Faculty: Information Technology	
Department: Cybersecurity	**Program: Bachelor**
Academic Year: 2023/2024	**Semester: 2nd**

Course Plan

First: Course Information

Course No.: 1506345	***Course Title: Secure Communications Protocols***	***Credit Hours: 3***	***Theoretical: 3***	***Practical: 0***
Prerequisite No. and Title:150341 - Networks and Information security	***Section No.: 1***	***Lecture Time: 11-12 (Sun, Tue, Thu)***		
Level in JNQF	***7***			
Type Of Course:	☐ ***Obligatory University Requirement*** ☐ ***Elective University Requirement*** ☐ ***Obligatory Faculty Requirement*** ☐ ***Elective Faculty Requirement*** ■ ***Obligatory Specialization Requirement*** ☐ ***Elective Specialization Requirement*** ☐ ***Ancillary course***			
Type of Learning:	■ ***Face-to-Face Learning*** ☐ ***Blended Learning (2 Face-to-Face + 1 Asynchronous)*** ☐ ***Online Learning (2 Synchronous+ 1 Asynchronous)***			

Second: Instructor's Information

Course Coordinator					
Name: Dr. Mahmoud Asassfeh			***Academic Rank: Assistant Professor***		
Office Number: 237 B	***Extension Number: 1964***		***Email: masassfeh@zu.edu.jo***		
Course Instructor					
Name: Dr. Mahmoud Asassfeh			***Academic Rank: Assistant Professor***		
Office Number: 237 B	***Extension Number: 1964***		***Email: masassfeh@zu.edu.jo***		
Office Hours:	***Sunday***	***Monday***	***Tuesday***	***Wednesday***	***Thursday***
	10:00-11:00	***-***	***10:00-11:00***	***-***	***10:00-11:00***

Third: Course Description

The aim of this course is to give students a basic knowledge of several security protocols used in the cybersecurity industry. In particular, it introduces the protocol concept in general. It revises the OSI Model protocols and TCP/IP Model protocols. A number of security protocols are then discussed in detail which is related to the network layers, in general. Other Authentications protocols will also be discussed. Moreover, some protocols will be discussed which are specific for cloud-based communications, multimedia streaming, mobile communications, and wireless networks security. Some of the protocols which will be discussed in this course are Secure Sockets Layer/ Transport Layer Security (SSL/TLS), Datagram Transport Layer Security (DTLS), Secure Shell Protocol (SSH), IPSec, Host Intrusion Prevention (HIP), Extensible Authentication Protocol (EAP), Remote Authentication Dial-In User Service (RADIUS), OpenID, OAuth, Single Sign-On (SSO), and Security Assertion Markup Language (SAML).

Fourth: Course Objectives

1. Introducing the student to understand basic knowledge of several security protocols used in the cybersecurity industry.
2. Developing the student's ability to analyze security protocols.
3. Guiding the student to understanding of the modern authentication protocols.
4. Expanding the student's skills of designing and validation of secure authentication protocols using AVISPA tool.
5. Providing the student with the skills of implementation of an application or research project by students.

Fifth: Learning Outcomes

Level descriptor according to (JNQF)	*CILOs Code*	*CILOs* If any CLO will not be assessed in the course, mark NA.	*Associated PILOs Code* *Choose one PILO for each CILO**	*Assessment method* *Choose at least two methods*
Knowledge	**K1**	Outline the basic concepts of computer networking	**PK1**	• Mid-term Exam • Final Exam
	K2	Identify the different types of security protocols for different security needs.	**PK3**	• Mid-term Exam • Final Exam
	K3	Analyze secure protocols and understand in which layer it work.	**PK1**	• Quizzes • Mid-term Exam • Final Exam
Skills	**S1**	Recommend approaches to analyze secure protocols using the appropriate tools like AVISPA tool.	**PS2**	• Mid-term Exam • Final Exam
	S2	Design and validate secure protocol using AVISPA tool.	**PS3**	• Mid-term Exam • Final Exam
	S3	Determining the proper security protocol to be applied based on the vulnerabilities and sources of attack and intrusion.	**PS4**	• Quizzes • Mid-term Exam • Final Exam
Competencies	**C1**	Prove the ability to research, analyze and critically evaluate different security protocols.	**PC2**	• Participation
	C2	Demonstrate skills in problem-solving and decision-making regarding security issues.	**PC3**	• Participation

*CILOs: Course Intended Learning Outcomes; PILOs: Program Intended Learning Outcomes; For each CILO, the PILO could be the same or different.

Sixth: Learning Resources

Main Reference:	**Design and Analysis of Security Protocol for Communication**		
Author: Dinesh Goyal, S. Balamurugan, Sheng-Lung Peng and O.P. Verma	***Issue No.: First Edition.***	***Print:***	***Publication Year: 2020***
Additional Sources and Websites:	• **Communication System Security, 1st Edition, Lidong Chen and Guang Gong, Taylor & Francis Group, 2012.** • **Introduction to Network Security: Theory and Practice, 2nd Edition, Jie Wang Zachary A. Kissel, Wiley, 2015.** • **Information security principles and practices, 2nd Edition, Mark S. Merkow and Jim Breithaupt, Pearson IT Certification, 2014.** • **Data Communications and Networking, 5th edition, Behrouz A. Forouzan, McGraw-Hill Education, 2013.**		
Teaching Type:	■ ***Classroom*** ☐ ***Laboratory*** ☐ ***Workshop*** ■ ***MS Teams*** ■ ***Moodle***		

Seventh: Course Structure

Lecture Date	Course Intended Teaching Outcomes (CILOs)	Topics	Teaching Procedures*	Teaching Methods**	References***
W1	K1	- Introduction to Network Security	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W2	K1	- Introduction to OSI Model and Protocols	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W3	K1	- Introduction to TCP/IP Model and Protocols	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W4	S1, K2,K3	- Network Security Protocols (Application Layer)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W5	S1, K2, K3	- Network Security Protocols (Transport Layer)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W6	S1, S2, K2, K3,C1	- Network Security Protocols (Network Layer)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W7	S1, S2, K2, K3, C1	- Network Security Protocols (Data Link Layer)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1
W8	S1, S2, K2, K3, C1	-- Network Security Protocols	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch1

		(Data Link Layer)			
W9	S3, K1, K3, C2	-Types of Authentication Protocols (Remote Authentication Dial-In User Service):	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch15
Midterm Exam					
W10	S2, K1,K2, K3, C2	-Types of Authentication Protocols (Kerberos) - Types of Authentication Protocols (OpenID, OAuth)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch16
W11	S2, K1,K2, K3, C2	- Types of Authentication Protocols (Light-Weight Directory Access Protocol (LDAP))	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch15
W12	S2, K1,K2, K3, C2	Types of Authentication Protocols (Security Assertion Markup Language (SAML))	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch15
W13	S2, K1,K2, K3, C2	Types of Authentication Protocols (Extensible Authentication Protocol (EAP)	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch15
W14	S2, K1,K2, K3, C2	- Security Protocols for Mobile Communications	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch13
W15	S2, K1,K2, K3, C2	- Security Protocol for Cloud-Based Communication	Face-to-Face	Lecturing , quizzes and assignments	Textbook-ch12
W16	S1, S2, S3, C1, C2	-Revision	Face-to-Face	Lecturing , quizzes and assignments	Textbook
Final Exam					

*Teaching procedures: (Face-to-Face, synchronous, asynchronous). ** Teaching methods: (Lecture, video….).
*** Reference: (Pages of the book, recorded lecture, video….)

Eighth: Assessment Methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Specific Course Output to be assessed **If any CILO will not be assessed in the course, mark NA.								
				K1	K2	K3	S1	S2	S3	C1	C2	
First Exam												
Second Exam												
Mid-term Exam			35	✓	✓	✓	✓	✓	✓	✓	✓	
Participation			5									
Asynchronous Activities												
Quizzes			5	✓	✓	✓				✓		
Assignments			5	✓	✓	✓				✓		
Group presentation												
Final Exam			50	✓	✓	✓	✓	✓	✓	✓	✓	
Total out of 100			100									

Ninth: Course Policies

- All course policies are applied to all teaching patterns (online, blended, and face-to-face Learning) as follows:
  a. Punctuality.
  b. Participation and interaction.
  c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approval	Name	Date	Signature
Head of Department	Dr. Mohammad Rasmi AL-Mousa		
Faculty Dean	Prof. Dr. Mohammad Hassan		