Advanced Database Systems
26:198:641
Spring 2016
Mondays 10:00am - 12:50pm, 1 Washington Park, Room 202

Instructor: Prof. Vijay Atluri
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Official University/Campus closings due to inclement weather:
Call 973-353-1766 or 732-932-1766, Newark Campus Information

Course Description: The purpose of this course is to present advanced topics in database systems and delve into research in these areas. The topics include distributed systems, distributed databases, as well as advanced application domains that influence database research such as Big Data, cloud computing, Web services, semantic Web, information security & privacy, and electronic commerce.

Text Book: There is no prescribed text.

Reading Material:

There is no text assigned to this course at the moment. However, the following books either cover one topic in depth or cover some of the preliminary concepts of the topics. In addition to the books listed below, the reading list includes a number of research papers.

8. The DBLP Bibliography An Excellent source for the Research materials in the Database area
9. Google Scholar
10. Plus selected readings
Related Journals and Conferences:

1. ACM Transactions on Database Systems (TODS)
2. IEEE Transactions on Knowledge and Data Engineering (TKDE)
3. ACM SIGMOD International Conference on Management of Data (SIGMOD)
4. IEEE International Conference on Data Engineering (ICDE)
5. The Very Large Data Bases (VLDB) Conference
6. The International Journal on Very Large Data Bases (VLDB journal)
7. International Conference on Information and Knowledge Management (CIKM)
8. ----

Expected Work:

Research Paper and Presentation 30%
Mid term Examination 25%
Final Examination 25%
Homeworks 20%

Tentative Schedule:

Jan 5
Course Introduction
Introduction to Database Fundamentals

Feb 1
Concurrency Control, Distributed Databases and Distributed Transaction Processing

Feb 8
Data replication – consistency semantics in Emerging applications
The CAP Theorem

Feb 15
Data Warehousing
Research Paper Title and Outline due
Homework 1 posted

Feb 22
Secure Databases
Homework 1 Due

Feb 29
Big Data, No SQL databases

Mar 7
Cloud Computing – (Overview, IAAS, PAAS, SAAS)

Mar 21
Mid-term examination (Topics covered until Mar7)
Homework 2 posted

Mar 28
Security and privacy issues in data outsourcing in the cloud (Database as a service)
Homework 2 Due

Apr 4
Web Services and Service-oriented architectures

Apr 11
Service Composition and Workflows (BPEL)
Research Paper Due

**Apr 18**
Research Paper Presentations: Each student will have 20 minutes to present

**Apr 25**
Research Paper Presentations: Each student will have 20 minutes to present

**May 2**
Research Paper Presentations: Each student will have 20 minutes to present

**May 9**
Final Examination