

MISSOURI WESTERN STATE UNIVERSITY
COLLEGE OF LIBERAL ARTS AND SCIENCES

DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS, AND PHYSICS

Course Number: CSC 410
Course title: COMPUTER AND NETWORK SECURITY
Instructional Methods: FACE TO FACE

Catalog Course Description:

This course covers various facets of network security and the tools that are available to secure and monitor networks. Topics include commercial and open source security tools, public-key cryptography, firewalls, authentication, intrusion detection, control of malicious code, OS hardening fundamentals, and security assessment.

Prerequisites:

Completion of at least six credit hours of CSC courses numbered 300 or higher, or completion of CIS minor core.

TEXT:

COURSE OBJECTIVES

- demonstrate the ability to implement software that is robust against common security attacks,
- understand the capabilities of modern cryptographic systems and apply them appropriately,
- decompose system security requirements into confidentiality, integrity, and availability components,
- assess threats to and vulnerabilities of a computer system,
- evaluate the level of risk associated with various types of threats,
- justify appropriate countermeasures in response to identified threats,
- identify legal and ethical ramifications of policy decisions and defend those decisions
- distinguish desired system features (policy) from their implementation (mechanism).
- design a security plan for an instructor-supplied system description,

COURSE TOPICS COVERED

- System Security: hacker behavior, intrusion & anomaly detection, hacker and admin tools
- Networks & Infrastructure: TCP/IP, Denial of Service, IPSEC, TLS/SSL
- Basic Cryptography: Shared key crypto (AES/DES), Public Key Crypto (RSA), hashes
- Crypto software: Open SSL library, applications (authentication, digital signatures)
- Trust & Configuration management
- Malicious code: buffer overflows, viruses, worms, protection mechanisms
- Covert Channels