CS138: Distributed Systems Course Information and Syllabus Semester II, 2017–2018

Lectures	ectures I hour: 10:30–11:50 on Tuesdays and Thursdays		
Room	CIT 368		
Lecture Notes	http://www.cs.brown.edu/courses/cs138/s18/syllabus.html A recording of each lecture will be available soon after it is given.		
Text	Distributed Systems: Concept and Design, by Colouris, Dollimore, Kindberg, Blair, 2011		
Prerequisite	CS 33 or CS32		
Instructor	Theophilus Benson (tab@cs.brown.edu)		
Office	CIT 327		
Office Hours	Tuesdays 4-5 and Wednesdays 11-12, by appointment, or just stop by		
Head TAs	Sidd Karamcheti (skaramch@cs.brown.edu)		
UTAs	Amedeo Felice Alberio (aalberio@cs.brown.edu) Abdulla Aldilaijan (aaldilai@cs.brown.edu) Benjamin Shteinfeld (bshteinf@cs.brown.edu) Christopher Harvie (charvie@cs.brown.edu) Jared Siskin (jsiskin1@cs.brown.edu)		
Requirements	4 Programs (50%) (additionally there is an optional program at the beginning of the course; it will not count towards the course grade) 4 Homeworks (20%) Midterm Exam (10%) Final Exam (20%)		
Time Requirements	In addition to three hours per week in class, you will spend 10 to 20 hours per week on homeworks and programs.		
Goals	We will teach you the theoretical underpinnings of distributed systems and will teach you to write programs that run on multiple, geographically dispersed computers and that are tolerant of many sorts of faults. You will do problem sets based on the lectures that will help you grasp and apply the theoretical material. You will do a sequence of programming projects, working in groups of two that not only apply what's covered in lectures, but give you experience in coding and debugging distributed systems. We have you write the programs in a language that's probably new to you, Go, chosen because it		

	allows you to focus on the distributed aspects of a system without				
	getting bogged down in other details.				
All Are Welcome	Our intent is that this course provide a welcoming environment for all students who satisfy the prerequisites. Our TAs have undergone training in diversity and inclusion; all members of the CS community, including faculty and staff, are expected to treat one another in a professional manner. If you feel you have been treated unprofessionally by any of the course staff, please contact either Prof. Benson (the instructor), Prof. Cetintemel (the department chair), or Laura Dobler (the department's coordinator for diversity and inclusion initiatives). We take all complaints about unprofessional behavior seriously				
	Homeworks, exams, and programs are given letter grades;				
	"curving" is done on a per-assignment basis.				
Grading	The final course grade is the weighted average of homework, exam, and program grades. The first program is 10% of your course grade; each of the others is 13.33% The midterm exam is is 10% of your course grade; the final exam is 20%. Each homework is 5% of your course grade. Grade averages are computed using a 4-point scale: an A+ is worth 4.3 points, an A 4 points, an A- 3.7 points, a B+ 3.3 points, etc. To determine your final course grade, a weighted				
	course average of 3.5 and higher is an A, 2.5 and higher is a B, and				
	1.5 and higher is a C. Please note that your assignments will be graded by the TAs, most of whom are undergraduates. If you have a question about the grading of an assignment, please bring it up first with the TA who graded it. If your question is not resolved to your satisfaction, then bring it up with Prof. Benson.				
Incomplete Policy	We expect everyone to complete the course on time. However, we certainly understand that there may be factors beyond your control, such as health problems and family crises, that prevent you from doing so. If you feel you cannot complete the course on time, please discuss with Prof. Benson the possibility of being given a grade of Incomplete for the course and setting a schedule for completing the course over the summer.				
Due Dates	All assignments are submitted electronically (via deparment machine handin scripts for programming projects and via Gradescope for written homework assignments) due at 11:59 pm.				
Late Policy	The late-day policy described here applies to all late days other than those due to illness and religious holidays. Thus days missed because of job interviews are included in the late-day policy. Everyone is allowed a total of four late days on projects free of				

	charge, but no more than three late days may be applied to any one assignment. Beyond that, you are penalized one grade level (e.g., B work goes down to a C) for each day it is late. We will apply late days to assignments in an optimal fashion (with respect to your grade). Note that late penalties are applied after grades have been curved. If you are ill, you may get an extension without using late days. Please get a note from either health services or the office of student life and contact one of the instructors. If you must miss an assignment deadline because of a religious holiday, you may also get an extension without using late days; please contact one of the instructors.
Accommodations	If you feel you have physical, psychological, or learning disabilities that could affect your performance in the course, we urge you to contact SEAS (https://www.brown.edu/campuslife/support/accessibility- services/). We will do whatever we can to support accommodations recommended by SEAS.
Mental Health	Being a student can be very stressful. If you feel you are under too much pressure or there are psychological issues that are keeping you from performing well at Brown, we encourage you to contact Brown's Counseling and Psychological Services (CAPS: https://www.brown.edu/campus-life/support/counseling- andpsychological-services/). They provide confidential counseling. In addition, the deans of student life as well as the deans of the college can provide notes supporting extensions on assignments for health reasons.

Date	Topic	Readings	Out	Due
Jan 25	L1 Intro to 128		LiteMiner	WhatsUp (optional)
Jan 30	L2 Peer-to-Peer	Chapter 10		
Feb 1	L3 Peer-to-Peer II	Chapter 10		
Feb 6	L4 Peer-to-Peer III	Chapter 10		
Feb 8	L5 Networking	Chapter 5	HW1	
Feb 13	L6 Networking II	Chapter 5		LiteMiner
Feb 15	L7 RPC	Chapter 5	Tapestry	HW1
Feb 20	Holiday!!!			

Lectures and Due Dates

Feb 22	L8 Security	Chapter 11		
Feb 27	L9 Security II	Chapter 11		
Mar 1	L10 Time	Chapter 14		Tapestry
Mar 6	L11 Global State	Chapter 14	HW2	
Mar 8	L11 Raft	Chapter 15		
Mar 13	L12 – Raft II	Chapter 15		HW2
Mar 15	L14 Debugging		Raft	
Mar 20	L15 Gossip			
Mar 21	Midterm			
Mar 22	L16 Distributed			
	File System I			
Mar 27	Holiday!			
Mar 29	Holiday!			
Apr 3	L17 Distributed			
	File System II			
Apr 5	L18 Distributed		HW3	
	Transaction			
Apr 10	L19 –			Raft
	Google/Facebook			
Apr 11			Puddlestore	
Apr 12	L20 Amazon			
Apr 17	L21 Final project			
	discussion			
Apr 19	L22 Consensus			HW3
Apr 24	L23 Zookeeper		HW4	
Apr 26	L24 Systems for			
	ML			
May 3				HW4
May 7				Puddlestore
	Final			