THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Network Security

CSE 5473

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate

Course Components:
Lecture

Course Description:
Security threats and services, elements of cryptography, protocols for security services, network and internet security, advanced security issues and technologies.

Prerequisites and Co-requisites:
Prereq: 3461 (677) or 5461.

Course Goals / Objectives:
- Competent with some protocols for security services
- Competent with network security threats and countermeasures
- Familiar with fundamentals of cryptography
- Familiar with network security designs using available secure solutions (such as PGP, SSL, IPSec, and firewalls)
- Familiar with advanced security issues and technologies (such as DDoS attack detection and containment, anonymous communications, and security properties testing, verification and design)
- Exposed to original research in network security

Course Topics:

- Security threats and services
- Elements of cryptography: (1) Classic ciphers, modern ciphers, stream ciphers and block ciphers; (2) Secret key (symmetric): DES/AES and public key (asymmetric): RSA
- Protocols for security services: (1) Key distribution and management, (2) Data integrity and message authentication codes, (3) User authentication; (4) Non-repudiation and digital signatures
- Network and internet security: (1) Transport-level security, (2) Wireless network security, (3) Email security, (4) IP security
- Advanced security issues and technologies such as firewalls, intrusion detection, active worm defense, DDoS attacks and defense, anonymous communications, security in routing (OSPF and BGP), sensor network security

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Designation:

Elective