Intro Cyber Phys Sys Sec

Course Information

Instructor: Saman Zonouz (szonouz6@gatech.edu)
Course Prefix and Number: ECE 6770 OCY
Term: Summer 2026

Course Description

The course covers introductory topics in cyber-physical systems security. The goal is to expose students to fundamental security primitives specific to cyber-physical systems and to apply them to a broad range of current and future security challenges. Much of the course is taught with the focus on one instance of cyber-physical systems - Industrial Control Systems (ICSs). However, students will be expected to generalize the concepts for other cyber-physical systems.

Students will work with various tools and techniques used by hackers to compromise computer systems or otherwise interfere with normal operations. Students will also use tools that are unique to interacting with cyber-physical systems. The purpose of the class is NOT to teach you how to be a hacker, but rather to teach you the approaches used by hackers so you can better defend against them. Students will be graded based upon exams and completion of assignments.

Course Learning Outcomes

Describe what cyber-physical systems are

Demonstrate what makes cyber-physical systems hard to secure

Analyze common methods used to secure cyber-physical systems

Evaluate the differences between securing traditional enterprise systems and cyber-physical systems

Required Course Materials

There are two required textbooks. We cover lots of really good material and no one textbook has it all. These are excellent references and will serve you well in future jobs or research projects. We will also occasionally review conference and journal publications. You can either

buy these books or get access to them through Georgia Tech library's website. As students, you have access to all the journal articles and book services subscribed to by the university. You just have to log in similar you would in Canvas.

Industrial Network Security, Second Edition
Securing Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control Systems
Authors: Eric D. Knapp and Joel Thomas Langill
ISBN: 978-0124201149

Applied Cyber Security and the Smart Grid
Implementing Security Controls into the Modern Power Infrastructure
Authors: Eric D. Knapp and Raj Samani
ISBN: 978-1597499989

Grading Policy

Paper Presentation 10%

Mini Projects 60%

Exams 30%

Attendance Policy

This course does not include scheduled class meetings.

Academic and Research Honesty/Integrity Statement

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research for this thesis course.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Core IMPACTS

Not applicable.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Expectations of Advisors and Advisees

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Expectations of Advisors and Advisees articulates some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.