Syllabus for CPSC 4650/5650

Spring 2027

Instructor: James Aspnes

Description

Models of asynchronous distributed computing systems. Fundamental concepts of concurrency and synchronization, communication, reliability, topological and geometric constraints, time and space complexity, and distributed algorithms.

After CPSC 3650 or 3660 or equivalent.

Meeting times

Lectures are [[[**To be announced**]]].

On-line course information

The lecture schedule, course notes, and all assignments can be found in a single gigantic PDF file at https://www.cs.yale.edu/homes/aspnes/classes/4650/notes.pdf. You should probably bookmark this file, as it will be updated frequently.

Staff

The instructor for the course is James Aspnes. Office: AKW 401. Email: james.aspnes@gmail.com. URL: https://www.cs.yale.edu/homes/aspnes/.

The teaching fellow is [[[**To be announced**]]].

Office hours for all course staff can be found in the calendar on James Aspnes's web page.

Textbook

The primary course textbook is the lecture notes.

You may also find it helpful to look at the textbook on which the notes were originally based:

Hagit Attiya and Jennifer Welch, *Distributed Computing: Fundamentals, Simulations, and Advanced Topics*, second edition. Wiley, 2004. QA76.9.D5 A75X 2004 (LC). ISBN 0471453242.

On-line version: https://dx.doi.org/10.1002/0471478210. (This may not work outside Yale.)

Errata: http://www.cs.technion.ac.il/~hagit/DC/2nd-errata.html.

Course requirements

If you are taking the class as CPSC 465: Six graded assignments (100% of the semester grade).

If you are taking the class as CPSC 565: Six graded assignments (85% of the semester grade), plus a brief presentation (15%).

Each presentation will be a short description of the main results in a relevant paper chosen in consultation with the instructor, and (circumstances permitting) will be done live during one of the last few lecture slots. If numbers and time permit, it may be possible to negotiate doing a presentation even if you are taking the class as CPSC 465.

Use of outside help

Students are free to discuss homework problems and course material with each other, and to consult with the instructor or a TF. Solutions handed in, however, should be the student's own work. If a student benefits substantially from hints or solutions received from fellow students or from outside sources, then the student should hand in their solution but acknowledge the outside sources, and we will apportion credit accordingly. Using outside resources in solving a problem is acceptable but plagiarism is not.

Questions and comments

Please feel free to send questions or comments on the class or anything connected to it to the instructor at james.aspnes@gmail.com.

For questions about assignments, you may be able to get a faster response using the course Discord server. An invite link can be found on Canvas. Note that questions you ask there may be visible to other students if sent to a public channel, so be careful not to broadcast your draft solutions.

Late assignments

Late assignments will not be accepted without a Dean's Excuse.

Academic integrity statement

The graduate school asks that the following statement be included in all graduate course syllabi:

> Academic integrity is a core institutional value at Yale. It means, among other things, truth in presentation, diligence and precision in citing works and ideas we have used, and acknowledging our collaborations with others. In view of our commitment to maintaining the highest standards of academic integrity, the Graduate School Code of Conduct specifically prohibits the following forms of behavior: cheating on examinations, problem sets and all other forms of assessment; falsification and/or fabrication of data; plagiarism, that is, the failure in a dissertation, essay or other written exercise to acknowledge ideas, research, or language taken from others; and multiple submission of the same work without obtaining explicit written permission from both instructors before the material is submitted. Students found guilty of violations of academic integrity are subject to one or more of the following penalties: written reprimand, probation, suspension (noted on a student's transcript) or dismissal (noted on a student's transcript).