Course Outline

1. Document Information

Degree Program	Computer Science
Course Number	CS 531
Course Title	Security in Cyber-Physical Systems
Semester Hours	3
Course Coordinator	Abdullah Aydeger
Revision Term	Fall 2020
Latest Revision	Spring 2021

2. Catalog 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. Various tools and techniques used by hackers to compromise computer systems or otherwise interfere with normal operations are explored including tools that are unique to interacting with cyber-physical systems.

3. Textbooks

- Knapp, E. & Langill, J. T. (2015). Industrial Network Security. Wiley Press, 2nd Edition.

4. References

5. Course Learning Outcomes

- Introduction to the mathematical and technical background on Cyber-Physical Systems.
- Study security and privacy vulnerabilities of Cyber-Physical Systems in various application domains and provide security mechanisms to handle them.

6. Assessment of the Contribution to Student Outcomes

Outcome	1	2	3	4	5	6	7
Assessed	X	X	X	X	X	X	X

7. Prerequisites by Topic

Graduate standing or consent of the instructor.

8. Major Topics Covered in the Course

1. Introduction (10 Lectures)
   Fundamentals of Cyber Physical Systems (5 Lectures)
   Discrete and Continuous Modeling (5 Lectures)
2. Risks, Intrusion Detection, and Analysis, and Attacks (10 Lectures)
3. Security and Access Controls (5 Lectures)
4. Monitoring, Regulations, Standards, and Controls (5 Lectures)