

EE 4395/5390 --- Selected Areas in Communication Networks

Spring 2021

Instructor: Dr. Michael McGarry
Office: Engineering Annex 340
Telephone: 747-6955
Email: mpmcgarry@utep.edu

Texts: Computer Networking: A Top-Down Approach, 7th Edition
James Kurose and Keith Ross
Automated Network Management Systems
Douglas Comer

Course Description: This course provides a survey of contemporary topics in communication networks after covering the fundamentals of communication networks (e.g., protocol layering, error recovery, congestion control, computing shortest paths). In Spring 2021, these topics will include network management (and its automation), software defined networking, and multimedia networks.

Prerequisite: Ideally, an introductory course in communication networks. However, it is not necessary as we will cover the fundamentals of communication networks.

Class Hours: Mondays and Wednesdays 4:30PM to 5:50PM, Online

Office Hours: Mondays and Wednesdays 10:30AM to 12PM, Online

Course Outline:

Week 1: Introduction and Course Overview
Week 2: Network Performance Measures and Protocol Layering
Week 3: Transport Layer Design Principles: TCP, and UDP
Week 4: Error Recovery and its Implementation in TCP
Weeks 4-5: Congestion Control and its Implementation in TCP
Week 5: Network Layer Design Principles: IP, and Router Architecture
Week 6-7: Routing Algorithms: RIP, OSPF, and BGP
Week 7: Software-Defined Networking (SDN)
Week 8: **Midterm Exam**
Weeks 9-10: Network Management: FCAPS model
Week 11: Link Layer Design Principles: Error Detection/Correction, and Ethernet
Weeks 11-12: Media Access Control Protocols: Ethernet CSMA/CD
Weeks 12-13: Fundamentals of Data Analytics (incl. clustering and outlier detection)
Week 13: Network Data Analytics (Packet, Flow, Interface Stats)
Week 14: Protocols for Delivering Video over Packet Switched Networks
Week 14: Providing Delay and Bandwidth Guarantees
Week 15: Rate Limiting Devices, Link Sharing Packet Schedulers

Grading:

Course Portfolio/Participation	10%
Assignments/Quizzes	30%
Project	20%
Midterm	20%
Final	20%

Academic Dishonesty:

As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self responsibility. The assumption that a student's work is a fair representation of the student's ability to perform forms the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of the Dean of Students. The Dean will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the Office of the Dean of Students' homepage (Office of Student Life) at <http://studentaffairs.utep.edu/dos> for more information.

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

CASS' Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.