



CS 525: Advanced Topics in Distributed Systems Spring 2007

(previously CS 598IG)

Tuesdays and Thursdays / 1131 Siebel Center / 9.30 AM – 10.45 AM

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What are the Main Topics?

- I. Distributed Systems Fundamentals
- II. Large Distributed and Peer-to-peer Systems
- III. Large-Scale Sensor Networks
- IV. Design Methodologies for Distributed Systems

What do Students Learn in this Course?

- Advanced **grounding** in the theory, practice, design and pragmatisms of distributed systems.
- Study of advanced distributed systems concepts in **breadth and depth**.
- In-depth study and review of about **80 papers in distributed systems**, both classical and contemporary.
- Knowledge of how to design practical distributed systems **inspired by natural phenomena** (e.g., rumor mills, biology).
- Chance to **present conference papers** in a friendly environment with peer review.
- **You write your own new conference paper!**

You get to Write Your Own Conference Paper!

Besides advanced study of distributed systems, the course's other goal is to lead you gently through the process of writing a conference-quality research paper (perhaps your first!). Projects from previous CS 598IG's have been published at top conferences such as ICDCS, DSN, PODC, MMCN, WORLDS, MASS, WCW, NCA, and many more! For instance, out of the 12 projects in CS 598IG during Fall 2003, 9 papers have already been published in top conferences and workshops! Subsequent Fall 2004 and Spring 2006 course versions had similarly high success rates.

Laundry List of Topics: Epidemic algorithms, peer to peer systems, sensor networks, distributed computing theory, the Grid, overlays, routing, handling stress, distributed management, membership, classical algorithms, design methodologies, sources of unreliability and other characteristic studies, industrial systems, caching, publish-subscribe, structure of networks, selfish algorithms.

Prerequisites: Operating Systems or Networking or Basic Distributed Systems or equivalent.

Course Website: <http://www.cs.uiuc.edu/class/cs525/>

This course can be taken to satisfy credit requirements for a PhD in the Systems&Networking area.