

Course Information

§ Course Overview (or – What Will I Learn from this Course?)

This course will equip students with foundational basics needed to understand, work with, and build distributed systems such as cloud computing systems. Topics include, but are not limited to, MapReduce, distributed hash tables (peer-to-peer systems), failure detectors, synchronization, election, distributed agreement, inter-process communication, consensus, gossiping, concurrency control, replication, key-value stores, NoSQL, security, probabilistic protocols, self-stabilization, measurements, etc. These topics are discussed in the context of real-life and deployed systems such as clouds and datacenters, databases, peer to peer systems, clusters, etc. This course does not deal with details of computer networking, e.g., Internet routing - CS 438 covers those.

§ Course Essentials

Course Website: <http://courses.engr.illinois.edu/cs425/>

All updates/announcements will be posted on the website. Please check the website periodically.

Lecture: Tuesday and Thursday, 2:00 PM - 3:15 PM, 1320 DCL (Digital Computer Laboratory).

Prerequisites: CS 241 (Systems Programming) or ECE 391, or equivalent course on Operating Systems or Networking (approval of instructor required for latter).

Credits: 3 - 4 hours.

Main Textbook (Recommended, not Required): Coulouris, G., Dollimore, J., Kindberg, T., and Blair, G., *Distributed Systems: Concepts and Design*, Addison-Wesley, *Fifth Edition*, 2011, ISBN: 0132143011. [Recommended purchase – copies available at Illini Book Store. On reserve at Grainger Library]. *We will refer to chapter, section, and problem numbers ONLY in the Fifth Edition. If you use an older edition, correct interpretation/translation of these numbers is solely the students' responsibility (no excuses).*

Supplementary material are listed at the end of this handout.

Course Staff Information: Please see course website.

Office Hours: Please see course website.

Communicating with the Course Staff:

You have three options:

1. (Most Preferable) Post messages in the discussion forum:
<https://piazza.com/illinois/fall2014/cs425>
2. Email the staff mailing list by emailing cs425-help@cs.illinois.edu (please do not email individual staff unless absolutely necessary).
3. Visit the instructor or TA during their posted office hours.

All work is expected to be your own. Please use the discussion forum for questions/discussion on homeworks and programming assignments - however, if you post a solution (code or write-up) to the newsgroup, you will lose all points for that particular assignment. Use email only when you cannot use the discussion forum, e.g., if you have an urgent question, or if you have a personal matter to ask/discuss.

§ Course Participation

Assignments:

1. There will be four to five homework sets, with about 1-2 weeks turnaround time per homework. **Your homework solution submissions are required to be typed** (you may use any of your favorite word processors). We will not accept handwritten solutions. Figures and equations (if any) may be drawn by hand. Homeworks will be **due at the beginning of class on the day of the deadline**.
2. Three to four programming assignments will be given throughout the semester, each requiring 2-4 weeks of effort.

Grading (tentative):

- Homework sets 30%
- Programming Assignments 20%
- Midterm Exam 15%
- Final Exam 35%

Grades will be available in Compass 2g.

Grading for undergraduate and graduate students will be separated. Grades will be assigned on a curve (relative grading). The fraction of students receiving A's is not fixed a priori, and depends on the overall class performance.

Homeworks and programming assignments are as valuable as exams - it is in your best interest to not ignore any of these.

Lecture Participation: Attending the lectures is important. Some classes may have a quiz or in-class homework solving (included in your grade) - if you miss the class, you lost the points.

§ Course Policies

Academic Integrity Policy We adhere by the CS academic integrity policies outlined at the webpage <https://agora.cs.illinois.edu/display/undergradProg/Honor+Code> . It is the course policy that all of the work you submit for grading, or in support of graded material, as an individual or project group, shall be your own product, from inception to completion. The only resources you can avail of in your HWs and MPs are the provided course materials (slides, textbooks, etc.), and communication with instructor/TA via newsgroup and email. Please do not reveal solutions on any of these fora. Exams are closed-book, closed-notes, unless otherwise specified.

Violations of this academic integrity policy will be treated seriously.

Policy on Late Submission: Unless otherwise specified, **all MP assignments**, or components thereof, that are to be electronically submitted are **due at 11:59 PM** on the due date. Similarly, **homework sets**, or components thereof, that must be submitted by other means are **due at the beginning of class** on the due date.

All MP and HW submission deadlines are hard and will not be extended. No late homework sets or MPs will be accepted except under extremely rare non-academic circumstances (which usually require approval from the Dean's office).

§ Supplementary Textbooks

We will use many readings off the Web - these will be available under the Lectures link on the course website. The following textbooks may be used for supplementary course material. You are not required to own these books. They are on reserve at the Grainger Library (if available). You *may* be able to use a prior edition of the textbook if you own one.

1. Fourth edition of the Coulouris-Dollimore-Kindberg textbook.
2. "Distributed Systems: An Algorithmic Approach," Sukumar Ghosh, CRC Press, 2006, ISBN: 1584885645. (Available online free at the Illinois Library Catalog).
3. "Distributed systems: principles and paradigms," A. Tanenbaum and M. Steen, Prentice Hall, Second Edition, 2005, ISBN: 0132392275.
4. "Distributed algorithms: concepts and design," N. Lynch, Morgan-Kaufmann, 1ed, 1996, ISBN: 1558603484.

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