1.	Course title	Principles of Information Security
2.	Course number	1911194
3.	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4.	Prerequisites/corequisites	None
5.	Program title	Cybersecurity
6.	Year of study and semester (s)	First 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	March 1, 2022
11.	Required/ Elective	Required

12. Course Instructors:

Prof. Mohammad Qatawneh
Email address: mohd.qat@ju.edu.jo

Prof. Khair Eddin Sabri
Email addresses: k.sabri@ju.edu.jo

Dr. Maen Al Assaf
Email addresses: m_alassaf@ju.edu.jo

13. Other instructors:

N/A

14. Course Description:

This course introduces students to a basis for cyber security. Topics included are: security properties (integrity, confidentiality, availability), authentication and access rights management, vulnerabilities and attacks, and principles of security models and design.

15. Course aims and outcomes:

Aims:

The aim of the course is to provide students with a basic introduction to of all aspects of cyber-security including cryptography, network security, security management, legal and ethical issues, and security technology.

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

   A- Knowledge and Understanding: Students should ...

     A1) Learn the basic concepts involved with cyber security.

     A2) Understand the legal, ethical and professional issues related to cybersecurity.

     A3) Understand the importance of having a secure network.

     A4) Identify the technologies that can be used to achieve security.

     A5) Understand the main concepts related to cryptography.

     A6) Understand the basic concepts related to digital forensic and ethical hacking

   B- Intellectual skills: with the ability to ...

     B1) Identify the risks and write policies.

     B2) Distinguish between symmetric and asymmetric encryptions.

     B3) Analyze and compare the advantages/disadvantages of different security mechanisms and identify the set of security services they can provide.

     B4) Classify different types of security attacks

   C- Subject specific skills – with ability to ...

     C1) Encrypt, decrypt, sign and verify messages.

     C2) Scan network and inspect packets.

   D- Transferable skills – with ability to

     D1) Discuss and work in a group in order to identify security risks in systems

     D2) Use security tools

16. Topic Outline and Schedule:

Topic	Week	ILOs	Program SOs	TLA: Teaching/Learning & Assessment Methods
Introduction to Information Security: Explaining essential concepts and reviewing the origins of the field and its impact on the understanding of information security. Brief History of Information security. Key Concepts. Security in today's world business models, The recent emergence of	1&2	A1, B4	6	**T**: Lecture **L**: Chapter 1 and slides **A**: In class questions

Cybersecurity, Cybersecurity in worlds job market. Certifications and Security Organizations.				
The Need for Security: Defense in depth, Threats and Attacks, Compromises to Intellectual Property, Deliberate Software Attacks: Virus, worms, malware, zero-day attacks. Espionage or Trespass, Hackers, crackers, Forces of Nature, Human Error or Failure, Sabotage or Vandalism, hardware/Software failure or errors. Physical Security.	3&4	A1, B3, B4, D2	6	**T**: Lecture and presentation **L**: Reading lecture notes and chapter **A**: Assignment: Linux Tutorial and Essential Commands.
Legal, Ethical, and Professional Issues: Law and Ethics, Organizational Liability and the Need for Counsel, Policy Versus law, Policy Versus law, relevant laws. Legal, Ethical, and Professional Issues in Information Security.	5	A1, A2, B1, D1	4, 6	**T**: Lecture and presentation **L**: Reading lecture notes and chapter **A**: Quiz/Assignment
Risk Management: An Overview of Risk management, Risk Identification, Risk Assessment, Risk Control.	6	A1, B1, B3, B4, D1	6	**T**: Present examples **L**: Reading lecture notes and chapter **A**: In class questions
Network Security, Firewalls and VPNs Overview on Network Security, Packet filtering, Firewalls rules, DMZ, Sandbox, VPN, DNS server attacks.	7&8	A1, A3, B3, B4, C2, D2	1, 6	**T**: Present examples **L**: Reading lecture notes and chapter **A**: Assignment 2: Part1 - Wireshark packet analyzer. Part2- DNS query https://1.1.1.1/dns
Midterm Exam				**A**: On-line exam on materials in all above chapters**.**
Security Technology: Intrusion detection, access Control, and other security Tools: Intrusion detection (IDS) deploying and electiveness measures, centralized and distributed IDS, Honeypots, DDoS defense, False Negative, False Positive, Scanning and analysis tools, port scanning, Firewall analysis, packet sniffers, access control devices.	9&10	A1, A4, B3, B4, C2, D2	1, 6	**T:** Lectures and presentation **L**: Reading chapter **A**: Assignment 3: Nmap- Network Mapping and port scanning.
Cryptography: Cryptography terminologies, Cipher methods, Symmetric/ Asymmetric cryptography, Message Digest, Hash Value, digital signatures, digital certificates, Transport Layer Security (TSL), Secure Socket Layer (SSL), Message Integrity, Confidentiality, Eavesdropping, non-repudiation.	11&12	A1, A5, B2, B3, B4, C1, D2	6, 7	**T**: Lecture and presentation **L**: Reading chapter **A**: Assignment 4: Part1- Cryptography Tools and Hash Value Calculation. Part2- SSL Certificate analysis.
Wireless Network Security: Overview on wireless networks, Access points, Ad-Hoc Networks, Vulnerabilities, Man-In-the-middle Attack, Threats, and Countermeasures.	13	A1, A4, B3, B4	6	**T**: Presentation **L**: Reading lecture notes and chapter **A**: In class questions
Mobile device security: Mobile devices Hardware specifications, threats and attacks, countermeasures	14	A1, A4, B3, B4	6	**T**: Presentation **L**: Reading lecture notes and chapter **A**: Quiz/Assignment
Digital Forensics and Ethical Hacking Forensics definitions, evidence, stages, tools, and challenges. Ethical hacking definitions, types, and required skills.	15	A1, A6, B3, B4	6	**T**: Presentation **L**: Reading lecture notes and chapter **A**: In class questions
Review and Final Exam	16	All		Q&A.

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 attending and class participation, Practical assignments; conducting the midterm, and the final exam.

18. Course Policies:

A- Attendance policies:
Deliberate abstention from attending 1911194 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*	*30%*
- *Practical assignments*	*20%*
- *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:

- *Whitman, Michael E., and Herbert J. Mattord. "Principles of information security".6th Edition. Cengage Learning, 2017.*

21. Additional information:

Course website: elearning.ju.edu.jo

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

Name of Course Coordinator: -------------------Signature: -------------------------

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

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

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

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