

Course Information

This information handout describes the following information about the course - essentials, overview, participation, schedule, policies, and supplementary material.

§ Course Essentials

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

Credits: 3 hours.

Main Textbook: Coulouris, G., Dollimore, J., and Kindberg, T., *Distributed Systems: Concepts and Design*, Addison-Wesley, *Fourth Edition*, 2005, ISBN: 0201619180. [Recommended purchase – copies available at Illini Book Store. On reserve at Grainger Library]. *The third edition ought to suffice for most of our material, but we will refer to chapter, section, and problem numbers ONLY in the Fourth Edition. Correct interpretation/translation of these numbers in the 3rd edition is solely the students' responsibility (no excuses).*

Supplementary books are listed at the end of this handout. The latest editions available at the Grainger Library have been put on reserve. We may also read some research papers. All supplementary material from sources outside of the above main textbook will be provided to you as and when needed.

Course Staff:

Professor	Dr. Indranil Gupta (Indy) 3112 Siebel Center indy at cs dawt uiuc dot edu 265-5517
Teaching Assistant	Ramsés Morales 0207 Siebel Center rvmorale at cs dawt uiuc dot edu
Administrative Help	Donna Coleman 2120 Siebel Center donna kc at cs dawt uiuc dot edu

Timings:

Lecture: Tuesday and Thursday, 11:00 AM - 12:15 PM, 1105 SC (Siebel Center).

Office Hours (tentative):

Professor - Indy Tuesday 3.30 PM - 5.00 PM and Thursday 2.00 PM - 3.30 PM, 3112 Siebel Center.

TA - Ramsés Morales M 10:30 AM - 12:00 PM and W 12:30 PM - 2:00 PM, 0207 Siebel Center.

Course Website: <http://www.cs.uiuc.edu/class/fa07/cs425>

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

Communicating with the Course Staff:

You have three options:

1. Post messages in the newsgroup: class.cs425
2. e-mail the instructor or TA.
3. Visit the instructor or TA during their posted office hours.

Please use the newsgroup 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 newsgroup, e.g., if you have an urgent question, or if you have a personal matter to ask/discuss.

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

This course focuses on basic concepts underlying the design, implementation, and management of distributed systems. It covers fundamental topics such as basic concepts in distributed systems, synchronization, election, distributed agreement, inter-process communication and coordination, replicated data management, distributed objects, security, and directory and discovery services. These are discussed in the context of real-life and deployed systems such as distributed file systems, databases, peer to peer systems and the Grid. This course does not deal with the details of computer networking (e.g., details of different routing protocols in the Internet), except as applied to topics listed above. Students interested in the latter topics are recommended to take CS 438.

§ Course Participation**Assignments:**

1. Homework sets will be distributed on an approximately bi-weekly basis. **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. **You may choose to work in groups of up to 2 students for each of the projects.** You may change groupings from one assignment to the next, although we do not suggest you do so. **Graduate students taking the course for 4 hours will be required to ensure that their last MP is research-oriented.**

Grading (tentative):

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

Also note: (i) Grading for undergraduate and graduate students will be separated; (ii) Grades will be assigned on a curve (relative grading); (iii) Homeworks and programming assignments are as valuable as exams - it is in your best interest to not ignore any of these. The fraction of students receiving A's is not fixed a priori, but it has been generous in the past for classes that performed well as a whole.

Lecture Participation: Attending the lectures 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 for a lecture before the lecture**. These readings will be specified at the end of the previous class.

§ Course Schedule (tentative)

Lectures: The plan is to cover the following broad topics - new topics might be added. Readings will be specified as and where needed. The order of topics, as well as time estimates are tentative and subject to change. All slides will be placed on the website around the time of the lecture.

Topic	Number of Lectures
Introduction	1
Basic Theoretical Concepts - I	7
Peer to peer computing	2
The Internet	3
(Midterm)	1
Basic Theoretical Concepts - II	2
Transactions & Concurrency	4
Replication	3
Distributed Shared Memory	1
Distributed File Systems	1
Security	1
The Grid	1

Programming Projects: We will build a peer to peer system (hot topic!) in several stages. Four to five programming assignments.

§ Course Policies

Policy on Attribution: 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 either be your own thought product or clearly and specifically credited to the proper source. In other words you must clearly and visibly provide proper attribution for ideas and expressions that you borrow from others.

Violations of this policy will be treated seriously. We might choose to give you less than full credit for a submission that is not wholly yours. The maximum penalty at the course-level is a final grade of 'F', with no permission to drop (other penalties might be imposed by the University). In short, we recommend that you not violate this policy.

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. **No late homework sets will be accepted except under extremely rare non-academic circumstances (which usually require approval from the Dean's office).**

You are encouraged to turn in MPs before the deadline. However, late MP assignments are given a grace period of 48 hours without any penalty. (These 48 hours include any weekend, break, or holiday, if any, following the due date.) To encourage you to get started early for each assignment and to turn in assignments on time, neither the instructor nor the TAs will answer any question related to, or help with, the assignment in the grace period. Beyond the grace period, you may lose any or all part of your grade for the assignment.

§ Supplementary Textbooks

The following textbooks may be used for supplementary course material. They are also useful for back-referring to basic 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.

Distributed Systems

1. "Distributed systems: principles and paradigms", A. Tanenbaum and M. Steen, Prentice Hall, 1ed, 2002, ISBN: 0130888931.
2. "Distributed algorithms: concepts and design", N. Lynch, Morgan-Kaufmann, 1ed, 1996, ISBN: 1558603484.
3. "Distributed computing: fundamentals, simulations and advanced topics", H. Attiya and J. Welch, McGraw Hill, 1ed, 1998, ISBN: 0077093526.

Computer Networks

1. "Unix network programming", W. R. Stevens, (Addison-Wesley, 3ed, 2002, Vols. 1 and 2 – ISBN: 0130810819 and ISBN: 0131411551 OR Prentice Hall, 1ed, 1990, ISBN: 0139498761).
2. "An engineering approach to computer networking", S. Keshav, Addison-Wesley, 1ed, 1997, ISBN: 0201634422.
3. "Computer networks", A. Tanenbaum, Prentice-Hall, 4ed, 2002, ISBN: 0130661023.

Operating Systems

1. "Applied operating systems concepts", Silberschatz, Galvin and Gagne, Wiley, 6ed, 2002, ISBN: 0471250600.

§ **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. Nitin Vaidya subsequently.