Hashemite University
College of Engineering
Department of Computer Engineering
Computer Security
(3 Credit Hours/Dept. Compulsory)

Instructor

Dr. Anas Al Majali	
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Office:	Eng. 3058
Office hours:	Wednesday 9:30 – 11:00 or by appointment

Grading info

Mid Exam	40%
Projects	20%
Final	40%

Class Info

Days	Sec1: Mon/Wed
Time	Sec1: 9:30-11:00
Location	Eng. 2013

Course

Course Number:	110408456
Prerequisite:	Computer Networks (110408450) & Algorithms (110408300)
Textbook:	**"Computer Security: Principles and Practice,"** By William Stallings, Pearson, 2011, 2nd Edition.
Course Description:	The aim of this course is to provide students with a thorough understanding of security and information assurance (confidentiality, privacy, integrity, authentication, identification, authorization, availability, access control). This course should cover both symmetric and asymmetric cryptography, business issues of risk analysis and management of resources. It should also cover issues in information systems security; analysis, design, and coding of information systems/ networks for security; introduces firewalls, network intrusion detection, Viruses, Worms, Trojan horses, and other forms of malicious code; techniques for building secure organizational systems; e-commerce related security issues; policy, legal and ethical issues in security.
Specific Outcomes of Instruction (Course Learning Outcomes)	1. **Understand** the basic goals of computer security, that is, confidentiality, integrity and availability. (a) 2. **Identify** the different types and applications of cryptographic tools. (a, c,e, k) 3. **Use** the proper authentication method based on the application and accordingly use the proper access control mechanism. (a, c, k) 4. **Distinguish** between the different types of malware and use the proper technique to protect against them. (a, i, j, k) 5. **Design** a secure system that achieves the required goals of computer security taking into consideration the ethical responsibility in the domain of computer security. (a, c, f, k)
Important material	- Lecture notes - References - Internet resources

References:

- "Computer Security: Art and Science," by Matt Bishop, Addison Wesley, 2008.

Major Topics Covered and Schedule in Weeks:

Topic	# Weeks	# Contact hours*
Overview (Basic definitions)	1	3
Cryptographic Tools	1	3
Symmetric Encryption and Message Confidentiality	2	6
Public-Key Cryptography and Message Authentication	2	6
Authentication	2	6
Access Control	1	3
Malicious Software	2	6
Intrusion Detection	2	6

Network and Internet Security	1	3
Total	**14**	**42**

Course Policy

- The course will follow selected subjects as listed on the course schedule. Additional lecture notes and examples will be given and discussed in class as much as time permits.
- Students are responsible for the reading assignments from the text and handouts
- Students are responsible for following up the lecture materials
- Students are responsible for reading additional information and examples in order to understand the materials discussed in the lectures.
- If you miss class, there won't be a makeup test, quiz, etc. and you WILL get a zero unless you have a valid excuse.
- Students are required to answer exam questions in English. The instructor will not grade answers written using improper language.
- Cheating and plagiarism are completely prohibited.
- If you miss more than 15% of classes you will automatically fail the class.

Student Outcomes (SO) Addressed by the Course:

#	*Outcome Description*	*Contribution*
General Engineering Student Outcomes		
(a)	An ability to apply knowledge of mathematics, science, and engineering	*H*
(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 within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	*L*
(d)	An ability to function on multidisciplinary teams	
(e)	An ability to identify, formulate, and solve engineering problems	*M*
(f)	An understanding of professional and ethical responsibility	*L*
(g)	An ability to communicate effectively	
(h)	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	*L*
(j)	A knowledge of contemporary issues	*L*
(k)	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	*H*

H=High, **M**= Medium, **L**=Low

Prepared By: Dr. Anas Al Majali   **Date: 23/11/2016**