COURSE DESCRIPTION FORM	
Course Code and Name	CENG316 DATABASE SYSTEMS
Course Semester	6
Catalogue Data of the Course (*Course Content*)	Database systems and architectures, data modeling using Entity Relationship (ER) model, enhanced entity relationship (EER) model, relational data model, relational database design by ER- and EER-to-relational mapping, basic SQL, more SQL: complex queries, triggers, relational algebra and relational calculus, basics of functional dependencies and normalization, NOSQL databases, big data storage systems, query optimization
Course Textbooks	Elmas, R., Navathe, S.B., Fundamentals of Database Systems, Addison Wesley, 2010.
Supplementary Textbooks	Database System Concepts Seventh Edition Avi Silberschatz Henry F. Korth S. Sudarshan,2019
Credit (*ECTS*)	6
Prerequisites for the Course (*Attendance Requirements*)	There is no prerequisite or co-requisite for this course.
Course Type	Compulsory
Language of Instruction	English
Course Objectives	To introduce database systems and architectures and to teach database design, how to create a relational database and how to write queries.
Course Learning Outcomes	1. Explains basic information about database systems, models and design. 2. Designs the database in line with the given requirements. 3. Writes SQL queries at different levels of complexity.
Instruction Method *(Face-to-face, Distance education etc.)*	The mode of delivery of this course is face to face.
Weekly Schedule of the Course	Week 1: Databases and Database Users Week 2: Database Systems and Architectures Week 3: The Relational Data Model and Relational Database Constraints Week 4: Data Modeling Using the Entity Relationship (ER) Model Week 5: The Enhanced Entity Relationship (EER) Model Week 6: Relational Database Design by ER- and EER-to-Relational Mapping Week 7: Basic SQL Week 8: More SQL: Complex Queries Week 9: More SQL: Complex Queries Week 10: The Relational Algebra and Relational Calculus Week 11: Basics of Functional Dependencies and Normalization for Relational Databases Week 12: NOSQL Databases Week 13: Big Data Storage Systems Week 14: Query Optimization
Teaching Activities *(The time spent for the activities listed here will determine the amount of credit required)*	Weekly theoretical course hours: 3 Internet search and library work Designing and implementing materials Midterm and revision for midterm Final exam and revision for final exam

Assessment Criteria

	Number(s)	Weight (%)
Midterm exam	1	20
Assignment	3	30
Application		
Project		
Practice		
Quiz	2	10

Final exam	1	40
Total	7	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	3	42
Weekly practical course hours			
Reading activities			
Internet search and library work	14	3	42
Designing and implementing materials	5	6	30
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	2	6	12
Final exam and revision for final exam	4	6	24
Total workload			150
Total workload/ 25			6
Course Credit (ECTS)			6

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.			X		
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.		X			
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.			X		
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.				X	
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.					
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the fields of information security and law.					
7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting		X			

		impartially, without discrimination on any issue, and being inclusive of diversity.					
	8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).					
	9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).				X	
	10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.					
	11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.					X
Lecturer(s) and Contact Information	Assist. Prof. Dr. M. Sedef DEMİRCİ sedefgunduz@gazi.edu.tr						