CS 798: Advanced Distributed Systems
Outline

Course Number: CS 798
Course Name: Advanced Distributed Systems
Sections:
   Section 1: Tuesday and Thursday 10:00am - 11:20am in DC 2585

Instructor: Samer Al-Kiswany (DC 3516)
Office hours: Tuesday and Thursday 11:20 - 12:20, or by appointment.
Course website: https://cs.uwaterloo.ca/~alkiswan/Classes/CS798-17F

Course Description:
This course will discuss a broad range of topics about modern distributed systems. The course will discuss the state of the art of these systems and how and why they reached there. We will discuss how modern systems can tolerate failures, maintain data consistency, scale, leverage the new hardware capabilities, and exploit highly concurrent hardware.

Course Objectives:
This course aims to strengthen students’ theoretical background in distributed system as well as building their technical and research skills.

Course Topics:
- Overview of computer networks
- Distributed middleware
- Fault tolerance
- Consistency
- Storage systems
- Data processing engines
- Scalability
- Scheduling
- Security
- Case studies of production systems

Grading:
The final course mark is computed as follows:
- Reading questions 10%
- Mid-term exam 25%
- Final exam 25%
- Projects 40%

Late Submission Policy
No late submission will be accepted for reading questions.
For projects, 33% point will be deducted for each late day (or a fraction of a day).
**Group Policy**
Some of the projects may require that the students work in groups. Each project will specify if it is to be done individually or in groups. It is the student’s responsibility to find partners and form a group. If a student is unable to form a group, he/she should talk to the instructor to get a permission to do the project individually. Doing a project individually without getting the instructor’s permission results in 33% points deduction. The deadline for getting the instructor’s permission is in one week from the date the project is posted.

**Mark Appeal Process:**
Students have one week after receiving an exam/project mark to appeal it. To appeal a mark the student should meet the instructor during one of the office hours.

**Intellectual Property:**
Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student’s educational experience. However, sharing this intellectual property without the intellectual property owner’s permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

**Academic Integrity:**
In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check http://uwaterloo.ca/academic-integrity for more information.]

**Grievance:**
A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, https://uwaterloo.ca/secretariat/policies-procedures-
guidelines/policy-70. When in doubt, please be certain to contact the department’s administrative assistant who will provide further assistance.

**Discipline:**
A student is expected to know what constitutes academic integrity [check https://uwaterloo.ca/academic-integrity/integrity-waterloostudents/what-misconduct ] to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration, should seek guidance from the course instructor, TA, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Last Modified: Oct. 2013 Discipline, www.uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71. For typical penalties, check Guidelines for the Assessment of Penalties, http://uwaterloo.ca/secretariat/policies-proceduresguidelines/guidelines/guidelines-assessment-penalties.

**Appeals:**
A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there are grounds. A student who believes he/she has grounds for an appeal should refer to Policy 72 (Student Appeals).

**Note for Students with Disabilities:**
AccessAbility Services (formerly the Office for Persons with Disabilities), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities, without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.