

**Rutgers, The State University of New Jersey  
Rutgers Business School, Newark and New Brunswick**

# **Advanced Database Systems 26:198:641**

**Spring 2017**

**Tuesdays 10:00am - 12:50pm, 1 Washington Park, Room 303**

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.

1. A. Silberschatz, H. Korth and S. Sudarshan, *Database System Concepts*, 6<sup>th</sup> Edition, Mc-Graw Hill, 2011
2. Elmasri and Navathe, *Fundamentals of Database Systems*, 6th Edition, Addison-Wesley, 2011
3. Raghu Ramakrishnan, *Database Management Systems* McGraw-Hill, 3rd Edition 2002, McGraw Hill
4. Michael Papazoglu, *Web Services: Principles and Technology*, Prentice Hall Publishers, 2007
5. Özsu, M. Tamer, and Patrick Valduriez. *Principles of distributed database systems*. Springer, 2011.
6. Andrew S. Tanenbaum and Maarten van Steen, *Distributed Systems: Principles and Paradigms*. Pearson.
7. Coulouris, Dollimore, Kindberg and Blair, *Distributed Systems: Concepts and Design* Edn. 5. Pearson Education 2012
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%  
Midterm Examination 25%  
Final Examination 25%  
Quizzes 20%

## Tentative Schedule:

 **Jan 17**

Course Introduction  
Introduction to Database Fundamentals  
Concurrency Control

 **Jan 24**

Distributed Databases and Distributed Transaction Processing

 **Jan 31**

Data replication – consistency semantics in Emerging applications  
The CAP Theorem

 **Feb 7**

Data Warehousing  
**Research Paper Title and Outline due**

 **Feb 14**

Guest Lecture by Deepak Paramand, Synchronoss

 **Feb 21**

Big Data, No SQL databases

**Quiz 1**

 **Feb 28**

Big Data, No SQL databases

 **Mar 7**

Cloud Computing

 **Mar 21**

**Mid-term examination (Topics covered until Mar7)**

 **Mar 28**

Cloud Computing

 **Mar 31 (instead of Apr 4)**

Guest Lecture by Deepak Paramand, Synchronoss

 **Apr 11**

**Quiz 2**

Security and privacy issues in data outsourcing in the cloud (Database as a service)

Quiz 2



**Apr 18**

Security in Databases

Research Paper Due



**Apr 25**

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



**May 2**

Final Examination