

# Welcome to CS378: Advanced Computer Networks

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## Course Goals

- Learn the state of the art
  - Fundamental design and implementation principles
  - Performance evaluation of networked systems
  - Current networking topics & emerging technologies
- Gain hands-on experience
  - Simulate and analyze network protocols inside ns-2
  - Implement, deploy and measure a cool Web application on Google's AppEngine

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## Course Topics

- Part 1: Network design and implementation
  - Signaling, indirection, virtualization, multiplexing, randomization, scalability, implementation techniques
  - Design of the Internet: end-to-end principle, the big picture, lessons learned
- Part 2: Network performance evaluation
  - Discrete event simulation, statistical analysis of output, ns-2, network measurement
- Part 3: Current networking topics
  - Networking at the core: routing, MPLS, VPN, management
  - Networking at the edge: enterprise networks, data centers, ...
  - Applications & services: p2p, multimedia, cloud computing, ...
  - Network security and privacy

If there is a particular topic that you want to learn more, please let me know

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## Prerequisite

- Advanced level undergrad networking course → Requires CS 356 (or instructor consent)
- To refresh your memory, go through the review slides at [http://www.cs.utexas.edu/~yzhang/Teaching/cs378-s9/Slides/networking\\_review.pdf](http://www.cs.utexas.edu/~yzhang/Teaching/cs378-s9/Slides/networking_review.pdf)
- Textbooks for introductory networking
  - James Kurose and Keith Ross, "Computer Networking: A Top-Down Approach," 4th Edition, Addison Wesley, 2007. ISBN: 0321497708.
  - Larry Peterson and Bruce Davie, "Computer Networks - A Systems Approach," 3rd Edition, Morgan Kaufmann, 2003. ISBN: 155860832X.
  - S. Keshav, "An Engineering Approach to Computer Networking", Addison Wesley Longman, Inc., 1997. ISBN: 0201634422.
  - W. Richard Stevens, "TCP/IP Illustrated: Protocols", Addison Wesley.
- If you've never read any of the 4 overview books listed above, read one ASAP.

After reviewing the slides, ask me if you have any questions

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## Course Mechanics

- Basic course information
  - Course number: 54275
  - Time: Tue & Thu 2 - 3:30 PM; RAS 313A
  - Office hours: Tue & Thu 1-2 PM (or by appointment), ACES 5.248
  - Contact information: Yin Zhang [yzhang@cs.utexas.edu](mailto:yzhang@cs.utexas.edu)
- Teaching assistant
  - TBD
- Grading
  - Homework assignments 20%
  - Programming assignments 25%
  - In-class exams (two): 45%
  - Class participation (quizzes, ...) 10%
- Class home page & mailing list
  - See <http://www.cs.utexas.edu/~yzhang/Teaching/cs378-s9/>

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- Questions??
- Let's begin!
  - Should be a fun course!

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