University of Lethbridge
Department of Mathematics and Computer Science

Computer Science 4210/5210/7210 – Wireless Networks
Course Outline – FALL 2023

ROOM & TIME: A580, 1:30 pm, Tue & Thr

INSTRUCTOR: Robert Benkoczi (office C556)
`robert.benkoczi@uleth.ca`

TEXTS: The main source for reading is from research articles.
Optional texts for reference:
Ad Hoc Wireless Networks by C. Siva Ram Murthy and B. S. Manoj.
Principles of Ad-Hoc Networking, by Michel Barbeau and Evangelos Kranakis.

GRADING SCHEME:

Theory assignments (3 or 4)	10%
Exams (2)	60%
Project assignments (approx 5)	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+	77	C+	67	D+	55
A	85	B	73	C	63	D	50
A-	80	B-	70	C-	60	F	< 50

SCHEDULE:
(as time permits):
1) Applications of ad-hoc networks. Physical layer and transmission of information. Modulation techniques.
2) Medium access (if time permits).
3) Broadcast algorithms, broadcast storm problem, connected dominating sets.
4) Unicast algorithms (routing): AODV, DSR, OLSR, geographic routing, etc.
5) Conservation of energy.
6) Security in wireless networks.

COMMENTS:
– Project: the students will attempt to create an ad-hoc wireless network using Arduino Uno micro-controllers with a simple, cheap, and popular radio transmitter (Olimex RF24L01). Pro-

gramming the micro-controllers is performed using a dialect of C++ called Processing. Programming the radio transmitter is done through high level library routines.
– Because of the nature of the project, there is little flexibility in allowing extensions to the due dates. Some project assignments are tested in class and must work with the code written by the other students. No provision is made for late submissions in this case, except for medical reasons or emergencies. Missed 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, 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.
– Plagiarism can lead to severe penalties – please consult the calendar.

LINKS

- Moodle: `http://moodle.uleth.ca/`
- Instructor's page including contact information: `http://www.cs.uleth.ca/~benkoczi/`