



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Fall

CSE3055 Database Systems

COURSE DESCRIPTION FORM

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| Offering Department | Department of Computer Engineering | | Undergraduate must course (5th semester) | | | | | |
| Course Code | CSE3055 | | | | | | | |
| Course Name | Database Systems | | | | | | | |
| Language of Instruction | English | | | | | | | |
| ECTS | 7 | | | | | | | |
| Contact Hours | Theoretical (T):3 | Practice (U): | Laboratory(L):2 | | | | | |
| Pre-requisites | CSE2025 Data Structures | | | | | | | |
| Instructor | Name | Betül Demiröz Boz | | | | | | |
| | E-mail | betul.demiroz@marmara.edu.tr | | | | | | |
| Course Materials | Mandatory | J.A. Hoffer, R. Venkataraman, H. Topi, "Modern Database Management", 11th Edition, Prentice Hall. 2013. | | | | | | |
| | Recommended | R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", 6th Edition, Addison Wesley. 2011. | | | | | | |
| Course Objectives | To gain data modeling, analyzing, and improving skills. To gain concept of database terms, objects, applications, data models, schemas, use them practically and to learn and use SQL programming language. To understand the existing principles of current database tools and to calculate the cost when designing a database. | | | | | | | |
| Course Content | Teaches Entity-Relation diagram modeling. Teaches logical database design and relational database modelling topics. Explains SQL programming language in detail. Teaches database normalization, database performance and index usage. Teaches fundamental concepts like stored procedures and triggers in detail. Teaches database application development, data warehouse and database management topics. | | | | | | | |
| Learning Outcomes | LO1 | Modeling, analyzing and improving the data. | | | | | | |
| | LO2 | Gain the ability to use database concepts, objects, applications, data models and schmeas practically. | | | | | | |
| | LO3 | Use SQL programming language. | | | | | | |
| | LO4 | Use database management tools as a software component effectively. | | | | | | |
| | LO5 | Understand working principles of current database tools; using tools for query optimization, query analysis and cost calculation while creating a database. | | | | | | |
| Program Outcomes | LO1 | LO2 | LO3 | LO4 | LO5 | | | |
| PO4 | Ability to devise (a), select, and use (b) modern techniques and tools needed for engineering practice (1); ability to employ information technologies effectively (2). | 1b | 1b | 1b | 1b | 1b | | |
| PO14 | Knowledge of data structures and algorithm analysis (a), database management systems (b), operating systems (c), software engineering (d), computer architecture (e) and automata theory (f) in computer engineering. | b | b | b | b | b | | |
| Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods | No | Week | Subjects | LO1 | LO2 | LO3 | LO4 | LO5 |
| | S1 | 1 | Introduction, database environment and development processes. | H, P | | | | |
| | S2 | 2-3 | Data modeling and entity relation diagrams. | MF, H, Q, P | | | | |
| | S3 | 4 | Logical database design and relational model. | | Q,H,P | | | |
| | S4 | 5-6 | SQL programming language. | | | MF, H, Q, P | | |
| | S5 | 7 | Advanced SQL queries. | | | MF, H,Q,P | | |
| | S6 | 8 | Physical database design. | | H,P | | | |
| | S7 | 9 | Functional dependency and normalization. | | | | | MF, H, P |
| | S8 | 10 | Database performance and indexing usage. | | | | | H, P |
| | S9 | 11 | Stored procedure and trigger usage. | | MF, H, P | | | |
| | S10 | 12 | Database application development. | | | | P | |
| | S11 | 13 | Data warehouses. | | | | | MF |
| S12 | 14 | Database management. | | | | MF, P | | |
| Assessment Methods and Weights | No | Type | Weight | Implementation Rule | | Make-up Rule | | |
| | MF | Midterm, Final | 58% | During the exams no calculation or communication device is allowed. Closed note exams. | | Marmara University regulations will be followed for make-up exams. | | |
| | Q | Quiz | 12% | On class hours, in computer lab, | | - | | |

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| | | | | based on topics taught in class, there are applications. There are 2 quizzes in a term. | |
| H | Homeworks | 9% | | To reinforce the lessons taught on the class and to measure them, 5 homeworks are given to the students. | - |
| P | Project | 21% | | There is a project which has 4 different stages. This project is declared at the beginning of the term. The deadline of the end project is term end. Each deadline of each stage of the project is determined. | - |
| R | Report | | | | |
| S | Presentation | | | | |
| A | Attendance | | | | |
| L | Class/ Laboratory/ Field Work | | | | |
| O | Other | | | | |
| TOTAL | | %100 | | | |

Determining Letter Grades

- Knowledge level related to class topics are evaluated by at least one question in midterm exam and final exam. Additionally, knowledge level related to K1-K9 is evaluated by homeworks. Students turn in the homework as applications; by using Microsoft Visio, MS SQL Server Management Studio or any database management tool they want to prepare and send it online. Knowledge level between K2-K5 is measured by quizzes. Term project is formed from 4 stages and this stages are designed to measure all topics except K11.
- In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.
- The final exam score and the total average score of the student must be at least 35 to pass the course.
- According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 40 out of 100.

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| Assessment | Midterm | Quizzes | Homeworks | Project | Final | TOTAL |
| Weight | 18 | 12 | 9 | 21 | 40 | 100 |

Teaching Method, Student Work Load

| Time Applied by the Instructor | | | |
|--|---|---|---------|
| No | Method | Explanation | Hours |
| 1 | Lectures | Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts. | 14x3=42 |
| 2 | Problem Session/ Practice | Problems related to the course topics are solved on the board. | |
| 3 | Laboratory | Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises. | 14x2=28 |
| 4 | Interactive Courses | Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category) | |
| 5 | Field Work | Students attend activities outside the campus. | |
| 6 | Midterm | Midterm exam is given during the midterm week. | 2 |
| 7 | Final | Final exam is given during the final exam week. | 2 |
| Estimated Time to be Allocated by a Student | | | |
| 8 | Project | The students carry out research about the problem given in the project, design and implement their solution and prepare a report. | 40 |
| 9 | Homeworks | The students solve the problems given as homework. | 5x5=25 |
| 10 | Pre-class learning of Course Material | The students study and learn the new subjects from course materials. | |
| 11 | Review of Course Material | Students review the course subjects from course materials to prepare for the exams and homeworks. | 35 |
| 12 | Office Hour | Students ask questions to the instructor or the assistant during office hours. | 2 |
| TOTAL | | | 176 |

Academic Honesty

Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.