University of Lethbridge
Department of Mathematics and Computer Science

Computer Science 3780 – Data Communications and Networking
Course Outline – Fall 2024

LECTURES: Mon Wed 9:00 – 10:15   **Room W561**

INSTRUCTORS:

Lectures:	Labs:
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TEXTS:

Main: *Computer Networking : Principles, Protocols, and Practice* 3rd Ed, by Bonaventure, available at `https://beta.computer-networking.info/syllabus/default/index.html`(under a CC License).

Supplementary reading: *An Introduction to Computer Networks* 2nd Ed, by Dordal, available at `http://intronetworks.cs.luc.edu/`.
Computer Networks: A Systems Approach, by Peterson and Davie, 2019, available at `https://open.umn.edu/opentextbooks/textbooks/771` (CC-BY)
Computer Networks 5th Ed, by Tanenbaum and Wetherall.

GRADING SCHEME:

Exams (2)	50%
Assignments (approx 5)	20%
Project (approx 7 assignments)	30%

GRADE DISTRIBUTION: This information is provided as a guideline only and may be revised in this offering. Minimum percentages for each letter grade are:

A+	95	B+	81	C+	69	D+	56
A	90	B	77	C	65	D	50
A-	85	B-	73	C-	61	F	< 50

SCHEDULE:
(as time permits):
1) Network reference models

2) Fundamental mechanisms and algorithms at the data link layer (connecting two hosts): alternating bit, go back n, sliding window protocols.
3) Fundamental mechanisms and algorithms at the network layer (connecting networks together): data and control planes, routing (distance vector and link state routing).
4) Applications and transport layer: socket based network programming, connection establishment and release.
5) Naming schemes, medium access control, congestion control algorithms.
6) Network security.
7) Protocols, if time and hardware permits: ARP, UDP, TCP, IPv6 and IPv4, DNS, HTTP, SMTP.

COMMENTS:
– Labs will introduce network and multi-threaded programming, and synchronization mechanisms in C++. Labs are designed to assist students with the project. The project is about writing code for the transport layer - students will manage the correct transfer of a file subject to communication errors.
– Work must be submitted at the scheduled time; no provision is made for make-up midterm or late assignments, except for medical reasons or emergencies. Missed tests and assignments receive 0 points.
– Requests for remarking tests and assignments are accepted only in writing *no later than one week from the date your graded work was returned.* On the request: identify the assignment or midterm, briefly explain why you believe the mark is incorrect, date and sign. Note that if your work is remarked, your grade may go up, down, or remain unchanged.
– Copying is strictly prohibited. Plagiarism can lead to severe penalties – please consult the student discipline policy at `https://www.uleth.ca/policy/resources/student-discipline-policy-academic-offenses-undergraduate-students` Any code submitted for grading will be checked for plagiarism using MOSS `https://theory.stanford.edu/~aiken/moss/`.