

WILMINGTON UNIVERSITY  
COLLEGE OF TECHNOLOGY  
**Course Syllabus**

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**FACULTY MEMBER:**

**TERM:**

**COURSE TITLE:** Industrial Control Systems (ICS) Security

**COURSE NUMBER:** SEC 6082

**OFFICE HOURS/METHOD OF CONTACT:**

**REQUIRED TEXT:** No Text Required

**Technical Requirements that may be required to utilize technology in this course:**

A headset or microphone.

You will need access to a high-speed computer equipped with Internet access, Microsoft Word, Microsoft PowerPoint or MS PowerPoint viewer, which you can download for free from the Internet, and a printer. You should be able to access Canvas as that is where details of assignments and resources needed to complete them will be located.

**COURSE DESCRIPTION:**

This course will include cover security of Industrial Control Systems Architecture by

**Learning Outcomes:** The student will be able

- A-1 Define critical infrastructure, protection, and resilience in the context of the National Infrastructure Protection Plan (NIPP).
- A-2 Describe critical infrastructure in communities and the impact Lifeline sector assets have on a community's resiliency.
- A-3 Describe the processes that support critical infrastructure security and resilience.
- A-4 Identify strategies and methods for achieving results through critical infrastructure partnerships.
- A-5 Describe the roles and responsibilities of entities such as the DHS, sector-specific agencies, and state, local, tribal, and territorial governments.
- A-6 Discuss common standards bodies, such as the North American Electricity Reliability Council (NAERC) and the National Institute of Standards and Technology (NIST).
- A-7 Understand which certifications are required to protect critical infrastructure.

**GOAL B:** Become familiar with how Control System Assets interact with Industrial Control Systems

**Learning Outcomes:** The student will be able

- B-1 Describe the architecture components of an Industrial Control System
- B-2 Identify the differences between an IT system and Industrial Control Systems
- B-3 Demonstrate knowledge of application characteristics of Industrial Control Systems architecture.
- B-4 Recognize devices used within industrial networks and the role that they play
- B-5 Examine how Industrial control systems are going through a change in Automation.
- B-6 Distinguish between Critical and Non-Critical Industrial Control Systems
- B-7 Describe various ICS vs IT architecture vulnerabilities that impact Industrial control systems architecture.

**GOAL C:** Gain an understanding of relevant Standards and Organizations related to Industrial Control Systems

**Learning Outcomes:** The student will be able

- C-1 Identify several types of networking hardware and explain the purpose of each.
- C-2 Identify and describe the functions of common communications protocols and network standards used within CI.
- C-3 Identify new types of network applications and how they can be secured.
- C-4 Develop an understanding in the differences between IPv4 and IPv6.
- C-5 Discuss the unique challenges/characteristics of devices associated with industrial control systems.
- C-6 Identify the unique challenges that exist in securing Industrial Control Systems versus s



**LEARNING ACTIVITIES:**

Reading Assignments / In-Class Activities / Lectures / Structured External Assignment / Online Certification

**METHODOLOGY:****A. Teaching Methods:**

Teaching methods will include a combination of lectures, discussion, and structured in-class lab activities. A cooperative and participative learning strategy will be employed with every expectation that the student will contribute heavily, in a self-directed action-learning mode, to this education experience. Students should anticipate that assignments, and this syllabus, will be adjusted to match the pace of the course, the class size, and to meet the needs of individual students. Students are expected to be actively and fully engaged in classroom discussions.

