



King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering
Information and Computer Science Department

ICS 444: Computer and Network Security (3-0-3)

Syllabus – Second Semester 2014-2015 (142)

Website: Blackboard Learn 9.1 (<https://blackboard.kfupm.edu.sa/>)

Class Time, Venue and Instructor Information:

Sec.	Time	Venue	Instructor	Office Hours
01	UTR 10:00-10:50am	23-014	Dr. EL-SAYED EL-ALFY Office: 22-108 Phone: 013-860-1930 E-mail: alfy@kfupm.edu.sa , http://faculty.kfupm.edu.sa/ics/alfy	Announced in Blackboard

Course Catalog Description

Introduction to computer and network security; Security services: confidentiality, integrity, availability, accountability; Hacker techniques and attack types; Public and private key encryption; Authentication; Digital signature; User identification and access control; Computer viruses, Trojans and worms; Risk management and analysis; Information security process; Internet security: security protocols such as IPSec, SSL, TLS, email and web security; Security technologies and systems: Firewalls, VPN and IDS. **Prerequisite:** ICS 343 or COE 344

Course Objectives

- Develop a fundamental understanding of computer and network security proper practices, policies, technologies and standards.

Course Learning Outcomes

Upon completion of the course, you should be able to:

1. Describe computer and network security fundamental concepts and principles.
2. Describe the inner-workings of popular encryption algorithms, digital signatures, and certificates: DES, AES, RSA, SHA-512, X.509, etc.
3. Describe the inner-workings of today's remote exploitation and penetration techniques.
4. Demonstrate the ability to select among available network security technology and protocols such as IDS, IPS, firewalls, SSL, IPSec, TLS, VPNs, etc.
5. Gain hands-on experience using popular security tools, auditing, vulnerability scanning, and pen-testing.
6. Identify and assess different types of threats, malware, spyware, viruses, vulnerabilities, and today's attacks such as Trojans and Rootkits.
7. Demonstrate the ability to use security lingo and terminology.
8. Identify ethical, professional responsibilities, risks and liabilities in computer and network environment, and best practices to write a security policy.

Required Material

- Lecture handouts and assigned readings material posted in Blackboard

Other Recommended References

- [Computer Security: Principles and Practice](http://williamstallings.com/ComputerSecurity/), 3/e. W. Stallings and L. Brown, 2015.
- [Network Security Essentials Applications and Standards](http://williamstallings.com/NetworkSecurity/), 5/e. By W. Stallings, 2014.
- [Introduction to Computer Security](http://www.securitybook.net/), By M. Goodrich and R. Tamassia 2011.
- [Hacking Exposed 7: Network Security Secrete and Solutions](#), Stuart McClure, Joel Scambray, George Kurtz, McGraw-Hill, 2012.
- [Cryptography & Network Security](#), Behrouz Forouzan, McGraw-Hill, 2008.
- Eric Maiwald, [Fundamentals of Network Security](#), McGraw-Hill, 2004.
- [Analyzing Computer Security: A Threat, Vulnerability, Countermeasure Approach](#), Charles P. Pfleeger and Shari L. Pfleeger, Pearson 2012.
- [SEED Project - Computer System SEcurity EDucation](#)
- [Open Web Application Security Project \(OWASP\)](#)

Assessment Plan

Assessment Tool	Weight
Coursework: Assignments, Quizzes, Tutorial and Class Participation	40%
Midterm Exam (8 th Week)	25%
Final Exam (semi-comprehensive) [Date: Announced by the registrar: May 25, 2015 at 8am]	35%

Tentative Major Topics

- Cryptography, Digital signatures, Key Management
- Attacking systems, Remote exploitation and buffer overflow attacks
- Protecting systems
- Network Vulnerabilities
- Network Security
- Penetration testing, vulnerability scanning, and security auditing
- Firewalls and Intrusion Detection/Prevention
- Malware and viruses
- Modern attacks such as Trojans and Rootkits
- Web Security
- Mobile Security

Course Policies

- **Course website & participation:** Students are required to periodically check the course website on Blackboard Learn 9.1 to download course material as needed. Several resources will be posted through the website as well. It will be used also for posting and submitting assignments, posting grades, posting sample exams, etc. It is expected that you get benefit from the discussion board by raising questions or answering questions put by others.

- **Attendance:** Regular attendance is a university requirement; hence attendance will be checked at the beginning of each lecture. Late arrivals will disrupt the class session. Hence, two late attendances will be considered as one absence. There is no penalty for the first two absences, after that you lose one full percentage per absence. Missing more than 9 unexcused lectures will result in a DN grade without prior warning. To avoid being considered as absent, an official excuse must be shown no later than one week of returning to classes.
- **No makeup of homework, quizzes or exams will be given.**
- **Re-grading policy:** If you have a complaint about any of your grades, discuss it with the instructor no later than a week of distributing the grades (except for the final). Only legitimate concerns on grading should be discussed.
- **Office hours:** Students are encouraged to use the office hours to clarify any part of the material that is not clear; however the instructor will only provide hints if it is an assigned task but not solve it.
- **Academic honesty:** Students are expected to abide by all the university regulations on academic honesty. Cheating will be reported to the Department Chairman and will be severely penalized. Although collaboration and sharing knowledge is highly encouraged, copying others' work without proper citation, either in part or full, is considered plagiarism. Whenever in doubt, review the university guidelines or consult the instructor. Cheating in whatever form will result in F grade.
- **Courtesy:** Students are expected to be courteous toward the instructor and their classmates throughout the duration of this course. Talking while someone else is speaking will not be tolerated. Furthermore, all cell phones must be turned off during class and exams. In addition, students are expected to be in class on time. More importantly, you are not allowed to leave the class unless it is an urgent matter.
- **Contact:** To contact the instructor for private issues, please use email whenever possible and avoid using phone calls or written notes. For all other class related discussions and questions, you can use MS Lync 2013 on your mobile to get quicker response. More information on how to install and use MS Lync 2013, check this web page:
http://www.kfupm.edu.sa/centers/itc/SitePages/en/MSLync_tutorials.aspx
- **Warning:** Taking this course implicitly means that you agree to use the material you learn in this class ethically and only on systems that you are authorized for them. Violations will result in a big plain F Grade and disciplinary measures.

☺☺☺ Best luck!! ☺☺☺