

C S 380D (53640)

DISTRIBUTED COMPUTING I

Spring 2013

Department of Computer Science
THE UNIVERSITY OF TEXAS AT AUSTIN

Catalog description

Models of distributed systems; language issues, proving properties of distributed systems; time, clocks, partial ordering of events; deadlock and termination detection; diffusing computations; computing in hostile environments; distributed resource management.

Prerequisite: Graduate standing and Computer Science 372.

Course Objectives

The goal of this course is to present a number of important ideas in distributed computing and provide rigorous methods for reasoning about distributed programs.

Topics

- Distributed detection algorithms
- Distributed resource allocation
- Logical clocks
- Global snapshot
- Component integration
- A logic for reasoning about distributed programs
- Safety and progress
- Byzantine agreement

Other subjects may be covered as time allows.

Contact Information

Professor Jayadev Misra

Office hours: Tuesdays & Thursdays 3:30–4:30 p.m., in GDC 7.510

E-mail: misra at cs

(Post questions to [Piazza](#) rather than e-mail.)

Teaching Assistant John A. Thywissen

Office hours: Wednesdays 4:00–5:00 p.m., in GDC 7.508B

E-mail: jthywiss at cs

(Post questions to [Piazza](#) rather than e-mail.)

Class Meetings

Class meets: Tuesdays & Thursdays 2:00–3:30 p.m. in GDC 7.514

Discussion section: Wednesdays 3:00–4:00 p.m. in GDC 7.514

Required and Recommended Materials

- Papers on the [class Piazza site](#). See Course Page › Resources › Readings.
- Jayadev Misra. 2012. [Structured Concurrent Programming](#).
- (supplemental) Jayadev Misra. 2001. *A Discipline of Multiprogramming: Programming Theory for Distributed Applications*. Springer-Verlag.
- (supplemental) K. Mani Chandy, Jayadev Misra. 1988. *Parallel Program Design: A Foundation*. Addison-Wesley.
- (supplemental) Edsger W. Dijkstra, Carel S. Scholten. 1990. *Predicate Calculus and Program Semantics*. Springer-Verlag.

This course will use the [Orc Programming Language](#). Orc resources:

- Orc in 15 Minutes: <https://orc.csres.utexas.edu/tutorial.shtml>
- Download Orc [Eclipse](#) plug-in: <https://orc.csres.utexas.edu/download.shtml#eclipse>
- Orc User Guide:
<https://orc.csres.utexas.edu/documentation/html/userguide/userguide.html>
- Orc Reference Manual:
<https://orc.csres.utexas.edu/documentation/html/refmanual/index.html>
- Try Orc: <https://orc.csres.utexas.edu/tryorc.shtml>

Assignments

There will be two project assignments.

- Project 1 Due 18 March
- Project 2 Due 02 May

Homework assignments will be given; they will be discussed in the class and in the discussion sections, but they will not be graded.

Tests

There will be no tests.

Grading

Project 1 counts for 40% of the grade, and project 2 for 60%. Plus and minus grades will be used for the final class grade.

Late work/Make up tests: Only allowed for health, religious, or military reasons. Requires special petition in each case.

Policies

Academic Integrity and Collaboration

Throughout this course, collaboration with your fellow students is encouraged.

However, all work submitted by students must be each student's own work, prepared without unauthorized assistance, where "unauthorized" means not explicitly allowed by an instructor. Any assistance received on work must be documented in the work, for example as an acknowledgment in a paper or a prominent comment in source code.

Students must not disclose their solutions to assignments to anyone except the professor or TA. Students must not acquire from any unauthorized source (e.g., another student or an Internet site) a partial or complete solution to an assignment until after that assignment has ended.

Everyone should do their share and take an active part in maintaining academic integrity. No one may enable someone else to turn in work that is not theirs. Anyone who suspects academic dishonesty should inform the professor (without necessarily specifying the offenders).

Academic dishonesty will normally result in a course grade of "F" for all those willingly involved, and will be referred to the Dean of Students for further disciplinary action.

University of Texas Honor Code

The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Accommodations

The university provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (video phone).

Electronic Communications

Announcements, course documents, and on-line discussions will be on [Piazza](#), which is a cross between a wiki and a discussion board. To get help quickly and efficiently, post your questions on Piazza, rather than e-mailing questions to the professor or TA. Regularly review the postings on Piazza for this class. Suggestion: Set "Email Notifications" in your Piazza account settings.

The professor and TA may send e-mail communications to you, with the expectation that they will be received and read by the following day. Your official e-mail address (as listed in UT Direct as "Student Records - Email Address") will be used. For details, see the UT [Use of E-mail for Official Correspondence to Students](#) policy.

Grades will be posted to UT's [Blackboard](#) system.