Computing Science Course Outlines 2019 Spring

CMPT 371 - D100 Data Communications and Networking

Instructor(s): Qianping Gu

Calendar Objective/Description:
Data communication fundamentals (data types, rates, and transmission media). Network architectures for local and wide areas. Communications protocols suitable for various architectures. ISO protocols and internetworking. Performance analysis under various loadings and channel error rates.

Instructor’s Objectives:
Communication networks play a central role in ICT (Information and Communication Technology) and our routine life. This course is an introduction to the basic concepts, principles and technologies for communication networks. The course will cover the preliminaries of the Internet and wireless networks, and give students the foundation to analyze the performance and further study advanced topics of communication networks.

Prerequisites:
CMPT 225, (CMPT 150, ENSC 150 or CMPT 295) and MATH 151 (MATH 150). MATH 154 or 157 with a grade of at least B+ may be substituted for MATH 151 (MATH 150).

Topics:
- Introduction, overview, network types, protocols
- Internet
- * Basic principles and architecture, TCP/IP and OSI protocol models
- * Network applications and protocols, Web and HTTP, E-mail and protocols, etc.
- * Transport layer service and protocols, TCP, UDP
- * Internet layer service, Internet Protocol (IP), protocols for computing routing tables
- * Network access (data link) layer service, multiple access protocols, Ethernet
- Basics in data transmission and encoding
- Wireless and mobile networks
- * Introduction, wireless links and network types, mobile networks
- * Basic technologies for wireless communications
- * IEEE 802.11 (WiFi) wireless LAN
- * Cellular wireless networks, basic concepts and principles, network standards
- * Technologies to address mobility

Grading:
Assignments 20%; midterms 30%; final 50% (tentative).
Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C- or better).

Required Books:

Reference Books:

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).