

Computer Networks  
CAS CS 455/655 – Fall 2004  
[www.cs.bu.edu/fac/byers/cs455.html](http://www.cs.bu.edu/fac/byers/cs455.html)

455/655 Lectures: TR 11:00 - 12:30 AM, SMG 222  
655 Seminar: M 4:00 - 5:00 PM, Location TBA

	<b>Instructor: Prof. John Byers</b>	<b>Teaching Fellow: Vijay Erramilli</b>
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Office Hours	Tu 2:00 - 3:30 & Fri 9:30 - 11:00	Mon 2:00 - 3:30 & Thu 4:00 - 5:30
Lab Hours	—	Wed 3:00 - 6:00

**Course Overview:** CS 455 serves as an advanced introduction to computer networks geared toward seniors majoring in Computer Science. CS 655 serves as an advanced introduction to computer networks suitable for graduate students who have not taken an advanced undergraduate course. Students in both classes will attend the same lectures and will complete the same written assignments, programming assignments and exams. In addition, students in CS 655 will attend and participate in a weekly graduate networking seminar and will write a survey paper in the second half of the semester. The main focus of the course will be an investigation the design of computer networks and network protocols, from both a conceptual and design standpoint. We will mostly focus on the *software* used behind the scenes to build scalable, general-purpose networks.

**Prerequisites:** Protocols underlying networked communications are intricate and can be best understood by those with a broad background in both the systems-oriented and theoretical aspects of computer science. In particular, this course will assume intimate familiarity with CS 350 (fundamentals of computing systems) and MA 293 (basic discrete math and elementary probability theory). Also, students are expected to have taken or be concurrently enrolled in CS 330 (algorithms). Students without the prerequisites will not be allowed to enroll in the course.

**Textbook:** The required text is Larry Peterson and Bruce Davie, *Computer Networks: A Systems Approach*, 3rd Edition, Morgan Kaufmann, 2003, available at the B.U. bookstore and at any online bookseller. Course materials will refer to the third edition (black cover) – please do not purchase the second edition (blue cover) used in years past. A small amount of supplemental reading will be assigned and distributed later in the course.

**Workload:** Be forewarned – the workload in this course will be heavy. To master the conceptual material covered in lecture, there will be written homework assignments due

approximately every other week in class (typically due on alternating Tuesdays). In addition, there will be two substantial programming assignments (written in a language of your choice), each of which is likely to amount to a thousand lines of code. If you are worried that your skills in writing and debugging large programs are weak, this course may not be for you. On the other hand, this course can help you greatly improve these essential skills.

**Teaching Fellow:** Vijay Erramilli will be the teaching fellow for this class. During his regularly scheduled office hours in MCS B20, he will be happy to answer questions about the assignments, the lectures, or the course material. When programming assignments are due, Vijay will hold additional lab hours in the undergraduate teaching lab (Rm. 302, 730 Comm Ave.) where he can address programming-related issues in the lab. To reach Vijay outside of his regularly scheduled office hours, please send him e-mail.

**Exams:** There will be a ninety minute in-class midterm held during the middle of the semester on Tuesday, October 26. The final will be held during the normal final exam slot for courses in our time slot: Day 1, Thursday, December 16 from 9:00 to 11:00 AM. Please plan your work and travel plans at the end of the semester accordingly.

**Topics in CS 455:** We will no doubt drift slightly from any formalized plan, but a rough schedule of weekly lecture topics and corresponding readings is provided in the course overview that follow. A more detailed and continually updated schedule will be maintained on the course homepage.

**Additional topics in CS 655:** In the additional weekly meeting for CS 655, students will be asked to read and discuss current research papers published in top-flight networking conferences such as ACM SIGCOMM and IEEE Infocom. Each week, we will discuss one or two of these papers together with the network research group. Students enrolled in CS 455 are also welcome to attend. In the second half of the semester, students will write a short survey article on a networking research topic of their choice. Some suggestions for appropriate topics will be provided in mid-October.

**Grading:** Students enrolled in CS 455 will be graded on a different scale than those enrolled in CS 655. For CS 455, the course grade will break down as follows: 25% written assignments, 25% programming projects, 20% midterm, 30% final. For CS 655, the course grade will break down as follows: 20% written assignments, 20% programming projects, 15% midterm, 25% final, 10% participation in weekly discussions, 10% survey paper.

**Handouts:** Handouts will be announced in class and posted on the course webpage, but it will be your responsibility to print them out.

**Late Policy:** I will post solutions to written homework assignments on the course website immediately after class on the due date. Therefore, late assignments will not be accepted after their in-class due date. Programming assignments will be accepted up to 48 hours after the submission deadline with a 20% deduction. In the event of serious illness documented

by a doctor's note, makeup examinations will be given orally. Incompletes for the course will not be granted.

**Academic Conduct:** Academic standards and the code of academic conduct are taken very seriously at our university. Please take the time to review the College of Arts and Sciences Academic Conduct Code if you are unfamiliar with its contents. The work that you submit must be your own original work – while it is acceptable to brainstorm together on the written homework assignments, your writeups must be generated independently. For programming assignments, it is not acceptable to share code with your peers (although at my discretion, I may post some helpful routines on the course website). Programming assignments will be tested for originality with an automated software tool.