

Course Description	
Course Code	YS 418
Course Name	DATABASE PROGRAMMING APPLICATIONS
Prerequisite Courses	Database Management
Language of the Course	The English
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	Understanding the principles of implementing a Database Management System with a skeleton DBMS for educational purposes.
Course Content	Database Main Memory (Buffer) Management; Movement Management Basic Concepts; Simultaneity; Recovery; Records and Metadata Management; Query Processing Principles; Query Planning and Optimization Methods

Weekly Course Content	
Week 1	DB, DBMS Overview
Week 2	Data Storage: Disk & Files
Week 3	File Org. Comparison of Structures
Week 4	External Sequencing
Week 5	Query Evaluation and processing
Week 6	Query Evaluation and processing
Week 7	Query Optimization
Week 8	Midterm exam.
Week 9	Motion Management
Week 10	Concurrency Management and Isolation Levels
Week 11	Concurrency Control with Locks
Week12	Concurrency Control with Optimistic Methods
Week 13	Database Recovery
Week 14	Database Recovery
Week 15	Final exam.

Course Learning Outcomes	
1	The student will have detailed information about database system modules and their tasks and working principles.
2	The student can understand the implementation of a transactional database management system that consists of many modules such as buffer management and query optimization.
3	The student can understand complex data structures and the difference between them.
4	Students can come up with ideas for designing new data structures.
5	The student can make some changes in the database system and analyze its effects.

Contribution of the Course to Program Qualifications		Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.	5
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.	4
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.	3
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.	5
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.	4
06	The student will have the ability to work between disciplines and teamwork.	3
07	The student will have the ability to work in international environments and adapt to different cultures.	4
08	The student will have verbal and written communication skills in Turkish and English.	2
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.	3
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.	2
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).	3
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.	1
13	The student will have the ability to find unusual ways and produce projects.	3
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.	3
15	It is sensitive about the problems of the age and looks after the national interests.	2

ECTS WORKLOAD			
	Number	Duration (hours)	Number*Duration
Face to face education	14	2	28
Out-of-class study time (pre-study, reinforcement)	14	1	14
Homeworks	1	8	8
Presentation / Seminar preparation	1	3	3
Quizzes	0	0	0
Preparation for midterm exams	1	7	7
midterm exams	1	4	4
Project (Semester assignment)	1	8	8
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	1	15	15
Semester final exam	1	2	2
Research	0	0	0
<b>TOTAL WORKLOAD</b>			<b>89</b>
<b>ECTS</b>			<b>3</b>

Evaluation		
SEMESTER EVALUATION	Number	Contribution Percentage
Midterm	1	20
Quiz	0	0
Homework	1	20
<b>SEMESTER TOTAL</b>		<b>40</b>
Contribution rate of mid-term evaluations to success		40
Contribution rate of the final exam to success		60

<b>GRAND TOTAL</b>		<b>100</b>
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<b>RESOURCES</b>	
Textbook	Database Management System, Raghu Ramakrishnan and Johannes Gehrke (Univ. of Wisconsin, Cornell University) Edward Sciore, Database Systems and Implementation, John Wiley, 2009 Database Systems: The Complete Book (2nd Edition), Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom, Prentice Hall
Helpful Resources	