CSE 461 Introduction to Computer-Communication Networks

Credits
4.0 (3 hrs lecture, 1hr section)

Lead Instructor
Arvind Krishnamurthy

Textbook

- *Computer Networking: A Top-Down Approach (6th Edition)*, Kurose and Ross

Course Description
Computer network architectures, protocol layers, network programming. Transmission media, encoding systems, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, network security.

Prerequisites
either CSE 326 or CSE 332; either CSE 303 or CSE 333.

CE Major Status
Selected Elective

Course Objectives
This course introduces the basics of networking, ranging from sending bits over wires to the Web and distributed computing. We focus on the networking ground between these two extremes, particularly focusing on the engineering of the Internet - goals, constraints, solutions, and experiences. The outcome of this course for you should be an appreciation of the fundamental challenges of networking, design strategies of proven value, and common implementation technologies.

ABET Outcomes
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, , and economic factors
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Course Topics

Topics will include: framing, error correction, packet switching, multi-access (Ethernet), addressing and forwarding (IP), distance vector and link state routing, queueing and scheduling, reliable transport, congestion control (TCP), quality of service, naming (DNS), and security.