



King Saud University
College of Computer and Information Sciences
Department of Computer Engineering

1. Course number and name: **CEN448, Security and Internet Protocols**

2. Credits and contact hours: **3 (3, 0, 1)**

3. Instructor's or course coordinator's name: **Dr. Waleed AL-Ghanem**

4. Text book, title, author, and year:

Cryptography and Network Security, William Stallings, 6/E, 2013, Prentice-Hall.

a. other supplemental materials:

Handbook of Applied Cryptography (Discrete Mathematics and Its Applications), Alfred Menezes, Paul van Oorschot and Scott Vanstone, 1/E, 1996, CRC Press. Available online at: <http://www.cacr.math.uwaterloo.ca/hac/>.

Lecture Notes, Selected Articles from the World Wide Web.

5. Specific course information

a. Course description (catalog)

Overview: Security Concepts, Types of attacks, Services; Cryptography: Block ciphers, Public-Key; Authentication: Hash functions, User authentication Protocols; Transport-Level Security; Wireless Network Security; IP Security; Intrusion detection: Intruders, malicious software, firewalls.

b. prerequisites or co-requisites: CEN445 (prerequisite).

c. Required, elective, or selected elective course: Required.

6. Specific goals for the course

a. **Course Learning Outcomes:** This course requires the student to demonstrate the following

1. Recognize the ethical aspects of using computer systems.
2. Identify the main security attack types and standards.
3. Describe and apply symmetric ciphers.
4. Describe and apply asymmetric ciphers and digital signatures.
5. Apply authentication protocols and hash algorithms.
6. Identify how to implement security at various network layers.
7. Analyze firewall types and rules.

b. **Relationship of Course to Student Outcomes**

Outcome	Student Outcome Description	Contribution
(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 within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	√
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	√
(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, economic, environmental, 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.	

7. Brief list of topics to be covered and schedule in weeks

Introduction, Security Concepts, Attacks, Services	1
Block Ciphers and their Operation	2
Public-Key Cryptography and Hash Functions	2
User Authentication Protocols	1
IP and Transport-Layer Security	2
Wireless Network Security	2
Intruders and Malicious Software	2
Firewalls	2
Review	1

8. Assessment Plan for the Course

Quizzes	10%
Project /Presentation	10%
Midterm Exams (2)	40%
Final Exam	40%
Total	100%

Midterm exam dates:

Midterm 1: 27-10-2015.

Midterm 2: 08-12-2015.

Course Policies:

- Cheating or plagiarism in any form will not be tolerated. A grade of zero will be registered for any infraction.
- **Attendance in the lecture is a must.** Students failed to achieve more than 75% attendance will be reported to the concerned authority; excuse should be directly submitted to the concerned authority; excuses of absence are accepted no later than one week of the absence.
- **All the exams are closed book.**

Contribution of Course to Meeting Curriculum Disciplines:

Curriculum Discipline	Percentage
Mathematics and Basic Science	20
Engineering Science	70
Engineering Design	10
General Education	

Current Instructors, Department, Office Hours and Date:

Dr. Waleed AL-Ghanem

Department of Computer Engineering

Office Hours: Sun, Tue, Thu 1-2 PM Tue, Thu 3-4 PM Mon 1-4 PM and
by appointments Sun, Tue, Thu 10AM-12 PM

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