Bilkent University
COMPUTER ENGINEERING DEPARTMENT

CS351 DATA ORGANIZATION AND MANAGEMENT

FALL/2011[1]
Section 1: Mon. <u>10:40, 11:40</u>, Thur. 8:40[2], <u>9:40</u>; EB201
Section 2: Wed. 8:40,<u> 9:40</u>, Fri. <u>10:40, 11:40</u>; EB201
Section 3: Wed. <u>13:40, 14:40</u>, Fri. <u>15:40</u>, 16:40; EB201

Instructor   : Dr. Fazlı Can
Office   : EA 505, Phone: 290-2613
Office Hours   : Wed. 10:40-11:30, Thu. 10:40-11:30, or by appointment
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COURSE DESCRIPTION
Structure, organization and processing of files. Physical characteristics of storage media. Sequential file creation, access, and update. Sort/merge algorithms. Direct file processing techniques. Dynamic hashing techniques: Extendible, linear and dynamic hashing. Indexed and relative files; creation, processing and update. B trees and B+-trees as index structures and their maintenance. File inversion, secondary key retrieval techniques. Introduction to database management systems. Three level system architecture. Entity-Relationship Modeling. Relational Model of Data. Relational Algebra and Relational Calculus.

Students will practice and apply data organization and processing techniques through programming projects.

PREREQUISITE
CS 202.

TEXTBOOK

Raghu Ramakrishnan, Johannes Gehrke, *Database Management Systems, 3rd ed.* McGraw Hill, 2003.

RECOMMENDED BOOKS

Betty Salzberg, *File Structures: An Analytical Approach*, Prentice Hall, 1988.
Alan L. Tharp, *File Organization and Processing*, John Wiley & Sons, 1988.
Henry F. Korth, Abraham Silberschatz, *Database System Concepts, 3rd ed*. McGraw Hill, 1997.

GRADING POLICY
Midterm	: 25 % (Tentative: Nov.26,Saturday,13:40-15:30)
Final exam (comprehensive)	: 35 % (Date: TBA - to be announced)
Homeworks and Projects	: 25 %
Quizzes	: 15 %
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Total	100 %

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[1] Classes: Sep. 26, 2011– Jan. 6, 2012, Kurban Bayramı Tatili: Nov. 7 – 11, 2011, Final Exams: Jan. 9 – Jan 19, 2012. For other university calendar details please see: http://www.bilkent.edu.tr/bilkent-tr/academic/calendar/

[2] Not unlined hours are reserved for make up. In the first and second week the make up hours will be used and in the rest of the semester it depends on conditions.

GENERAL POLICIES

1. Your work (homeworks and project) should be turned in on due date, no late work will be accepted without a valid excuse.

2. If individual review is needed due to a question on the grade this should be no later than one week after receiving your work or exam. This time limit is for consistency in grading.

3. Plagiarism is defined as the action of using or copying someone else's idea or work and pretending that you thought of it, or created it. Bilkent University requires that you be aware of the concept and dangers of plagiarism. In order to conform to international academic standards, you must respect the individual thoughts, ideas, and expressions of other authors in sources.

   In the homeworks and projects in this course, occurrences of plagiarism will be seriously dealt with, leading to a zero grade for the work concerned and upon repetition to a failure in the course, even to punishment through disciplinary procedures which call for a term or two terms of dispelling from the university. (Ogrenci Disiplin Ilke ve Kurallari, Madde 8).

   You may discuss and exchange ideas related to homework problems and the various aspects of the term project among yourselves, you may consult to relevant books and other forms of written material, but the final work must be your own, with references to the sources utilized.

TENTATIVE COURSE SCHEDULE

WEEK-No.: 1st Day	Topic(s) to be covered
WEEK-1: 26/9	Course overview. Secondary storage media.
WEEK-2: 3/10	Secondary storage media and their physical characteristics. Sequential files.
WEEK-3: 10/10	Sequential file organization: creation, access and update. Performance of sequential files operations.
WEEK-4: 17/10	External sorting/merging algorithms.
WEEK-5: 24/10	External sorting/merging algorithms. Static hashing, address calculation and collision handling.
WEEK-6: 31/10	Static hashing, address calculation and collision handling. Dynamic hashing techniques.
WEEK-7: 7/11	**Kurban Bayramı Haftası - No Classes**.
WEEK-8: 14/11	Dynamic hashing techniques.
WEEK-9: 21/11	Indexed sequential access method (ISAM). B-trees and B+ trees. **Midterm EXAM: Nov. 26 Saturday** (tentative)
WEEK-10: 28/11	B+ trees. Secondary key retrievals. Introduction to database management systems.
WEEK-11: 5/12	Architecture, components, and facilities of a DBMS.
WEEK-12: 12/12	Data model principles. Entity relationship data model.
WEEK-13: 19/12	Entity relationship data model. Relational model of data.
WEEK-14: 26/12	Relational algebra.
WEEK-15: 2/1	Relational algebra and relational calculus.

This schedule is subject to change as the semester progresses. Homeworks/projects will be assigned throughout the semester. Week [1, 14]: 2011, Week 15: 2012.