CSE 5472: Information Security Projects

Course Description
Team-based projects: solve information security problems (mobile/static host/network hardening, intrusion detection and vulnerability scanning, forensics); results communicated through report writing and presentation.

Prior Course Number: CSE 652
Transcript Abbreviation: Info Sec Projects
Grading Plan: Letter Grade
Course Deliveries: Classroom
Course Levels: Undergrad, Graduate
Student Ranks: Senior, Masters, Doctoral
Course Offerings: Autumn
Flex Scheduled Course: Never
Course Frequency: Every Year
Course Length: 14 Week
Credits: 3.0
Repeatable: No
Time Distribution: 2.0 hr Lec, 1.0 hr Lab
Expected out-of-class hours per week: 6.0
Graded Component: Lecture
Credit by Examination: No
Admission Condition: No
Off Campus: Never
Campus Locations: Columbus
Prerequisites and Co-requisites: (CSE 3901 or CSE 3902 or CSE 560) and (CSE 3461 or CSE 5461 or CSE 5471)
Exclusions: Not open to students with credit for CSE 652
Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No
The course is a GEC: No
The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901
Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

Course Goals

Be competent with the use of VMWare to create flexible, complex virtual computer networks.
Be competent with techniques for hardening various operating systems (Linux and Windows) and services running on these systems (web, database, others).

Be familiar with issues involved in the configuration and use of firewalls, intrusion detection/prevention, and vulnerability scanning/exploit tools.
Be familiar with common software vulnerabilities and techniques for finding and fixing them.
Be familiar with host security standards and laws such as HIPAA, PCI, Ohio House Bill 104, OWASP, NSA, CSI and so on.
Be familiar with general goals of and issues pertaining to computer forensic analysis and incident response.
Be exposed to a wide variety of computer security tools, especially forensics and investigation tools and scanning tools.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Host hardening: configuration, patching, logging & monitoring, host-based intrusion detection, etc.	4.0		2.0					
Network Security: vulnerability scanning and enumeration, web application scanning, VPN, sniffing, network-based intrusion detection, etc.	4.0		2.0					
Computer Investigations: incident response, forensics, malware analysis, etc.	4.0		2.0					
Miscellaneous topics relating to information security	2.0		1.0					
VMware, project objectives	10.0		5.0					
Group presentations	4.0		2.0					

Representative Assignments

Host Hardening Project
Network Security Project
Computer Investigation Project

Grades

Aspect	Percent
Host Hardening Project - paper, presentation, lab notebook	30%
Network Security Project - paper, presentation, lab notebook	30%
Computer Investigation Project - paper, presentation, lab notebook	30%
Participation, attendance, peer evaluations	10%

Representative Textbooks and Other Course Materials

Title	Author
Various, from the Internet	

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
**	a	An ability to apply knowledge of mathematics, science, and engineering.
***	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
**	d	An ability to function on multi-disciplinary teams.
***	e	An ability to identify, formulate, and solve engineering problems.

Course Contribution		College Outcome
***	f	An understanding of professional and ethical responsibility.
**	g	An ability to communicate effectively.
***	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
**	i	A recognition of the need for, and an ability to engage in life-long learning.
**	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

BS CSE Program Outcomes

Course Contribution		Program Outcome
**	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
***	b	an ability to design and conduct experiments, as well as to analyze and interpret data;
**	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
**	d	an ability to function on multi-disciplinary teams;
***	e	an ability to identify, formulate, and solve engineering problems;
***	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
**	g	an ability to communicate effectively with a range of audiences;
***	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
**	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
**	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
**	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
*	m	an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
**	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

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