



# Syllabus

## CpE691 – Information Systems Security

### Course Objectives:

History of network security; Classical information security; Cryptosecurity; Kerberos for IP networks; Private and public keys; Nature of network security; Fundamental framework for network security;; Analysis and performance impact of network topology;; Vulnerabilities and security attack models in ATM, IP and mobile wireless networks; Security services, policies, and models; Trustworthy systems; Intrusion detection techniques - centralized and distributed; Emulation of attack models and performance assessment through behavior modeling and asynchronous distributed simulation; Principles of secure network design in the future; Projects in network security and student seminar presentations.

- The goal of Information Systems Security is to familiarize students with the security issues and technologies involved in modern information systems, including computer systems and networks.
- Students will gain an understanding of the various ways in which information systems can be attacked and tradeoffs in protecting networks.
- Students will gain an appreciation of the need to develop an understanding of underlying system applications and potential security issues early in the design process.

### Course Outline:

Week 1. Security Introduction  
Week 2. Cryptography  
Week 3. Essential Security Concepts  
Week 4. Trusted Systems and Security Models  
Week 5. Authentication, Kerberos  
Week 6. Availability, DoS Attacks  
Week 7. ATM Networks – Performance and Attacks  
Week 8. IP Network Performance – QoS and DoS  
Week 9. Key Management for Secure Networks  
Week 10. Security Protocols  
Week 11. Security Protocols - continued  
Week 12. Biometrics, TEMPEST  
Week 13. Student final project “presentations”

### Course Material:

Lecture Notes

Bruce Schneier, “Secrets and Lies: Digital Security in a Networked World,” Wiley, ISBN 0-471-25311-1  
---, Applied Cryptography: Protocols, Algorithms, and Source Code in C, Wiley, ISBN 0-471-11709-9.

Websites

### Grades:

*Available Points*

- ✓ Research papers (2) – 20% each
- ✓ Research seminar paper “presentation” – 20%
- ✓ Final project report – 20% (individual or small group effort)
- ✓ Final project presentation – 10%
- ✓ Participation in class discussions (webCT discussion groups) – 10%

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100 total points for the course (extra credit available for each deliverable)