FAMU-FSU College of Engineering

EEL 4930/5930 Cyber-Physical Systems Security
Spring 2020
Prof. Charalambos (Harrys) Konstantinou
Meeting Time: TR 11am-12:15pm

Course Description: The course covers introductory topics in security at both the physical layer and the cyber layer of Cyber-Physical Systems (CPS) (especially smart grid systems). The main objective of the course is to expose students to fundamental information security primitives and to understand the challenges in designing and securing CPS. Students will investigate different techniques used to model and analyze industrial CPS processes.

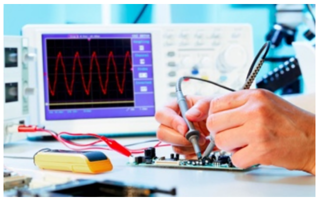
Prerequisites: The course is largely self-contained and will introduce the necessary technologies required for a qualitative (rather than quantitative) understanding of the security landscape of industrial CPS. Undergraduate/graduate courses in power systems, computer architecture, networking, and programming are preferred but not required (e.g., EEL 3112, EEL 3705, EEL 3216, COP 3330, COP 3353, EEL 4713, EEL 4746). It is assumed that the students are familiar and have good background using a least one programming language, such as C, C++, Python, MATLAB, etc.

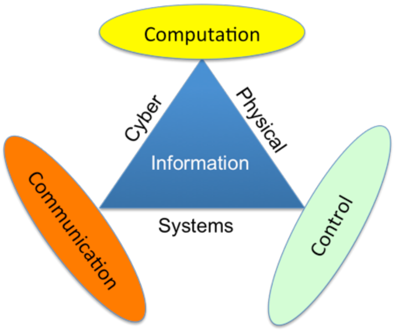
Grading and Exams:

- Online Active Participation (15%)
- Midterm (15%)
- Final Exam (10%)
- Assignments [6 hands-on labs] (60%).

Topics:

- Threat modeling
- Cyber infrastructure for CPS
- Industrial control systems
- Cryptography
- Passwords
- Network Security
- Systems vulnerabilities
- Electric utilities
- Advanced security topics
  - Hardware performance counters
  - Multi-party computation
  - Architectural side-channel attacks
  - Process-aware attacks




Computation
Cyber
Physical
Information
Systems
Communication
Control