COURSE ORGANIZATION AND OUTLINE
CS 451
Distributed Systems
Fall 2012

Course objectives:

- To explore and contrast distributed paradigm from the traditional centralized computational and communication framework.
- To discuss and explore distributed algorithms
- To explore the architectures of some distributed systems
- To articulate security issues associated with distributed systems

Instructor: Sam Sengupta, C129 Phone: 792-7353 (campus), 735-0874 (home)
Schedule: Tuesdays & Thursdays: 4:00-5:50 PM at Room C202
Consultation Period: Mondays & Thursdays: 12:00 noon - 1:50 PM, Fridays: 12:00 -1:00 PM
Course prerequisite: CS330, or any equivalent OS course


Recommended Books:

1. Distributed systems (4th ed.): concepts and design. George Coulouris, Jean Dollimore, and Tim Kindberg. Addison-Wesley, 2005

Papers for reading and research:

3. Unraveling the Web Services Web: an Introduction to SOAP, WSDL, and UDDI, Curbera, Internet Computing, March-April 2002

Course units:

1. Introduction to Distributed systems
2. Some examples of distributed systems (and quasi distributed systems)
3. Introduction to Networking: Foundation of communication
4. Naming and discovery
5. IPC & Remote procedure call
6. Synchronization of physical clocks
7. Logical time
8. Replication and consistency
9. Fault-tolerance
10. Transactions
11. Distributed File Systems
12. P2P systems
13. Group Communication
14. Sensor networks
15. Location problems
16. Cluster Computing
17. Social networking

Grading:

The final grade for the course would be predicated by equal weighted items below

- Midterm (about Thursday, October 11, 2012)
- Final (sometime in the Final week)
- Homework assignments (3 assignments, group submission)
- Group project class presentation (last week before final)
- Group project report (anytime before the final)

Expected learning outcome:

- Articulate and explain the requirements of distributed systems and their properties.
- Indicate how such systems should be designed
- Explain and compare approaches for interprocess communications
- Describe middleware models
- Explain the concept of logical time
- Attempt to use logical time to structure distributed algorithms