CS 454/654
Distributed Systems

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Course Objective

■ This course provides an *introduction* to the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.

■ The structure of distributed systems using multiple levels of software is emphasized. Specific topics include:

- distributed algorithms
- distributed file systems
- distributed data
- distributed consensus and replication
- distributed services such as the world-wide web, and
- examples of research and commercial distributed systems

Course Modules

- Fundamental Architectures and Models of Distributed Systems

- Communication

- Distributed Naming

- Distributed File Systems

- Synchronization

- Data Replication

- Fault Tolerance

- Applications

Course Information

- **Intended Audience:**
  - CS 454 is a course for CS major students and is normally completed in the fourth year.

- **Related Courses:**
  - Prerequisites: CS 350 or SE 350 and fourth-year standing in a CS major program.
  - Antirequisites: CS 436, ECE 454.
  - CS 456 is not a prerequisite but provides information about the underlying facilities assumed in this course.

Course Information

- **Lectures:**
  - None. Course material will be available as:
    - electronic slides, notes, supplementary textbook readings.
- **Office Hours:**
  - TBA (on course webpage)
- **Assignments:**
  - 4 assignments: a combination of answering questions and implementation work.
- **Take-home Test:**
  - Toward the end of the course
  - Reference only course materials in answering test questions
- **Assignments & Take-home Test are individual work**
- **Late Assignments/Test (past deadline) will *not* be accepted!**

Course Documents

- **Course Home Page:**
  - `http://www.cs.uwaterloo.ca/~kdaudjee/courses/cs454`
  - Home page will include links to course material.
- **Textbook:**
  - A.S. Tanenbaum and M. van Steen, *Distributed Systems: Principles and Paradigms*, Pearson/Prentice-Hall, 2017 (3rd Edition) [see link from course web page]
- **Other References:**
  - G. Colouris, J. Dollimore, and T. Kindberg, *Distributed Systems: Concepts and Design, 5th edition*, Addison-Wesley.
- **Course Newsgroup:**
  - `Piazza`

Administrivia

- **Grading**

	CS 454	CS 654
Assignments	50	40 (Assignments 2, 3 and 4 only)
Take-home Test	10	10
Project		20

  - Assignments (CS 454):
    - A1, A2 and A4 are 10 each, A3 is 20
  - Assignments (CS 654):
    - A2 is 10, A3 is 20, A4 is 10 (A1 is not required)

- **Assignments and Take-home Test** *must be typeset*
- **Announcements**
  - On the course Web page, and on course newsgroup on Piazza
- **Collaboration**
  - Collaborate on assignments, but do not merely copy.

Plagiarism and academic offences

■ Don't think I won't report problems just because you've made it to fourth year!

■ Nice explanation of plagiarism on-line

```
https://uwaterloo.ca/secretariat-general-
    counsel/policies-procedures-
    guidelines/guidelines/guidelines-assessment-penalties
```

■ Read this and understand it

● Ignorance is no excuse!

● Questions should be brought to the attention of instructor

■ Plagiarism applies to both text and code

■ You are free (even encouraged) to exchange ideas, but *no sharing code*

Plagiarism (2)

- **Common mistakes**
  - Excess collaboration with other groups
    - Share ideas, but no design or code!
  - Using code from other sources (like previous offerings of this course)
- **Possible penalties**
  - First offense
    - -100% for that part of the course plus extra -5% for course
  - Second offense
    - Expulsion is possible