

Fall 2015

Seminar in Identity, Privacy and Security JIE1001F/ECE1518F

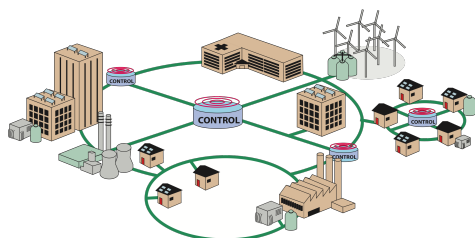
The Edward S. Rogers Sr. Department of Electrical & Computer Engineering
University of Toronto



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Seminar in Identity, Privacy and Security: Cyber-Physical Security of the Smart Grid

Information technology facilitates greater efficiency, cost effectiveness and timeliness of data thus driving cyber-enabled innovation. The higher granularity and accessibility to personal and sensitive data in our information-driven world, however, brings forth natural challenges in addressing identity, privacy and security. This seminar course aims to bring together several challenges and solutions related to identity, privacy and security as it relates to the emerging cyber-enabled power grid known as the *smart grid*. The security of a system is as strong as its weakest link. Thus, the scale and complexity of the smart grid provides a natural framework to discuss diverse threats and attacks, and multidisciplinary mitigation approaches. Moreover, the smart grid also represents a prototypical *cyber-physical system* requiring a recasting of the classical definitions for security to include a cyber-physical context.



This course introduces students to timely topics in cyber-physical security, privacy and identity of modern energy systems. Fundamental technical principles of information security and power delivery will be provided in lectures followed by technological solutions for smart grid cyber-physical security based on research papers and technical reports. Invited public seminars and assigned group work will establish breadth of the topic touching upon multidisciplinary issues and tensions related to policy, governance and technology.

Lectures

Mondays	11:00 am – 1:00 pm	BA 4164	(regular lecture)
Mondays	11:00 am – 2:00 pm	TBA	(public seminar)

Main References

1. Class notes;
2. Tony Flick and Justin Morehouse, *Securing the Smart Grid: Next Generation Power Grid Security*, Syngress, 2011; <http://go.utlib.ca/cat/8059709>;
3. Copies of relevant papers/reports related to public seminars.

Please note that seminar speakers may give additional references in relation to their discussion.

Composition of Final Mark

Assignments (3-4):	65 %
Final Project:	35 %

Tentative Syllabus of In-Depth Lectures

- Introduction to Energy Systems and the Smart Grid
- Communications and Sensing in the Smart Grid
- Information Security and the C-I-A Paradigm
- Networks and Network Security Practices
- Reliability, Security, Resilience and Survivability
- Risk Management
- Smart Grid Threats, Vulnerabilities and Cyber Security Strategies
- Cyber Security Environment, Federal Initiatives and Regulatory Compliance

Complementary invited public seminars are intended to cover a breadth of topics related to policy, governance, technology and commerce as it relates to the theme of energy systems.

Course Website

The course will make use of Blackboard (<http://portal.utoronto.ca>) for important course announcements. *All students must register on Blackboard and check it regularly.* Course notices, handouts and general information will be administered using the course website at: <http://www.comm.utoronto.ca/~dkundur/course/jie-1001ece-1518-seminar-in-identity-privacy-and-security/>.

Course Policies

- Questions regarding marking must be formally written on a piece of paper and submitted along with the associated test/assignment to myself or the cognizant TA. There is a 48-hour limit from the time the test/assignment is first returned in which you may request a recheck.
- Please note that late assignments and projects will be deducted 10% per business day.
- Academic integrity is of utmost important. Any issues of plagiarism and inappropriate collaboration will be taken seriously and reported to the appropriate higher authority.
- Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or Accessibility Services at (416) 978 8060; <http://accessibility.utoronto.ca>.