COURSE PROFILE

Course Name	Code	Semester	Term	Theory+PS+Lab (hour/week)	Local Credits	ECTS
Advanced Database Systems	IT491	Fall	7	3 + 0 + 0	3	6

Prerequisites	None

Course Language	English
Course Type	Departmental Elective
Course Lecturer	Assist. Prof. Dr. Gülay Ünel
Course Assistant	
Course Objectives	This course aims to provide the basic principles of relational database systems the key database management concepts including indexing techniques, query processing and query optimization methods.
Course Learning Outcomes	Upon successful completion of the course, students will be able to: • understand the fundamentals of relational database systems • design and implement methods for key database management activities such as indexing, query processing, and query optimization
Course Content	Fundamentals of relational databases, Data layout, buffer systems, file management, indexing techniques (tree-based and hashing).Query processing methodology, implementation of relational operators, external sorting, query optimization. Transaction models, concurrency control algorithms, database recovery.

COURSE CONTENT

Week	Subjects	Related
1	Overview (relatioal algebra, SQL)	Chapters 1,3,4
2	Overview (relatioal algebra, SQL)	Chapters 1,3,4
3	Storage and Indexing	Chapter 8
4	Storage and Indexing	Chapter 8
5	Storage and Indexing	Chapter 9
6	Storage and Indexing	Chapter 10
7	Storage and Indexing	Chapter 11
8	Query Processing	Chapters 12,13,14
9	Query Processing	Chapters 12,13,14
10	Query Processing	Chapters 12,13,14
11	Query Optimization	Chapter 15
12	Transaction Management	Chapter 16,17
13	Transaction Management	Chapters 16,18
14	Final Assignment Presentation	

Course Textbook	R. Ramakrishnan, J. Gehrke, Database Management Systems, 3rd Ed., Mc-Graw Hill, 2003, ISBN 0-07-115110-9.
Recommended References	

Semester Requirements	Number	Percentage of Grade
Attendance/Participation		
Laboratory		
Application		
Special Course Internship (Work Placement)		
Quizzes/Studio Critics	4	20
Homework Assignments	4	20
Presentation		
Project		
Seminar/Workshop		
Midterms/Oral Exams	1	30
Final/Resit Exam	1	30
Total	10	100

	Number	Percentage
PERCENTAGE OF SEMESTER WORK	9	70
PERCENTAGE OF FINAL WORK	1	30
Total	10	100

	Core Courses	
	Major Area Courses	X
Course Category	Supportive Courses	
	Media and Management Skills Courses	
	Transferable Skill Courses	

COURSE'S CONTRIBUTION TO PROGRAM

#	Program Qualifications / Outcomes	* Level of Contribution				
		1	2	3	4	5
1	A foundation in mathematics and basic sciences and ability to apply acquired knowledge as they relate to the study and practice of information technology					X
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution, to understand, select and use appropriate technology, tools, standards, protocols, building blocks, and components to solve the problem					X
3	An ability to propose, analyze, design, develop, test and maintain an information technology system including software solutions, security model, computer and network infrastructure, information systems etc. to solve information technology problems			X		
4	An ability to analyze local and global impact of computing on individuals, organizations and society; and the ability to apply information technology techniques, skills, and tools for regular computing practices as well as to improve effectiveness of current methodologies			X		
5	An ability to effectively communicate in oral and written media with all kinds of related audiences; and prepare documentation for this purpose as required		X			
6	An understanding of professional, ethical, legal, and social issues and responsibilities of information technology profession		X			
7	A taste and breadth of knowledge across several social topics outside the immediate requirements of the information technology profession, and the ability to work within heterogeneous teams to accomplish a common goal including people from the information technology area as well as other disciplines		X			
8	An ability to engage in life-long learning and professional development for personal improvement to follow contemporary information technology issues				X	

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exams)	14	3	42
Tutorials			
Laboratory			
Application			
Special Course Internship (Work Placement)			
Field Work			
Study Hours Out of Class	14	3	42
Presentations / Seminar			
Project			
Preparatory reading	14	3	42
Homework Assignments	4	5	20
Quizzes			
Midterm Exams	1	2	2
Final / Resit Exam	1	2	2
		Total Workload	150

COURSE CATEGORY

ISCED GENERAL AREA CODES	GENERAL AREAS	ISCED BASIC AREA CODES	BASIC EDUCATIONAL AREAS	
1	Education	14	Teacher Training and Educational Sciences	
2	Humanities and Art	21	Art	
2	Humanities and Art	22	Humanities	
3	Social Sciences, Management and Law	31	Social and Behavioural Sciences	10
3	Social Sciences, Management and Law	32	Journalism and Informatics	
3	Social Sciences, Management and Law	38	Law	
4	Science	42	Life Sciences	
4	Science	44	Natural Sciences	
4	Science	46	Mathematics and Statistics	10
4	Science	48	Computer	50
5	Engineering, Manufacturing and Civil	52	Engineering	30
5	Engineering, Manufacturing and Civil	54	Manufacturing and Processing	
5	Engineering, Manufacturing and Civil	58	Architecture and Structure	
6	Agriculture	62	Agriculture, Forestry, Livestock, Fishery	
6	Agriculture	64	Veterinary	
7	Medicine and Welfare	72	Medical	
7	Medicine and Welfare	76	Social Services	
8	Service	81	Personal Services	
8	Service	84	Transport Services	
8	Service	85	Environment Protection	
8	Service	86	Security Services	