



Brief Course Description (50-words or less)	Basic concepts of computer security and the theory and current practices of authentication, authorization, and privacy mechanisms in modern operating systems and networks.
Extended Course Description / Comments	N/A
Pre-Requisites and/or Co-Requisites	CSCI 4730 Operating Systems Or CSCI 4760 Computer Networks
Required, Elective or Selected Elective	Selected Elective Course
Approved Textbook	Author(s): Jon Erickson Title: Hacking: The Art of Exploitation Edition: 2 ISBN-13: 978-1593271442 Author(s): Wenliang Du Title: Computer Security: A Hands-on Approach Edition: 3 ISBN: 978-17330039-5-7
Specific Learning Outcomes (Performance Indicators)	<p>This course presents the strengths and weakness of security mechanisms that are built into existing system and networks. The course will make students aware of the common programming mistakes that could lead to potential security compromises and help them avoid these situations. At the end of the semester, all students will be able to do the following:</p> <ol style="list-style-type: none">1. Classify symmetric and asymmetric cryptography algorithms and explain the difference between them.2. List the fundamental goals of computer and network security.3. Explain the points of strength and weakness of different authentication and authorization mechanisms.4. Give examples of common software vulnerabilities.5. Explain and implement common computer security attack and/or defense techniques.6. Explain the process of malware infection on computer system and networks.

ABET Learning Outcomes

- A. Graduates of the program will have an ability to: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- B. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- C. Communicate effectively in a variety of professional contexts.
- D. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- E. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- F. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Relationship Between Student Outcomes and Learning Outcomes

Specific Learning Outcomes	ABET Learning Outcomes						
		A	B	C	D	E	F
1	●				●		
2	●	●			●		
3	●			●	●		
4				●	●		
5	●	●		●	●		●
6				●	●		

Major Topics Covered

Security Principle and Goals (3-hours)

Symmetric Cryptography (4-hours)

Public-key based Cryptography (4-hours)

Access Control (6-hours)

Secure Network Protocols (such as SSL/TLS, IPsec) (10-hours)

Application Security (such as Email and Web) (10-hours)

Security in Software Development (10-hours)

Trends in the Computer Security Arms Race (3-hours)

02/20/2024 by Dr. Le Guan

Dr. Kang Li

Yes

Modified
Course Master
Approved