

BIL 317: ADVANCED DATABASE APPLICATIONS
(ILERI VERI TABANI UYGULAMALARI)
Fall 2011

Instructor: Yrd. Doc. Dr. Ahmet Sayar

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Office hours: By appointment or after the classes

Class web page: <http://www.ahmetsayar.com/lecturenotes/>

Students should normally contact me via email. Be sure to include the name of the course in the subject. Every effort will be made to respond to email within 24 hours except for weekends and holidays. Please use your KOU email account.

Day & Time: Thursday, 1st Ed: 11:00-13:50, 2nd Ed: 17:00-18:50

Aim: This course aims at providing information on advanced Database systems such as Object Oriented (OODB) and Object Relational (ORDB), and application of these on spatial context.

Prerequisites: BIL-226 Veritabanı Yönetimi

Course Description: Topics include (1) relational and object-oriented database concepts in terms of database design principles, structures for efficient data access, query languages and processing; (2) introduction to spatial databases, data models, representation of spatial objects, abstract data types, spatial storage and indexing.

Textbooks:

- Spatial Databases: A Tour, by Shashi Shekhar and Sanjay Chawla. Published by Prentice-Hall, 2003.
- *This book is recommended but not required.*

Resources:

- Spatial Databases: With Application to GIS, by Philippe Rigaux, Michel O. Scholl, Agnes Voisard. Published by Morgan Kaufmann, 2002.
- Fundamentals of Database Systems (4th Edition), by Ramez Elmasri, Shamkant B. Navathe Addison-Wesley, 2003.
- Database System Concepts (4th Edition) by Avi Silberschatz, Henry F. Korth, S. Sudarshan. Published by McGraw-Hill, 2005.
- *Additional readings from scientific journals and conferences will be recommended on some of the discussed topics.*

Grading: (tentative)

Midterm (40%)

Final exam (60%)

Course Learning Objectives/Outcomes:

1. Describe the types of database systems, such as Relational databases, Object-relational and Object-oriented databases and their usage area.
2. Explain knowledge management, data governance and their importance.
3. Give experience on creating ER diagrams and SQL queries through in class applications.
4. Enable theoretical knowledge to be converted to practical knowledge by teaching how to use well-known database management tools and software.
5. Give essential information on Geographic Information Systems (GIS) and spatial databases
6. Explain and demonstrate how GIS is used in our day to day lives
7. Provide information on data modeling and abstract data types and their application to spatial databases.

Class Schedule:

1.week: Introduction to the course	9.week: Midterm
2.week: Database Management Systems	10.week: Spatial query language and RA
3.week: Geographic Information Systems	11.week: Spatial storage and indexing
4.week: Introduction to spatial databases	12.week: Spatial indexing
5.week: OGC GIS and spatial database	13.week: Spatial data mining
6.week: Field and Object based data modeling	14.week: Real world applications with PostGreSQL and PostGIS
7.week: Topology and spatial ER diagrams	15.week: Real world applications with PostGreSQL and PostGIS
8.week: Case studies	16.week: Overview

Attendance

- Regular attendance is the university requirement. Attendance will be taken in every class.
- As soon as the number of absences goes beyond 20% of the held classes a written warning will be given by the instructor.
- D grade will be given on the 6th unexcused absence.
- Late arrivals are disruptive --- plan to arrive five minutes before the start of class

Academic Dishonesty:

Cheating will not be tolerated and may result in serious sanctions, including immediate failure in the course. Serious incidents of academic dishonesty will also for brought to the attention of the university and may result in expulsion. All work in this class is meant to be an individual effort by the person receiving the grade. Any variation from this is considered cheating and all parties involved (giving or receiving) will be sanctioned.