management.

## **Text Book and References**

1. Raghu Ramakrishnan, Database Management Systems, McGraw Hill, 3<sup>rd</sup> edition, 2003 (*text book*).
2. H. Garcia-Molina, J. D. Ullman, J. Widom, Database Systems the Complete Book, Prentice Hall, 2002.
3. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems, 4<sup>th</sup> edition, Addison-Wesley, 2004.

## **Course web page:**

<http://odtuclass.metu.edu.tr>

## **Course Schedule**

Tue: 10:40-12:30; Thu:14:40

The lectures will be given during these class hours in live sessions. The lectures will be recorded and be available for you to watch them afterwards. Your instructor may ask you occasionally to turn your camera on.

The link for Live Sessions is available on the course page on odtuclass.

## Course Outline

- Introduction to DBMS
- Review of SQL
- Semi-structured data models
- Advanced SQL
- Database Design Theory
- Overview of Storage and Indexing
- Relational Algebra and Query Execution
- Query Optimization
- Transaction Management
- Transactions : Concurrency Control
- Transactions : Crash Recovery
- Other topics: Advanced data types, performance tuning, NoSQL databases

## Grading

Midterm	25 %
Written assignments	20 %
Mini projects	25 %
Final Exam	30 %

### **Bonus:**

Participation in class 3%

## Exams

Both the midterm exam and the final exam will be online with your cameras on. You will use your smart phone as your camera. You will also need a scanner or scanner app. Your activities during the exam will be proctored by the teaching assistant and the instructor in separate virtual classrooms.

In the event of problems owing to electricity or internet cut-off: You will have 3 minutes to be back online and participate in the exam. Your situations will be evaluated and resolved case by case. If you are disconnected more than an acceptable time period, you may take an oral makeup exam.

## Written Assignments

Written assignments will focus on theory and basic application problems to reinforce content from lecture, and to provide practice for the exams. Written assignments will be distributed via ODTUClass. Some of the written assignments will be designed as short online exercises. All assignments are to be completed individually.

## **Mini Projects**

There will be two mini projects. These aim to provide you opportunity to practice querying, indexing, database tuning and writing transactions on a real database management system. We will use PostgreSQL database management system. Both projects are to be completed individually.

## **Participation**

Your participation to class activities is important. Participation includes attendance to live-sessions and attempting to solve the online exercises in class. Your response to the exercises will be graded as bonus points.

## **Late Submission Policy**

Each student has 5 late days for the entire semester. You may use late days on any assignment, and each allows you to submit up to 24 hours late without penalty. Once a student has used up all their late days, each successive day that an assignment is late will result in a loss of 10% on that assignment.

If unusual circumstances truly beyond your control prevent you from submitting an assignment, you should discuss this with the course staff as soon as possible. If you contact us well in advance of the deadline, we may be able to show more flexibility in some cases.

## **Makeup Policy**

1. You may miss an exam only if you inform the instructor BEFORE the exam and you have a legal excuse (e.g. medical report).
2. There will be a comprehensive make-up exam in the week following the end of your legal excuse period.
3. Makeup for the final exam will take place at the end of the semester.