CMPT 371 - E100 Data Communications and Networking

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:
Computer networks and the Internet have become an essential part of our everyday life; almost every device that we use is either already connected to the Internet or soon will be. This course is an introduction to the principles and practical aspects of designing and operating computer networks as well as analyzing their performance.

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, Protocol Layers
- Network Applications: Network applications and protocols, HTTP, DNS, Socket programming
- Transport Layer: Transport layer services and protocols, UDP, TCP, Flow and congestion control
- Network Layer: Routing algorithms, Forwarding and addressing in the Internet, IP, Router design
- Link Layer and Local Area Networks: Multiple access protocols, Error detection, Ethernet, Bridges
- Network Security: Principles of cryptography, Public key encryption, Firewalls (time permitting)

Grading:
Assignments and Projects 30%; Quizzes 30%; Final Exam 40%
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 ).