CS603 Advanced Topics in Distributed Systems

Semester and Year: Spring 2002 Level: Graduate
Credit Hours: 3

Delivery Mode: TV, Videotape, NTU

Day and Time: MWF 1:30- 2:20pm
Term Offered: SP

% Applied: 65 % Theory: 35

Instructor: Clifton, Christopher W.
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Taught to International Audience: Yes

Delivered course to GM: No

Visit to GM: No

Notes/Handouts via: Internet

Syllabus: Yes

Vitae: Comment:
http://www.cs.purdue.edu/homes/clifton/cv/

Objective: Be able to understand and develop distributed computing systems. Topics include principles of naming and location, atomicity, resource sharing, concurrency control and other synchronization, deadlock detection and avoidance, security, distributed data access and control, integration of operating systems and computer networks, distributed systems design, consistency control, and fault tolerance.

Description: Building correctly functioning, performance-oriented, reliable and secure distributed systems, especially in web-based environments using Java and XML; study the design principles of distributed systems and their application to the modern networked environment; fundamental distributed systems theory including group communication, synchronization, concurrency control, load balancing and scheduling, replication, fault-tolerance, and network security; client/server systems, middleware and middleware-based systems, network computing, and networked file systems.

Topical Areas: Introduction; Concurrency and Synchronization; Data Representation; Communication Mechanisms and Protocols; Networked file systems; Consistency and correctness of distributed applications; Middleware (e.g., CORBA); Load balancing; Replication and distributed caching; Network security.

Prerequisites: Operating systems, computer networks, significant programming experience (C, C++, UNIX; Java).

Homework: Four or five assignments; will be a mixture of programming/implementation and analysis/design.

Exams: One midterm exam and one final exam.

Project: Required, possibly job-related, student chooses topic; programming/implementation of a prototype system, design/analysis of a distributed system problem, or in-depth survey of a subtopic.

Textbook: Douglas A. Comer and David L. Stevens, "Internetworking with TCP/IP Vol III: Client-Server Programming and Applications", Prentice-Hall, 2001, ISBN 0-13-032071-4.

Other Requirements: None.

Computer Requirements: CEE minimum computer requirements; Windows or Linux is sufficient; some amount of programming and debugging may be done locally if computer has C, C++, or Java support; lecture notes, references and related material will be posted to the course web site.

Willing to offer course via Streaming Video?: Yes

Plan to use PowerPoint? Yes
If yes, what percentage of notes will be in PowerPoint? 80
If yes, when will slides be ready? Before class when slides presented

Web site: `http://www.cs.purdue.edu/homes/clifton/cs603`
When: Available now, but evolving
Will contain: Lecture notes, references, and related material.

Plan to Pretape: No