



# Course Specification

## (Bachelor)

Course Title: **Network Security**

Course Code: **332CCN-3**

Program: **Bachelor of Science in Computer Networks**

Department: **Networks and Communications Engineering**

College: **Computer Science and Information Systems**

Institution: **Najran University**

Version: **1.0**

Last Revision Date: **Feb 2025**



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## A. General information about the course:

### 1. Course Identification

**1. Credit hours: ( ..... )**

**3 (2, 2, 1) [Theory, Lab, Tutorial]**

**2. Course type**

A.  University  College  Department  Track  Others

B.  Required  Elective

**3. Level/year at which this course is offered: (Level 6 / Year 3)**

**4. Course general Description:**

This course is designed to provide students with the fundamental skills needed to analyze the security threats against an enterprise network, and to develop strategies that will protect an organization's information repository. The course covers the information protection techniques deployed in enterprise networks such as VLANs, VPNs, DMZ, firewalls and ACLs. The course also contains countermeasures like firewalls and security protocols such as SSL, SSH and IPsec and investigates in detail what makes them secure.

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

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

N/A

**7. Course Main Objective(s):**

This course validates skills for installation, troubleshooting, and monitoring of a secure network to maintain integrity, confidentiality, and availability of data and devices.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4	Distance learning		



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures [2 contact hours ' 15 weeks]	30
2.	Laboratory/Studio [2 contact hours ' 15 weeks]	30
3.	Field	
4.	Tutorial [1 contact hour ' 15 weeks]	15
5.	Others (specify)	
<b>Total</b>		<b>75</b>

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Explain the key terminologies and concepts of Network Security.	K2	Lecture	Tests, Quizzes, and Assignments
1.2	Explain common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms	K1, K2	Lecture	Tests, Quizzes, and Assignments
...				
<b>2.0</b>	<b>Skills</b>			
2.1	Securing Network Devices and Implementing Secure Remote Access.	S4	Lecture, Lab	Tests, Quizzes, Assignments, and Lab
2.2	Design and implementing different types of	S4	Lecture, Lab	Tests, Quizzes, Assignments, and Lab



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	Secure Networks including Intrusion Prevention Systems (IPS), Access Control Lists (ACLs), VPNs and VLANs.			
2.3	Show skills to evaluate the security needs for networked systems and applications.	S1, S6	Lecture, Lab	Tests, Quizzes, Assignments, and Lab
2.4	Implementing network security protocols and firewalls.	S2	Lecture, Lab	Tests, Quizzes, Assignments, and Lab
2.5	Setup different types of Secure Networks using proper network simulator.	S2	Lecture, Lab	Tests, Quizzes, Assignments, and Lab
...				
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Recognize professional responsibilities and make informed judgments in network security practice based on legal and ethical principles.	C3	Lecture, Lab	Tests, Quizzes, Assignments, and Lab
3.2				
...				

### C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Network Security	5
2.	Basic concepts: confidentiality, integrity, availability, security policies, security mechanisms, assurance. Authentication, Authorization and Accounting.	5
3.	Hashes and message authentication.	5





4.	Security protocols such as IPSec, SSL and SSH.	10
5.	Securing Network Devices and Implementing Secure Remote Access.	10
6.	Implementing Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS).	10
7.	Understanding and Implementing VLANs.	5
8.	Understanding and Implementing Access Control Lists (ACL).	5
9.	Understanding and Implementing Firewall Technologies.	5
10.	Understanding and Implementing DMZ (demilitarized zone)	5
11.	Understanding and Implementing VPNs.	5
12.	Understanding and Implementing Network forensics	5
<b>Total</b>		<b>75</b>

#### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	2, 4, 7, 11	8%
2.	Assignments or mini project (presentation)	3, 5, 8, 9	12%
3.	Midterm Examination	6th week	20%
4.	Lab Activities	1-14th week	10%
5.	Lab Final Examination	15th week	10%
6.	Final Examination	16th,17th week	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

<b>Essential References</b>	1. Textbook: Omar Santos John Stuppi, <b>CCNA Security 210-260 Official Cert Guide</b> , 2016 Cisco Press. Forouzan Behrouz A, 2007, <b>Cryptography &amp; Network Security</b> , McGraw-Hill.
<b>Supportive References</b>	Darril Gibson, <b>CompTIA Security+: Get Certified Get Ahead</b> , Darril Gibson 2017, YCDA, LLC.
<b>Electronic Materials</b>	Available in Blackboard
<b>Other Learning Materials</b>	

##### 2. Required Facilities and equipment



Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Room and Laboratory
<b>Technology equipment</b> (projector, smart board, software)	Data show, PCs.
<b>Other equipment</b> (depending on the nature of the specialty)	Network Security Lab

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, instructors and peer review	<ul style="list-style-type: none"> <li>- Online course survey: By the end of each semester, students give their opinions about many factors in the course. They give feedback about teaching strategies, assessment methods, textbooks, instructors, etc.</li> <li>- Feedback about Course Learning Outcomes (CLOs): A course survey is distributed to students to get their opinions about the CLOs.</li> </ul>
Effectiveness of students' assessment	Instructor, faculty, and student	<ul style="list-style-type: none"> <li>- Discussion with other faculty members about students' understanding and the best way of teaching them.</li> <li>- Peer consultation on teaching</li> <li>- Discussions within the group of faculties teaching the same course before</li> </ul>
Quality of learning resources	Instructor and Faculty	<ul style="list-style-type: none"> <li>- Describe the relationship between the course's topics and CLOs.</li> <li>- Course syllabus must be distributed in the first week. It should contain the necessary information about the course (CLOs, assessment methods, descriptions, etc.)</li> <li>- Feedback from the students about the understanding of lectures in academic advising hours.</li> <li>- Analysis of the critical topics with real-life examples and preparation of good effective PPT slides.</li> <li>- By suggesting good teaching methodologies</li> <li>- Ensure that all students participate in the class.</li> <li>- Encourage students to attend during office hours to clarify their doubts.</li> </ul>
The extent to which CLOs have been achieved	Peer and instructor	<ul style="list-style-type: none"> <li>- The course coordinator has to approve the exams and grades of students in exams.</li> </ul>



Assessment Areas/Issues	Assessor	Assessment Methods
		<ul style="list-style-type: none"> <li>- The curriculum committee will review all courses by the end of each semester and approve actions and improvements plan to be carried out.</li> <li>- Getting feedback from the students who will pass the course and work in the practical field.</li> <li>- The vice dean and the dean of the college have to approve the final grades.</li> </ul>
the planning arrangements for periodically reviewing course effectiveness and planning for improvement	Instructor	<ul style="list-style-type: none"> <li>- Each semester, the instructor has to teach the course according to the previous course materials (Course specification, report, improvement plan, etc.).</li> <li>- By the end of each semester, the instructor must prepare a course file which contains all activities and practices taken in the course. Achievements of CLOs can be used if the students' levels improved or not</li> </ul>

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

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	NETWORK AND COMMUNICATIONS ENGINEERING DEPARTMENT COUNCIL
<b>REFERENCE NO.</b>	<b>14450824-0482-00014</b>
<b>DATE</b>	<b>5/3/2024</b>

