

COURSE OUTLINE OF RECORD

Dept., Number	CST 6309	Course Title	Network Security
Semester Hours	3		
Year	2006	URL (if any):	

Current Catalog Description:

This course examines topics related to the security of computer systems and communication networks, focusing in particular on the security aspects of the web and Internet. Topics include: system issues, fundamentals of cryptography, security for Internet protocols, security for operating systems and mobile programs, and technology for electronic commerce. The basics of the mathematics of cryptography and its applications, conventional or symmetric encryption and public key, electronic mail security, web security and protocols for secure electronic commerce are also covered. Prerequisite: CST 5328.

Textbook(s):

1. Cryptography and Network Security: Principles and Practices, 4th Edition, William Stallings, Prentice Hall, Upper Saddle River, NJ, ISBN 0-13-187316-4.
2. Network Security Essentials: Applications and Standards, 2nd Edition, William Stallings, Prentice Hall, Upper Saddle River, NJ, ISBN 0-13-035128-8 (alternate)

Course Goals:

1. To provides a broad introduction to host-based and Internet-based computer security. Topics covered include an introduction to cryptography, authentication protocols, Internet vulnerabilities such as denial of service (DoS) attacks, worms and virus propagation, and techniques to secure the Internet such as firewalls, intrusion detection systems and Web and IP Security.

Prerequisites by Topic:

Major Topics Covered in the Course (number lecture hours):

1. Overview of Network Security (6 hours)
 - Classical Encryption Techniques
 - Block Ciphers and the Data Encryption Standard
 - Public-key cryptography and RSA
 - Key Management; Other Public-key Cryptosystems
 - Message Authentication and Hash Functions
 - Hash and MAC Algorithms
 - Digital Signatures and Authentication Protocols
2. Network Security Practice (18 hours)
 - Authentication Applications (Kerberos, X.509)
 - Electronic Mail Security (PGP, S/MIME)
 - IP Security
 - Web Security (SST/TSL, SET)
3. System Security (6hours)
 - Intruders
 - Malicious Software
 - Firewalls

Laboratory Projects (number weeks each):

Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Data Structures		
Software Design			Prog. Languages		
Comp. Arch.					

Oral and Written Communication:

Two written assignments will be used to reinforce class exercises. There will be scheduled one-hour tests. Each student will present a book chapter and one scientific article distributed by instructor. Final exam is also comprehensive.

Social and Ethical Issues:**Theoretical Content:****Problem Analysis:****Open-Ended Design:**