EXPANDED COURSE DESCRIPTION

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Lassonde School of Engineering
Electrical Engineering Computer Science

LE / EECS 4215 3.0 SECTION M
MOBILE COMMUNICATIONS
FALL 2019 / WINTER 2020

Last Modified Date: 07/26/2019

COURSE CALENDAR DESCRIPTION

Provides an overview of the latest developments and trends in wireless mobile communications, and addresses the impact of wireless transmission and user mobility on the design and management of wireless mobile systems. Prerequisites: cumulative GPA of 4.50 or better over all major EECS courses (without second digit “5”); LE/EECS 2030 3.00 or LE/EECS 1030 3.00; LE/EECS 3213 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
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<tr>
<td>Wang, Ping</td>
<td>Sec. M / LECT / W</td>
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ADDITIONAL INFORMATION

TOPICS AND CONCEPTS

The purpose of this course is to provide an overview of the latest developments and trends in wireless mobile communications, and to address the impact of wireless transmission and user mobility on the design and management of wireless mobile systems. Topics covered may include an overview of wireless transmission; wireless channel model, basic blocks of wireless system, wireless local area networks: IEEE 802.11, Bluetooth; 2.5G/3G/4G/5G wireless technologies; mobile communication: registration, handoff support, and roaming support; multiple access techniques.

SCHEDULE OF TOPICS:

Week 1 Module 1: Introduction
Week 2 Module 2: Mobile radio channel
Week 3 Module 2: Mobile radio channel
Week 4 Module 2: Mobile radio channel
Week 5 Module 3: Basic building blocks of mobile communication systems
Week 6 Module 3: Basic building blocks of mobile communication systems
Week 7 Module 3: Basic building blocks of mobile communication systems
Week 8 Module 4: Fundamentals of cellular communications
Week 9 Module 4: Fundamentals of cellular communications
Week 10 Module 5: Mobility management
Week 11 Module 6: Multiple access techniques
Week 12 Module 7: Multiple access techniques

Depending on the flow of the course, the topics to be covered may be subject to minor change.

Course Learning Outcomes

1. Explain the operation and purpose of key components in wireless communication systems.
2. Calculate the link budget of a wireless communicator.
3. Analyse the characteristics and impact of indoor and outdoor wireless channels.
4. Analyse the coverage and throughput of wireless networks.
5. Explain the channelization and control techniques employed by cellular and LAN networks.

SUGGESTED TEXTBOOKS:

EVALUATION SCHEME
Quizzes /Assignments and labs - 20%
Midterm Examinations - 30%
Final Examination - 50%

Note: Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.

ASSIGNMENT SUBMISSION
Proper academic performance depends on students doing their work not only well, but on time. Accordingly, assignments for this course must be received on the due date specified for the assignment. Assignments may be hand written, however all those that are intelligible/messy may be at the professor’s or Teaching Assistant’s discretion be given a score of zero. Assignments are to be handed in during lectures, tutorials, or through the course Moodle site as specified by the respective instructions.

LATENESS PENALTY
All students are expected to complete their coursework (assignments etc) in a timely fashion. All late assignments reports should be given to the instructor. Late assignments etc. will be subject to a reduced grade of 20% of the maximum grade per day late (where weekends will also count as two days). A mark of zero will be applied if the assignment is submitted after the solutions have been posted.

MISSED TESTS
Students who miss the quizzes or mid-term examination (or leave the examination), due to documented illness, or miss the quizzes or mid-term examination due to prior arrangement as documented with approval as legitimate from the Course Instructor, the weight will be added to their final exam. Otherwise, the mark will be zero. There will be no alternative dates scheduled to make up the quizzes or midterm. If a student leaves the midterm examination after 25 minutes, the midterm will be graded and that mark will be applied. Absence to quizzes or midterm(s) must be accompanied by a formal and valid explanation within 24 hours of said absence. In addition to university policies on granting a deferral final exam, the granting of a deferral final exam also requires that the student has performed satisfactorily in the course according to the evaluation scheme established in this Course outline, excluding the final examination for which deferral privileges are requested.

LABORATORIES
Students are expected to conduct their labs in a safe and professional manner. Attendance to all labs (including submitting lab reports and lab components) is mandatory and a requirement for a passing grade. Absence to labs must be accompanied by a formal and valid explanation within 24 hours of said absence (valid doctor’s notes and by using said note, permission is given to the professor to inquire to its validity). It will be the student’s responsibility to catch up on the material missed by speaking with classmates.

CLASSROOM ETIQUETTE
Photography, movie making, or voice recording during class by any means is not permitted without my or the TAs permission. If you are late use a seat on the outside of the class room, the professor will ask you to leave if you cause a disruption coming in late. The use of electronic devices (smart-phones, tablets, etc.) during lectures and tutorials is only permitted for education purposes.

NETiquette
In all online communications (e.g., email, online discussion, or other forms of online communications), please consider the guidelines from the Core Rules of Netiquette by Virginia Shea (http://www.albion.com/netiquette/corerules.html). Sometimes, online behaviour can appear to be inappropriate or disrespectful that it requires attention and follow up. In this case, please make sure you let your instructor know immediately so that the right resources can be identified to help.

GENERAL POLICIES
- Marked course work/tests will be returned only during class. If you miss picking up the material during one class it will be made available to you in the next two classes.
- All appeals of marks for quizzes/assignments, and mid-term exam must be made within one week from the day of posting of results and submitted to the appropriate TA (for assignments) or to the instructor (for mid-terms).
- All course mark appeals will be addressed via email as it allows time for reflection and documentation. Appeals will not be done by in-person-meeting.
- The final examination is for evaluation purposes only, and the paper will not be returned or made available to students after it is marked. Each exam is checked three times for accuracy.

REMINDEARS
- All students are expected to familiarize themselves with the following information:
  - General information (http://calendars.registrar.yorku.ca/2013-2014/policies/index.htm)
  - Senate policy on academic honesty and the academic integrity website (http://www.yorku.ca/secretariat/policies/document.php?document=69) and (http://www.yorku.ca/tutorial/academic_integrity/)
  - Ethics review process for research involving human participants (http://www.yorku.ca/research/support/ethics/)
  - Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities (http://www.yorku.ca/secretariat/policies/document.php?document=68)
  - Additional resources related to add/drop courses, student life, academic resources, campus services, …etc. can be found at this link: http://www.yorku.ca/yorkweb/cs.htm

COPY-RIGHT
Lectures and course materials, including power point presentations, outlines, and similar materials, are protected by copyright. The instructor is the exclusive owner of copyright and intellectual property in the course materials. You may take notes and make copies of course materials for your own educational use. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly for commercial and non-commercial purposes without my express written consent. If it can be shown that these terms were violated by you, your grade can be changed to an F even after the course is completed.

ACADEMIC INTEGRITY LINKS
- Senate Policy on Academic Honesty - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
- Academic Integrity - http://lassonde.yorku.ca/academic-integrity

STUDENT LINKS
- Student Rights and Responsibilities - http://oscr.students.uit.yorku.ca/student-conduct
- Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
- Student Accessibility Services (SAS) - https://accessibility.students.yorku.ca/
LAND ACKNOWLEDGEMENT

- We acknowledge our presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Métis. It is now home to many Indigenous Peoples. We acknowledge the current treaty holders, the Mississaugas of the New Credit First Nation. This territory is subject of the Dish With One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.
- The Indigenous Framework for York University: A Guide to Action can be found here: http://indigenous.info.yorku.ca/
- Meaning of a land acknowledgement: http://healthydebate.ca/opinions/indigenous-land-acknowledgements

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.

Moodle @ York University