The University of Jordan
School of Engineering
Computer Engineering Department

Academic Year:	2025 / 2026
Semester:	Fall
Course:	0907520 Information and Network Security
	3 Credits / Dept. Obligatory
Catalog Description:	This course covers topics including basics of computer security, Cryptography, Cryptology, Cryptanalysis, Encryption, Decryption, stream cipher, block cipher, symmetric encryption, asymmetric encryption, active attacks, passive attacks, DES, 3DES, AES, RSA, Hash functions, authentication, data integrity, and preserving confidentiality.
Prerequisite(s):	0907322 Computer Networks
Co-requisite(s):	None
Background:	Students are assumed to have had sufficient knowledge pertaining to computer networks.
Textbooks:	• Computer Security : Principles and Practice, 3rd Edition William Stallings and Lawrie Brown, Addison-Wesley, 2016.
References:	• Introduction to computer security/ Michael Goodrich, Roberto Tamassia. Harlow: Pearson Education; 2014 • Network Security Essentials: Applications and Standards, 6th ed., by William Stallings, Pearson Education, Inc., 2016.
Course Website:	Microsoft Teams
Schedule & Duration:	16 Weeks, 45 lectures, 50 minutes each (including exams)
Student Material:	Text book, class handouts, some instructor keynotes, and access to a personal computer and the internet.
Facilities:	Classroom with whiteboard, smart board, projector, library, and computer laboratory.
Course Objectives:	• By the end of this course, the student should be familiar with the basics of security and the main components and algorithms of the security triad; these are confidentiality, integrity, and availability. Also, the student should know the differences between symmetric and asymmetric encryption algorithms.

Course Outcomes and Relation to ABET Program Outcomes:	Upon successful completion of this course, a student should be able to:

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Upon successful completion of this course, a student should be able to:

- Understand the basic and most commonly used symmetric encryption algorithms.
- Decide which security algorithm and which security component are needed to attain a specific security function. [SO7]
- Decide when to use symmetric and when to use asymmetric encryption. [SO7]
- Decide for a given situation, what are existing vulnerabilities and what is the suitable security solution most suitable.
- Learn and use new security protocols and tools. [SO7]

Course Topics:

- Introduction
- Basic Classical Cryptography
- Mono-Alphabetic cryptanalysis example
- One Time pad
- DES
- AES
- Modes of Encryption
- Data Integrity
- Public Key Encryption (RSA)
- Diffie and Hellman Key Exchange
- User Authentication
- Access Control
- Denial-of-Service Attacks
- Intrusion Detection
- Firewalls and Intrusion prevention

Computer Usage: Practical aspects of the course are covered by assignments.

Policies:

- Attendance is mandatory and will be recorded each class; university absence rules apply.
- All submitted work must be your own; cheating, plagiarism, unauthorized AI-generated work, or improper use of AI tools will result in academic penalties.
- Professional conduct, timely communication, and adherence to assessment schedules are expected throughout the course
- All materials and announcements will be posted on Ms Teams Platform.

Assessment Tools & Grading:

☐ First Exam	0%	☒ Midtem Exam	30%
☒ Final Exam	50%	☒ Quizzes	10%
☒ Assignments	10%	☐ Projects	0%
☐ Other:			

Instructor(s):

- Prof. Ramzi Saifan (r.saifan@ju.edu.jo)

Section(s):

- **Section 1:** Sunday, Tuesday and Thursday 9:30 – 10:30

Student Outcomes (SO)

SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO3. An ability to communicate effectively with a range of audiences.

SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Last modified: December 11, 2025