CMPS 4760/6760 Distributed Systems
3 credits
Spring 2019

Instructor: Prof. Zizhan Zheng (zzheng3@tulane.edu)
Class Time & Place: TR 11:00-12:15pm, Stanley Thomas 302
Office hours: TBA

COURSE OVERVIEW
This course covers the fundamental concepts in distributed computing at the graduate level. The objective is to introduce students to the core notions, techniques, and algorithms in the design of distributed systems when there is no global clock and when unpredictable failures and variable latency are the norm. Recent developments in the Internet, cloud computing, blockchain, etc. will be used as case studies to help students establish a firm understanding of the philosophy and pitfalls in achieving reliable and efficient distributed computing. Topics to be covered include interprocess communication, time and clocks, snapshot, multicast, mutual exclusion, consensus, transactions, replication, and security.

PREREQUISITES
Discrete Mathematics (CMPS/MATH 2170), Introduction to Algorithms (CMPS 2200), Introduction to Computer Systems and Networking (CMPS 2300) or equivalent or instructor approval

COURSE WEBPAGE
http://www.cs.tulane.edu/~zzheng3/teaching/cmps6760/spring19/

COURSE MATERIALS
Textbooks
We may also use some material from book chapters available online and papers from journals and conferences. Information on these will be provided on the course webpage.

HOMEWORK AND LABS
There will be written problem assignments and labs (programming assignments). Graduate level students will be given extra questions that require advanced algorithmic/analytic techniques. Specific instructions will be given in each assignment. All the assignments will be posted on the course webpage.

STUDENT PRESENTATIONS
Each student will present one or two papers from the suggested paper list or chosen by you (please confirm with me). Two undergraduate students can present a paper together while each graduate student should give a presentation independently. For each presentation, all the students (other than the presenter) are expected to give feedback to the presenter.

EXAMS
There will be a midterm and a final exam. Both will be closed-book and closed-notes, but you will be allowed to bring a cheat sheet to each exam (one letter page single-sided). The final exam will be comprehensive.

LATE POLICY
Without prior arrangements, missing an exam, homework assignments, or project results in a grade of zero. Notification after the exam will result in a score of zero. A request for homework extension or a make-up exam must be given to the instructor prior to the exam date (documentation may be required).

**Attendance Policy**

**Students are required to attend all classes** unless they are ill or prevented from attending by exceptional circumstances. Students who find it necessary to miss class are responsible for obtaining notes on material covered in lectures or other class sessions.

Students are responsible for notifying instructors about absences that result from serious illnesses, injuries, or critical personal problems. Medical excuses are issued by the Student Health Center in the following instances: illnesses or injuries that involve hospitalization, a partial or complete withdrawal due to medical reasons, or a missed final examination for a medical condition being treated by Student Health Center. In all of these instances, medical information will be released only with the student’s written permission.

Instructors are authorized to lower the grades of students who are absent excessively without a satisfactory excuse or do not make up work missed because of absences. With the approval of the Newcomb-Tulane College dean, an instructor may have a student who has excessive absences involuntarily dropped from a course with a WF grade after written warning at any time during the semester.

**Grading Policy**

- Homework - 25%
- Labs - 15%
- Presentation - 10%
- Midterm - 20%
- Final Exam - 25%
- Class attendance - 5%

All grades will be posted on Canvas. The weighted average will determine your letter grade as follows:

- A >= 93% [Exemplary. Superior achievement.]
- A- >= 90% [Outstanding]
- B+ >= 87%, B >= 83%, B- >= 80% [High Pass, Above Average]
- C+ >= 77%, C >= 73%, C- >= 70% [Below Average]
- D >= 60%, [Low Pass, Unsatisfactory, Barely passing]
- F < 60% [Failure, Unacceptable]

**Students with Special Needs**

Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact Goldman Center for Student Accessibility.

**Code of Academic Conduct**

The Code of Academic Conduct applies to all students, full-time, and part-time, in Tulane University. Tulane University expects and requires behavior compatible with its high standards of scholarship. By accepting admission to the university, a student accepts its regulations (i.e. Code of Academic Conduct, Code of Student Conduct) and acknowledges the right of the university to take disciplinary action, including suspension or expulsion, for conduct judged unsatisfactory or disruptive.

**Title IX**

Tulane University recognizes the inherent dignity of all individuals and promotes respect for all people. As such, Tulane is committed to providing an environment free of all forms of discrimination including sexual and gender-based discrimination, harassment, and violence like sexual assault, intimate partner violence, and stalking. If you (or someone you know) has experienced or is experiencing these types of behaviors, know that you are not alone. Resources and support are available: you can learn more at titleix.tulane.edu. Any and all of your communications on these matters will be treated as either “Confidential”
or “Private” as explained in the chart below. Please know that if you choose to confide in me I am mandated by the university to report to the Title IX Coordinator, as Tulane and I want to be sure you are connected with all the support the university can offer. You do not need to respond to outreach from the university if you do not want. You can also make a report yourself, including an anonymous report, through the form at tulane.edu/concerns.

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<th>Confidential</th>
<th>Private</th>
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<td><strong>Except in extreme circumstances, involving imminent danger to one’s self or others, nothing will be shared without your explicit permission.</strong></td>
<td><strong>Conversations are kept as confidential as possible, but information is shared with key staff members so the University can offer resources and accommodations and take action if necessary for safety reasons.</strong></td>
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<tr>
<th>Counseling and Psychological Services (CAPS)</th>
<th>(504) 314-2277 or The Line (24/7)</th>
<th>(504) 264-6074</th>
<th>Case Management and Victim Support Services</th>
<th>(504) 314-2160 or <a href="mailto:srss@tulane.edu">srss@tulane.edu</a></th>
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<tr>
<td>Student Health Center</td>
<td>(504) 865-5255</td>
<td></td>
<td>Tulane University Police (TUPD)</td>
<td>Uptown - (504) 865-5911. Downtown – (504) 988-5531</td>
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<td>Sexual Aggression Peer Hotline and Education (SAPHE)</td>
<td>(504) 654-9543</td>
<td></td>
<td>Title IX Coordinator</td>
<td>(504) 314-2160 or <a href="mailto:msmith76@tulane.edu">msmith76@tulane.edu</a></td>
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