1.	Course title	Information Security and Privacy
2.	Course number	1911322
3.	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4.	Prerequisites/corequisites	Computer Network 1901363 and Introduction to Database Systems (1902224)
5.	Program title	Cybersecurity
6.	Year of study and semester (s)	Third year
7.	Final Qualification	Bachelor degree
8.	Other department (s) involved in teaching the course	None
9.	Language of Instruction	English
10.	Date of production/revision	February 26, 2023
11.	Required/ Elective	Required

12. Course Coordinator:

Dr. Khair Eddin Sabri

Email addresses: k.sabri@ju.edu.jo

13. Other instructors:

Dr. Iman AlMomani

Email addresses: i.momani@ju.edu.jo

Dr. Mohammad Atoum

Email addresses: m.atoum@ju.edu.jo

14. Course Description:

This course provides an introduction to information security and privacy. The course covers topics related to cryptography such as symmetric and asymmetric encryptions, hash functions, digital signatures, key management, and public key infrastructures. Also, the course covers topics related to network security as packet sniffing, spoofing, TLS, IPSec, Firewalls, wireless networks security. Furthermore, topics related to Authentication, Authorization, Web security and Steganography will be covered. Risk analysis and ethics, and their applications to the development of a secure healthcare system as a case study will be presented. Practical hands-on will be provided.

15. Course aims and outcomes:

A- Aims:

Goal:
The main goal of this course is to provide student an introduction to information security and privacy issues and take as a case study healthcare data privacy and security

Objectives:
- *Understand Cryptography and its elements: Symmetric key, public key, hash function, random number generators.*
- *Understand different security protocols and their properties*
- *Develop a secure software*
- *Develop knowledge in various aspects of information security and privacy*
- *Understand security and privacy in the domain of health informatics.*

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

A-Knowledge and understanding: with the ability to …

 A1) Understand the meaning of information security.
 A2) Understand security threats, Security models, and building security functions.
 A3) Understand Public key cryptography.
 A4) Understand Symmetric key cryptography.
 A5) Understand Cryptographic hash functions.
 A6) Understand Cryptographic Protocols such as IPSec, TLS.
 A7) Understand Firewall.
 A8) Understand Access Control.
 A9) Understand the main concepts of developing a secure software.
 A10) Understand risk management and its application to healthcare systems.

B- Intellectual skills: with the ability to …

 B1) Distinguish between public and symmetric key encryptions.
 B2) Distinguish between different cryptographic protocols and the usage of each one of them.
 B3) Explain the different ways of keys distributions.
 B4) Identify the different authentication and authorization techniques.
 B5) Identify code vulnerabilities.
 B6) Identify security requirements in healthcare systems.

C- Subject specific skills – with ability to …

 C1) Analyze some computational aspects related to public key cryptography.
 C2) Analyze some computational aspects related to symmetric key cryptography.
 C3) Analyze security protocols.
 C4) Develop a secure software.
 C5) Develop a secure healthcare system.

D- Transferable skills – with ability to

 D1) Use several security tools.

16. Topic Outline and Schedule:

Topic	Week	ILOs	Student Outcomes	TLA (teaching, learning and Assessment)
Information and Network Security Concepts	1	A1, A2	6	T: Lectures and discussion L: [1] CH 01 (Sections 1.1 – 1.7) A: Quiz, Midterm, Final
Classical Encryption Techniques	2	A4, B1, C2, D1	6	T: Lectures and discussion L: [1] CH 03 A: Lab task, Quiz, Midterm, Final
Block Ciphers and the Data Encryption Standards	3	A4, B1, C2, D1	1, 6	T: Lectures and discussion L: [1] CH 04 A: Lab task, Quiz, Midterm, Final
Advanced Encryption Standard	4	A4, B1, C2, D1	1, 6	T: Lectures and discussion L: [1] CH 06 (Sections 6.2 – 6.5) A: : Lab task, Quiz, Midterm, Final
Block Cipher Operations and 3DES cipher	5	A4, B1, C2	1, 6	T: Lectures and discussion L: [1] CH 07 (Sections 7.1 – 7.6) A: Quiz, Midterm, Final
Public Key Cryptography, RSA, and DH **Quiz**	5	A3, B1, C1, D1	1, 6	T: Lecture and discussion L: [1] CH 09 (Sections 9.1, 9.2) [2] CH 10 (Section 10.1) A: Lab task, Quiz, Midterm, Final
Hash Functions, Message Authentication Code and Digital Signature	6	A2, A5, C1	1, 6	T: Lectures and discussion L: [1] CH 11 A: Midterm, Final
Cryptographic Key Management and Distribution	7	B3	1, 6	T: Lectures and discussion L: [1] CH 15 A: Midterm, Final
Midterm	8			
Email Security, Transport Layer Security and	9	A6, C3, D1	1, 6	T: Lectures and discussion L: [1] CH19 (Sections 19.1 – 19.4) [1] CH17 (Section 17.2) A: Lab task, Final
IP Security, Firewall	10	A6, A7, C3, D1	1, 6	T: Lecture and discussion L: [1] CH 20 [1] CH 21: Firewalls (Section 21.1) A: Lab task, Final
User Authentication, and Access Control	11	A8, B4, C4, D1	1, 2, 6	T: Lectures and discussion L: [2] CH 03 (Sections 3.1, 3.2) [2] CH 04 (Sections 4.1 - 4.5) A: Lab task, Final
Database security and Software Security	12	A9, B5, C4, D1	1, 2, 6	T: Lecture and discussion L: [2] CH05 and CH06 A: Lab task, Final
Risk Management and Information Security and Privacy in Healthcare System	13, 14	A10, B6, C5	1, 4, 6	T: Lecture and discussion L: [2] CH14 [3] CH4, CH 7, CH8 and CH9 A: Final
Revision	15			
Final	16			

17. Evaluation Methods and Course Requirements (Optional):

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u>:

There will be several assessment methods of evaluation the performance of the students such as Quizzes, lab tasks, midterm and final exams.

18. Course Policies:

A- Attendance policies:

Deliberate abstention from attending 1911322 classes and any other similar acts will lead to student deprivation from the course according to the UJ regulations

B- Absences from exams and handing in assignments on time:

If you miss the midterm, then a makeup exam will not be provided unless you submit a valid absence excuse, within three days from the midterm, to your lecturer. This excuse must be signed and stamped from the UJ hospital in order to be valid. If your lecturer accepts the excuse, then you will be able to take the makeup. You need to follow up the departmental announcements regarding the makeup date and time. Please note that the lecturer may either accept or reject your excuse based on UJ regulations

C- Health and safety procedures:

N/A

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All students in this course must read the University policies on plagiarism and academic honesty

http://registration.ju.edu.jo/RegRegulations/Forms/All_Regulations.aspx

E- Grading policy:

- *Midterm Exam:*	*30%*
- *Quiz*	*10%*
- *Lab Tasks*	*10%*
- *Final Exam:*	*50%*

F- Available university services that support achievement in the course:

N/A

G- Statement on Students with disabilities

Students with Disabilities: Students with disabilities who need special accommodations for this class are encouraged to meet with the instructor and/or their academic advisor as soon as possible. In order to receive accommodations for academic work in this course, students must inform the course instructor and/or their academic advisor, preferably in a written format, about their needs no later than the 4th week of classes.

19. Required equipment:

20. References:

A- Required book (s), assigned reading and audio-visuals:

1. *Cryptography and Network Security: Principles and Practice, Global Edition, William Stallings, 8th edition, Pearson 2022.*
2. *Computer Security: Principles and Practice, Global Edition, William Stallings and Lawrie Brown, 4th edition, Pearson 2018.*
3. *Healthcare Information Security and Privacy, Sean Murphy and Dennis Seymour, 1st edition, McGraw Hill, 2014.*
4. *Computer Network, A top down approach. Kurose and Rose, 6th edition.*

21. Additional information:

Course website:
elearning.ju.edu.jo

Date: -------------------------

Name of Course Coordinator: Dr. Khair Eddin Sabri   Signature: -------------------------

Head of curriculum committee/Department: ------------------------- Signature: ---------------

Head of Department: ------------------------- Signature: --------------------------------

Head of curriculum committee/Faculty: ------------------------- Signature: ---------------------

Dean: --------------------------------------- -Signature: --------------------------------

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File