22C:166 Distributed Systems and Algorithms
Fall 2011

Course webpage
http://www.cs.uiowa.edu/~ghosh/16611F.html
Also check on ICON (http://icon.uiowa.edu)

Instructor
Sukumar Ghosh, 201P Maclean Hall, 319-335-0738, sukumar-ghosh@uiowa.edu
Class meeting time: MWF 1:30-2:20 PM, 205 MLH
Office hours: MWF 2:30-3:30PM, or by appointment.

Department
Department of Computer Science (DEO: Professor Alberto Segre), 14 MLH, 335-0713

Teaching Assistant
None so far

Textbook
Sukumar Ghosh: *Distributed Systems: An Algorithmic Approach,* 2006 CRC Press (ISBN 158488564)

Reference books
[1] Jean Dollimore, Tim Kindberg, George Coulouris: *Distributed Systems: Concepts and Design*, Addison-Wesley 2005
[2] Andrew Tannenbaum, Maarten van Steen: *Distributed Systems: Principles and Paradigms (Second edition)*, Prentice Hall 2006
[3] Nancy Lynch: *Distributed Algorithms*. Morgan Kaufmann 1996

These books will be available in the Main Library.

Prerequisites
Some knowledge of Operating Systems and/or Networking, Algorithms, and interest in Distributed Computing

Tests and Assignments
There will be four home assignments, a quiz, a midterm and a final examination. The home assignments and the quiz will be worth 30% of the final grade, and the examinations will account for 70% of the grades

MIDTERM: Thursday, September 29, 2011, **6:30-8:00 PM**, Room 205 MLH
QUIZ: Wednesday, November 11, 2011, in class, Room 205 MLH
FINAL: Tuesday, December 13, 9:45-11:45 AM, Room 205 MLH

Tentative scale for letter grade distribution

A+ = 95-100 B+ = 80-84 C+ = 65-69 D+ = 50-54 F = 0-39
A = 90-94 B = 75-79 C = 60-64 D = 45-49
A- = 85-89 B- = 70-74 C- = 55-59 D- = 40-44

The instructor reserves the right to make minor modifications in the above grading scale.

Course Objective

A distributed system is a network of processes collectively performing a meaningful job or providing a service to the users. Such systems are being increasing relevant to our lives and our society. How processes communicate and interact with one another, how to guarantee correctness and build tolerances to various kinds of failures or dynamic behaviors, how to design distributed algorithms for specific problems, manage replicas and provide group communication services are up for discussion. This course will deal with the theory and algorithms related to distributed systems, and not programming aspects.

Course Outline

Introduction -- Models and Proof -- Time and Clocks -- Distributed Mutual Exclusion -- Distributed Snapshot and Global States -- Distributed Algorithms for Graphs -- Faults and Fault-tolerance -- Distributed Transactions -- Distributed Consensus -- Group Communication -- Replicated data management -- Self-stabilization -- Applications: P2P networks

The College of Liberal Arts and Sciences Policies

Administrative Home of the Course

The administrative home of this course is the College of Liberal Arts and Sciences, which governs academic matters relating to the course such as the add/drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and how credits are applied for various graduation requirements. Different colleges may have different policies. Students with questions about these or other CLAS policies should speak with an academic advisor or with the staff in 120 Schaeffer Hall. Also see the CLAS Academic Handbook: http://www.clas.uiowa.edu/students/academic_handbook/index.shtml

Academic Honesty

The College of Liberal Arts and Sciences expects all students to do their own work, as stated in the CLAS Code of Academic Honesty. Instructors fail any assignment that shows evidence of plagiarism or other forms of cheating, also reporting the student's name to the College. A student reported to College for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled. See the Code for Academic Honesty in http://clas.uiowa.edu/students/handbook/academic-fraud-honor-code

Making a Suggestion or a Complaint

Students have the right to be involved with their academic community and to make suggestions or complaints. Students are encouraged to visit with the instructor, with the course supervisor, and with the departmental DEO. Discrepancies in grades or exam/assignment scores should be brought to the notice of the instructor within a week from the date the grade is assigned. Student complaint against faculty actions should be brought to the attention of the instructor, department, and if necessary the Associate Dean as soon as possible as soon as possible and always within six months of a specific incident. For more information visit http://www.clas.uiowa.edu/students/handbook/x/

Accommodations for Disabilities

The University upholds actions of diversity and inclusion. Under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, instructors provide reasonable academic accommodations for qualified students with disabilities. Students seeking academic accommodations first register with Student Disability Services and meet with a counselor in that office who reviews documentation and determines eligibility for services. Students approved for accommodations arrange to meet privately with course instructors. Visit Student Disability Services at http://www.uiowa.edu/~sds/

Understanding Sexual Harassment

Sexual harassment is reprehensible and will not be tolerated by the University. It subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit http://www.sexualharassment.uiowa.edu/ for definitions, assistance, and the full University policy.

Reacting Safely to Severe Weather

If the National Weather Service radar indicates a tornado or other severe weather, then the UI outdoor weather sirens will sound. The class will seek appropriate shelter immediately, continuing class if possible when the event is over.