

CSS 337: Secure Systems

Course Description:

Explores the technologies, strategies, and tools used to protect and detect computing infrastructure from cyber attacks. Prepares students with basic knowledge and skills needed to configure, review, and assess the security of complex computing systems within an organization. Discusses the ethical and professional expectations of personnel performing related cyber security work.

Work Load and Grading:

Course Work	Percentage	Grades	Approximately Corresponding Numeric Grade
Workshop 1	10%	90s	3.5 - 4.0
Workshop 2	10%	80s	2.5 - 3.4
Workshop 3	10%	70s	1.5 - 2.4
Workshop 4	10%	60s	0.7 - 1.4
Workshop 5	10%		
Quizzes	20%		
Exam #1	30%		

Workshops:

Workshops consist of hands-on activities to gain practical experience with tools and techniques related to the workshop topic. Each workshop includes about 1 hour of guided work in class and requires reflection and discussion be performed outside of class and submitted within one week of the workshop.

Textbooks:

Smith, S., Marchesini, J. The Craft of Secure Systems. Addison-Wesley, 2008.

Course Goals:

- Describe security subsystems including cryptographic, authentication, and authorization services
- Explain best practices for the configuration of security subsystems on commonly used platforms
- Identify configuration issues, known vulnerabilities, and other weaknesses of a system using appropriate tools
- Monitor and analyze network traffic to detect potential attacks using appropriate tools
- Describe policies and procedures to minimize and report risks in an operational environment

- Discuss the ethical and professional issues facing cyber security personnel

Topics covered and tentative 337 schedule:

Week	Topics	Chapters	Assignment
0	Intro	Ch 1-3, 11	
1	Cryptography	7-8	
2	Authentication/Authorization	9	
3	Networks & Security	5, 10	
			Network Basics Workshop
4	Operating System Security	4	
			Security Basics Quiz
5			Windows Workshop
			Linux Workshop
6	Applications and Services	12, 13, 14	
7	Scanners and Related Tools		Vulnerability Analysis Workshop
	Sniffing and Traffic Capture		Quiz -- Operating Systems & Applications
8	Social Engineering	18	Research Part 2 Due
		17	Traffic Analysis Workshop
9	Machine Learning and Security		
10			Exam