Course Information

This handout succintly describes important information about the course. All updates to the information below will be posted on the course website only. If anything is marked TBD, please check the course website.

§ 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. Students will build a cloud computing system from scratch, in several stages of programming assignments. 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, distributed graph processing, 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, 3:30 PM - 4:45 PM, 0216 SC (Siebel Center).

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. (4 credit students will be required to do an extra portion on each MP/HW.)

Main Textbook: 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:

Professor	Dr. Indranil Gupta (Indy) 3112 Siebel Center indy@illinois.edu 265-5517 Please check website for office location and hours.
Teaching Assistant	Hilfi Alkaff Please check website for office location and hours. alkaff2@illinois.edu
Teaching Assistant	Anshuman Tripathi Please check website for office location and hours. atripth2@illinois.edu
Teaching Assistant	Hongwei Wang Please check website for office location and hours. wang172@illinois.edu
Adminstrative Help	Donna Coleman 2120 Siebel Center donnakc@illinois.edu

Communicating with the Course Staff:
You have three options:

1. (Most Preferable) Post messages in the discussion forum (Piazza). This is the fastest way to get a response. Please check the website for Piazza link.
2. Email the instructor and TAs - please only use $cs425 - ece428@mx.uillinois.edu$. Please do not use direct email (to TA or instructor) unless absolutely necessary (e.g., private question).
3. Visit the instructor or TA during their posted office hours.

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, it will be counted as an academic integrity violation, which is pretty serious and could result in you failing the course. Use email only when you cannot use the discussion forum, e.g., if you have a private question.

§ 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. Four machine programming assignments (MPs) will be given throughout the semester, each requiring 2-4 weeks of effort. **You must work in groups of exactly TWO students for each of the projects**. This is a great opportunity to practice pair programming! Although you can change groupings from one assignment to the next, we highly recommend against this. Please pair up with another student who is also taking the course for exactly the same number of hours as you (3/4). Students taking the course for 4 hours will be required to complete the "Extra Credit" portions of all MPs.

Grading (tentative):

- Homework sets 20%
- Programming Assignments 30%
- 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 (viewing them if you're an online student) is important. To facilitate better understanding of the material from different perspectives, you are expected to have **read the relevant chapters from the main textbook before the lecture**. These readings will be specified at the end of the previous class, and are available under the Lectures link on the course website.

§ 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.

We rigorously check every submitted HW and MP (including code) for violations of academic integrity.

All violations of this academic integrity policy are treated seriously in this course. Don't risk it - just avoid cheating and the temptation to! That way, you'll learn more and years later you will be happier about standing up for yourself.

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).

Regrading Policy All regrade requests must be submitted back within 1 week of the graded HW/MP being returned. Regrade requests must be in writing on a separate piece of paper, and must clearly indicate the question number(s) and part(s) to regrade (and if necessary, the reason for the regrade request).

Regrade requests submitted after one week of the HW/MP being returned will not be regraded.

All regrading decisions will be final (i.e., no regrade requests on regrades).

§ Supplementary Textbooks

We will use many readings off the Web. These textbooks are on reserve at the Grainger Library.

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.

§ **Acknowledgements:** The slides used in the lecture borrow heavily from those designed by Professor Jennifer Hou and Professor Mehdi Harandi for previous semesters, and modified by Prof. Indranil Gupta, Prof. Nitin Vaidya, Prof. Klara Nahrstedt, and Prof. Sayan Mitra subsequently.