THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Cybersecurity

ECE 5561

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Introduction to cybersecurity. Technical fundamentals of data, software, component, network, and system security. Cybersecurity from an organizational and societal view point, including human factors.

Prerequisites and Co-requisites:
Prereq: Jr, Sr, or Grad standing, or permission of instructor.

Course Goals / Objectives:
- Become familiar with fundamental cybersecurity concepts, technologies and practices, and develop a foundation for further study in cybersecurity.
- Become familiar with fundamentals of data security.
- Become familiar with fundamentals of software security.
- Become familiar with fundamentals of connection/network security.

Course Topics:
- Basic concepts and definitions. Historical context. Cybersecurity frameworks.
- Data Security: Basic cryptography concepts, methods for data integrity and authentication, information storage security.
- Software security: software design with security requirements, testing, configuration management.
- Component security: Design, procurement, analysis, and maintenance of tangible components that are integrated into larger systems.
- Connection security: Security for networked systems, secure transmission models, common types of connection and transmission attacks.
- System security: System thinking, common system architectures, system management, access, control, and testing.
- Human security: identity management; personal awareness, understanding and compliance; human behavioral factors; personal data privacy and security.
- Organizational security: governance and policy strategies for organizations; cybersecurity risk management; legal and regulatory issues.
- Societal security: cybercrime, cyberlaw, cyberethics, cyberpolicy, privacy.
- Project presentations on complementary topics: hardware security, infrastructure security, cryptocurrencies etc.

Designation:
Elective