



Course Specification

— (Bachelor)

Course Title: **Computer and Network Security**

Course Code: **CENX 442**

Program: **B.S. in Computer Engineering**

Department: **Department of Computer Engineering**

College: **College of Computer and Information Sciences**

Institution: **King Saud University**

Version: *Course Specification Version Number*

Last Revision Date: *Pick Revision Date.*

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A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (Level 9)

4. Course general Description:

Symmetric and public key cryptography; digital signatures; cryptographic hash functions; authentication pitfalls; Network and Internet security: Network Access Control and Cloud Security; Transport-Level Security; Wireless network security; Electronic mail security, and IP security; System Security: Malicious software, Intruders, and firewalls.

5. Pre-requirements for this course (if any):

CENX 441, Computer Networks

6. Co-requirements for this course (if any):

7. Course Main Objective(s):

This course introduces the student to principles and practices of Computer and network Security, educate students about concepts and techniques for access to computer systems and network resources. Identification and authentication. Protection of information against intentional and unintentional attacks and threats. Cryptography and encryption of data. Encryption algorithms and their information theory foundations. Computer hardware and software for data encryption.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 hours per week	100%
2	E-learning		
3	Hybrid - Traditional classroom - E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	15
5.	Others (specify)	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Identify the main security attack types, standards, and ethics.	4	Lectures and Tutorials	Exams and Homework
1.2	Discuss the implementation of security protocols at various network layers.	1	Lectures and Tutorials	Exams and Homework
2.0	Skills			
2.1	Apply symmetric and asymmetric ciphers	2	Lectures and Tutorials	Exams and Homework
2.2	Illustrate the operation of authentication protocols and key management.	7	Lectures and Tutorials	Exams and Homework
3.0	Values, autonomy, and responsibility			
3.1	Analyze the main components of system security.	6	Lectures and Tutorials	Exams and Homework

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction, Security Concepts, Attacks, Services	4
2.	Symmetric cipher	16
3.	Asymmetric ciphers	4



4.	Authentication and key management.	16
5.	Security at transport, IP, and wireless layers	12
6.	Email security and System Security	8
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Examination (1)	6	20%
2.	Midterm Examination (2)	12	20%
3.	Homework Assignments	Weekly	15%
4.	Quiz	5 and 11	5%
5.	Final Exam	End	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Cryptography and Network Security, William Stallings, 7/E, Prentice-Hall.
Supportive References	
Electronic Materials	https://lms.ksu.edu.sa
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room with number of seats enough to accommodate enrolled students.
Technology equipment (projector, smart board, software)	Overhead projector with required software to facilitate presentations on smart board.
Other equipment (depending on the nature of the specialty)	



F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Department Council	Course reports are evaluated by the Department Council.
Effectiveness of Students assessment	Faculty-Peer Review	Final examination is moderated.
Quality of learning resources	Students	Indirect – Edu-gate survey.
The extent to which CLOs have been achieved	Students	Attainment level of every CLO is measured directly.
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

