



# Course Specification

— (Bachelor)

**Course Title:** Computer systems Security

**Course Code:** 502459-3

**Program:** Bachelor in Computer Science

**Department:** Department of Computer Science

**College:** College of Computers and Information Technology

**Institution:** Taif University

**Version:** V1.2024

**Last Revision Date:** 01/02/2024



## Table of Contents

<b>A. General information about the course:</b> .....	3
<b>B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods</b> .....	4
<b>C. Course Content</b> .....	5
<b>D. Students Assessment Activities</b> .....	6
<b>E. Learning Resources and Facilities</b> .....	6
<b>F. Assessment of Course Quality</b> .....	7
<b>G. Specification Approval</b> .....	7



## A. General information about the course:

### 1. Course Identification

1. Credit hours: (3)

2. Course type

A.  University  College  Department  Track  Others

B.  Required  Elective

3. Level/year at which this course is offered: ( 8/4)

4. Course general Description:

This course introduces the basic security attacks against computer systems and the different techniques to overcome these attacks. Besides, this course explains the different modern encryption mechanisms and protocols (including symmetric and public key cryptography). Moreover, it examines the different security services such as authentication and access control. Finally, this course introduces an overview to network security and the tools used to secure networks such as the firewall, proxy and intrusion detection systems. Students will learn about tools for defending against attacks, and methods for designing secure systems.

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

502482-3

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

None

7. Course Main Objective(s):

The objective of this course is to cover principles of computer and network security along with some relevant background in basic cryptography. We will discuss various attack techniques and how to defend against them. After completing this course, students will be able to analyze, design, and build secure systems of moderate complexity.

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5	100%
2	E-learning	0	0
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>	0	0
4	Distance learning	0	0



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

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
<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	Recognize the concepts of software architecture including requirement analysis, domain analysis, and software architecture patterns.	K1	Lecture Discussion Lab work	Written Exams Assignments, Quizzes Practical Exam
<b>2.0</b>	<b>Skills</b>			
2.1	Use the appropriate cryptographic methods and techniques to protect local and communicated data.	S1	Lecture Discussion Lab work	Written Exams Assignments, Quizzes Practical Exam
2.2	Use existing security services and techniques to design a secure computer system.	S2, S4	Lecture Discussion Lab work	Written Exams Assignments, Quizzes



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
				Practical Exam
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			

### C. Course Content

No	List of Topics	Contact Hours
1	Introduction to computer security	5
2	Malware	5
3	Cryptographic Tools and encryption methods	5
4	Symmetric cryptography encryption methods	5
5	Public-Key Cryptography and Message Authentication	5
6	User Authentication	10
7	Access Control methods	10
8	Web Security: Vulnerabilities, Attacks, and Countermeasures	10
9	Networks security	10
10	Physical and Infrastructure security	10





Total

75

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1	Assignments	10	10%
	Mid Exam	8	20%
2	Minor project	10	10%
4	Labs	11	20%
5	Final Exam	16	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>	William Stallings, Lawrie Brown, " <b>Computer Security: Principles and Practice</b> ", Prentice Hall, latest edition.
<b>Supportive References</b>	CompTIA Security+ Review Guide: Exam SY0-501 James Michael Stewart ISBN: 978-1-119-41694-4
<b>Electronic Materials</b>	Presentations and recorded lectures
<b>Other Learning Materials</b>	Useful web links Resources for security certification training

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> <li>A Lecture room appropriate for maximum 25 students with a personal computer, a data show and a smart board.</li> <li>A Lab room appropriate for maximum 15 students with a personal computer, a data show and a smart board.</li> </ul>
<b>Technology equipment</b> (projector, smart board, software)	<ul style="list-style-type: none"> <li>Lab materials and required software</li> </ul>
<b>Other equipment</b> (depending on the nature of the specialty)	<ul style="list-style-type: none"> <li></li> </ul>





## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty members</li> <li>Coordinator</li> <li>Council</li> <li>Curriculum Committees</li> </ul>	<ul style="list-style-type: none"> <li>Course exit survey</li> <li>Feedback from Faculty members</li> <li>Feedback from Course Coordinator</li> <li>Feedback from council</li> <li>Feedback from Curriculum Committees</li> </ul>
Effectiveness of Students assessment	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty members</li> <li>Coordinator</li> <li>Council</li> <li>Curriculum Committees</li> </ul>	<ul style="list-style-type: none"> <li>Course exit survey</li> <li>Feedback from Faculty members</li> <li>Feedback from Course Coordinator</li> <li>Feedback from council</li> <li>Feedback from Curriculum Committees</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty members</li> <li>Coordinator</li> <li>Council</li> <li>Curriculum Committees</li> </ul>	<ul style="list-style-type: none"> <li>Course exit survey</li> <li>Feedback from Faculty members</li> <li>Feedback from Course Coordinator</li> <li>Feedback from council</li> <li>Feedback from Curriculum Committees</li> </ul>
The extent to which CLOs have been achieved	<ul style="list-style-type: none"> <li>Students</li> <li>Faculty members</li> <li>Coordinator</li> <li>Council</li> <li>Curriculum Committees</li> </ul>	<ul style="list-style-type: none"> <li>Course exit survey</li> <li>Feedback from Faculty members</li> <li>Feedback from Course Coordinator</li> <li>Feedback from council</li> <li>Feedback from Curriculum Committees</li> </ul>
Other		

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

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	CS COUNCIL
<b>REFERENCE NO.</b>	MEETING #11
<b>DATE</b>	07/03/2024

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