Tentative Syllabus CSI 5140-P00
Information and Communication Systems for Smart Cities
Fall 2018

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Office Hours:

Teaching Assistants: TBD

Course Schedule:
LEC (5 Sep 2018 - 5 Dec 2018) Thursday 19:00-21:50 FSS 1005

Class attendance is mandatory. As per academic regulations, students who do not attend 80% of the class will not be allowed to write the final examinations.

All components of the course must be fulfilled; otherwise students may receive an INC as a final mark (equivalent to an F).

Calendar Style Description:

Description
This course is an introduction to relevant information and communication technologies (ICTs) required for coordinated, efficient cities. Three primary foci will be on smart cities sensing, analytics, and information security and privacy. Topics will include: a thorough presentation of information and communication infrastructures for smart cities, namely cloud and mobile edge solutions for computing, processing and storage, detailed investigation of opportunistic and participatory sensing solutions, analytics as a service, and information security and privacy in smart cities. An emphasis will be given on the design and analysis of Internet of Things (IoT) infrastructures, protocols and communication models; and the role of device-to-device networks in the realization of smart cities.

Prerequisite:
CEG3185 Introduction to Data Communications and Networking or permission of the professor
**Academic Integrity** is expected from all students participating in this course and academic fraud will not be tolerated. All students should be familiar with the University of Ottawa Academic Integrity WEB site at [http://web5.uottawa.ca/mcs-smc/academicintegrity/home.php](http://web5.uottawa.ca/mcs-smc/academicintegrity/home.php)

**Course Objectives**

By the end of the course, students:
- how to meet networking and communication challenges in smart cities
- how to achieve large scale and ubiquitous sensing in smart cities
- how to use digital technologies to improve well-being of citizens
- how to meet security and privacy needs in smart cities
- analytics as a service in smart cities
- an introduction to auction and game theoretic approaches in smart city applications

**Week-by-week Description:**

- Week-1: Introduction and Overview of Key Enabling Technologies for Smart Cities
- Week-2: Software Defined Things and Networks in Smart Cities
- Week-3: Service Discovery Protocols for Smart Cities
- Week-4: Wireless Sensor Networks and Smart Grids/Microgrids
- Week-5: Vehicle as a service and vehicular clouds
- Week-6: Sensing as a Service (SaaS)
- Week-7: Trustworthiness, reliability and privacy in SaaS
- Week-8: Big data acquisition: Auction models
- Week-9: Big data acquisition: Game theoretic models
- Week-10: IoT-Data analytics ecosystems
- Week-11: Open Data and Information Security & Privacy
- Week-12: Project Presentations

**Text**

- McClellan, Stan, Jimenez, Jesus, Koutitas, George; “Smart Cities : Applications, Technologies, Standards, and Driving Factors” Springer, ISBN 978-3-319-59381-4

**Term Project:** The project will have three phases: 1) Proposal and presentation of the state of the art (in writing), 2) Implementation and presentation of project outcomes, 3) Final report. You may work in groups of two; however if you work in a group of two; your individual performance will be evaluated in all phases. In all reports, both members have to clearly indicate the contributions of each team member, and the reports have to be signed by both project members

**Quizzes:** 4 quizzes will be given; each will contribute to 9% of your final grade. **No make up quizzes will be given. No exceptions will be made for missed quizzes.**

**Midterm:** Midterm is a closed book, in-class exam. Target date is either one week before or after the study break.
Note: Rules and regulations will be posted on the course web site, as well as how to deal with late copies.

Grading

<table>
<thead>
<tr>
<th>Term project- Phase I (Proposal + Presentation of the state of the art)</th>
<th>7%</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>9% x 4 = 36%</td>
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<tr>
<td>Midterm Examination</td>
<td>30%</td>
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<tr>
<td>Term project- Phase II (Implementation + Presentation)</td>
<td>20%</td>
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<tr>
<td>Final Report</td>
<td>7%</td>
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