Dept Number: CS 510
Course Title: Wireless and Network Security

Semester Hours: 3
Course Coordinator: Kemal Akkaya

Catalog Description: Advanced security concepts of distributed systems and wireless networks are presented. Topics include IEEE 802.11 security, Wireless Encryption and Authentication, Key Management in Networks, Distributed Denial of Service Attacks, Routing Security, Intrusion Detection and Mobile Code Security.

Textbooks

References

Course Learning Outcomes
- To introduce the principles, mechanisms and implementation of security in distributed systems.
- To provide a thorough coverage of the up-to-date wireless encryption and authentication protocols.
- To introduce the details of distributed security attacks and how to detect and handle such attacks.
- To have students gain hands-on experience with programming techniques for wireless security protocols.

Assessment of the Contribution to Program Outcomes

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Prerequisites by Topic
CS410 with a grade of C or better or consent of the instructor.
1. Introduction
   Wireless Basics
   Review of Characteristics of Wireless Networks
   Review of Routing in Wireless Networks
   Review of IEEE 802.11 and Bluetooth {3 classes}

2. Wireless Encryption and Authentication
   Review of Security Basics
   WEP, WPA, WPA2
   IEEE 802.11x, IEEE 802.11i, VPN over Wireless, RC4, RC5
   Bluetooth Security
   Encryption and Authentication in Wireless Sensor Networks {10 classes}

3. Key Management
   Key Management in Wired Networks
   Key Management in Wireless Networks {9 classes}

4. Distributed Trust
   Trust Models in Distributed Systems
   Reputation based Trust
   Recommendation based Trust {3 classes}

5. Routing Security
   Routing Security Attacks
   Routing Security of Internet / BGP
   Routing Security of Mobile Ad Hoc Networks
   Routing Security of Wireless Sensor Networks {9 classes}

6. Intrusion Detection
   Intrusion Detection in Wired Networks
   Host-based and Network-based IDS
   Intrusion Detection in Wireless Networks {6 classes}