Course Description Form	
Course Code and Name	CENG316 DATABASE SYSTEMS
Course Semester	6
Catalog Content	Databases and Database Users, Database Systems Concepts and Architecture, The Relational Data Model and Relational Database Constraints, Data Modeling Using the Entity Relationship (ER) Model, The Enhanced Entity Relationship (EER) Model, Relational Database Design by ER- and EER-to-Relational Mapping, Basic SQL, More SQL: Complex Queries, Triggers, Views, and Schema Modification, The Relational Algebra and Relational Calculus, Basics of Functional Dependencies and Normalization for Relational Databases, NOSQL Databases, Big Data Storage Systems, Object Relational Mapping, Query Optimization
Textbook	Elmas, R., Navathe, S.B., Fundamentals of Database Systems, Addison Wesley, 2004.
Supplementary Textbooks	Patrick O'NEIL, Elizabeth O'NEIL, Database Principles, Programming, and Performance, Morgan Kaufmann, 2000. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, Mc Graw Hill, 2002.
Credit	6
Prerequisites of the Course **(** *Attendance Requirements***)**	There is no prerequisite or co-requisite for this course.
Type of the Course	Compulsory
Instruction Language	English
Course Objectives	To inform the students about the contents of the course, to teach database fundamentals and design concepts
Course Learning Outcomes	1. Obtaining fundamental knowledge on database systems, models and design. 2. Become skillful at utilizing databases in software projects.
Instruction Methods	The mode of delivery of this course is face to face.
Weekly Schedule	1. Week: Databases and Database Users 2. Week: Database Systems Concepts and Architecture 3. Week: The Relational Data Model and Relational Database Constraints 4. Week: Data Modeling Using the Entity Relationship (ER) Model 5. Week: The Enhanced Entity Relationship (EER) Model 6. Week: Relational Database Design by ER- and EER-to-Relational Mapping 7. Week: Basic SQL 8. Week: More SQL: Complex Queries, Triggers, Views, and Schema Modification 9. Week: The Relational Algebra and Relational Calculus 10. Week: Basics of Functional Dependencies and Normalization for Relational Databases 11. Week: NOSQL Databases 12. Week: Big Data Storage Systems 13. Week: Object Relational Mapping 14. Week: Query Optimization

Teaching and Learning Methods *(These are examples. Please fill which activities you use in the course)*	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Designing and implementing materials Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

Assessment Criteria

	Numbers	**Total Weighting (%)**
Midterm Exams	1	30
Assignment	3	30
Application		
Projects		
Practice		
Quiz		
Percent of In-term Studies (%)		60
Percentage of Final Exam to Total Score (%)		40
Attendance		

Workload

Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load
Weekly Theoretical Course Hours	14	3	42
Weekly Tutorial Hours			
Reading Tasks	14	2	28
Studies	14	2	28
Material Design and Implementation	14	2	28
Report Preparing			
Preparing a Presentation			
Presentations			
Midterm Exam and Preparation for Midterm Exam	2	6	12
Final Exam and Preparation for Final Exam	2	6	12
Other (should be emphasized)			
Total Workload			150
Total Workload / 25			6
Course Credit (ECTS)			6

Contribution Level Between Course Learning Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems		X			
2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes				X	
3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose				X	
4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies				X	
5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions				X	
6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually					
7	Ability to efficiently prepare, evaluate and interpret reports			X		
8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English			X		
9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself				X	
10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles					

	11	Ability to apply knowledge on project management, risk management and change management					
	12	Awareness of entrepreneurship and innovation, ability to design and build sustainable systems					
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security					
	14	Awareness of the legal consequences of engineering solutions					
	15	Ability to apply knowledge on software development process and documentation rules					
	16	Knowledge on standards used in engineering applications					
	17	Awareness of occupational health and security, information security and privacy					

The Course's Lecturer(s) and Contact Information	Assoc. Prof. Dr. Murat HACIÖMEROĞLU murath@gazi.edu.tr