

## Synopsis:

This course combines an exposition of computer networking principles with network programming exercises and experiments, taking advantage of the Department's recently installed equipment in our CS Labs and in the Michael D. Kudlick interactive computer classroom (Harney-235). These facilities include remote access from off-campus to a cluster of sixteen Core-2 Duo servers, each equipped with two Intel Pro1000 gigabit-Ethernet controllers, one of which is dedicated to supporting a private Local Area Network for doing course-experiments. A similar but separate private LAN interconnects the Kudlick classroom's thirty Core-2 Quad workstations, allowing lecture-demonstrations to be done in class without affecting any network experiments in progress on the server-cluster.

Topics appropriate to this course's goals include:

- contemporary uses of computer networks and the Internet
- physical and architectural network elements
- conventional "layered" models of networking
- communication protocols and associated algorithms
- Local Area and Wide Area networks
- the ubiquitous TCP/IP protocol suite
- the Client/Server programming paradigm
- Berkeley 'sockets' application programming interface
- Issues of performance and network security

This course is open to upper-division computer science majors and to USF computer science graduate students. This course assumes that students are familiar with Linux or UNIX, and with programming in the C/C++/Python environments. (The specific course-preparation that is recommended includes: CS 110/112 and CS 245, or the equivalent preparation at another university.)

## Learning Outcomes:

- You will be introduced to the physical and logical organization of the Internet
- You will be acquainted with major internet applications and transport protocols
- You will know the functions of hubs, switches, bridges, routers, and firewalls
- You will understand the functional layering of network software architectures
- You will be able to write your own socket-based network application programs
- You will gain experience with using software tools for network troubleshooting

## Instructor:

Dr. Allan B. Cruse, Professor of Computer Science and Mathematics  
Harney Science Center - Room H-212 Telephone: (415) 422-6562  
Office Hours: Mon-Wed-Fri 1:30-2:15pm, Tue-Thu 6:30pm-7:15pm  
Email: [cruse@usfca.edu](mailto:cruse@usfca.edu) Website: <<http://cs.usfca.edu/~cruse/>>

## Textbook:

James F. Kurose and Keith W. Ross, [Computer Networking: A Top-Down Approach \(4th Edition\)](#), Pearson/Addison-Wesley, Inc. (2008), ISBN 978-0-321-49770-8

## Classroom Facility:

The course meets on Tuesdays and Thursdays, 7:30-9:15pm, in the Michael D. Kudlick Interactive Computer Classroom (HRN-235). Students will need to have individual computer accounts set up for access during these class meetings.

## Exam Dates:

Midterm Exam I will be Tuesday, March 3  
Midterm Exam II will be Thursday, April 2  
Final Exam will be Tuesday, May 19, 7:30pm

## Grading scheme:

Class Participation	25%
Programming Projects	25%
Midterm and Final Exams	50%

*NOTE: Unprofessional conduct, such as an abuse of USF computer privileges (unauthorized access), or a violation of academic integrity (plagiarism or fraud), will result in the student receiving a failing grade.*