ELEC 496A – Selected Topics in Computer Communications: MIMO and UWB Communications

Term – Spring 2018 (201801)

Instructor      Office Hours
Dr. Xiaodai Dong     Days: Thursdays or by email appointments
Phone: 250-721-6029     Time: 1pm-2pm
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Course Objectives
- Introduce the fundamentals of 4G mobile standards, new technologies of 5G such as massive multiple input multiple output (MIMO), millimeter wave, and narrowband internet of things

Learning Outcomes
- Understand the basic components of cellular standards
- Grasp the characteristics of wireless propagation channels, in multiple antenna settings
- Understand the requirements of 5G
- Master the principles of MIMO and massive MIMO
- Understand the potentials of mmWave
- Study the cellular standards for IoT applications

Syllabus
- 4G LTE specifications
- Carrier aggregation
- LTE-U, LAA
- Channels & Millimeter wave (mmWave)
- MIMO
- Massive MIMO
- Narrowband (NB) IOT

A-Section(s): A01 / CRN 23563
Days: Mondays and Thursdays
Time: 11:30am-12:50pm
Location: ELL-060

Optional Text
Title: Fundamentals of Wireless Communication
Author: D. Tse and P. Viswanath
Publisher: Cambridge University Press
Year: 2005

Assessment:
- Presentations 40%
- Paper 1 30%
- Paper 2 30%
Note:
The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/grading.html

There will be no supplemental examination for this course.

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair’s Assistant to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/religious-observanc.html

Policy on Inclusivity and Diversity:
https://web.uvic.ca/calendar2018-01/general/policies.html

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.
https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building. The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.