

Course Designator/ Course Number: CprE 537

Course Title: Wireless Network Security

Course Length: 45 hours in 15 weeks, 3 one hour meetings per week

Course Description:

Wireless network security is a key element in modern information assurance (IA). The need for engineers trained in IA is a critical national priority. Because of the exponential growth that is expected in wireless networking, it is essential that students specializing in IA obtain a good background in wireless security.

The first third of the course focuses on the communication system theory associated with the physical layer of the network. The material is designed to give non-communications students a good background in the elements of communication theory that are incorporated in the physical layer. Using this approach, students will not need a prior course in communication theory.

Course Learning Objectives:

Upon completing this course a student will:

- Understand the relationship between network layers, network services and functions.
- Understand the functions of the layers in a wireless communication system.
- Be able to describe methods of advanced data modulation.
- Understand basic electronic countermeasures and electronic counter-countermeasures for wireless communications.
- Be able to describe methods of detection, disruption (denial of service or jamming), and interception and understand appropriate countermeasures.
- Understand issues of network communications such as service, confidentiality, authentication, reliability, access control, and availability.
- Understand the security problems with wireless transmissions.
- Be able to describe the use of wireless security technologies such as frequency hopping, time hopping, direct-sequence spread spectrum, etc.

Major Topics:

- Introduction to the Physical Channel (Physical Layer)
- Communication and Networking
- Overview of Wireless Communications Security

- Wireless Security Technologies

Method of Instruction:

The course is taught using lectures, and project assignments.

Evaluation Methods:

Examinations:	Three exams (80 min)	70%
Projects:	Major	25%

Student Enrollment:

On campus: 32 per year