The University of Jordan
King Abdullah II School for Information Technology
Computer Information Systems Department
Information Security & Privacy (1932322)

Pre-requisite(s): Data structures (1901231)

Course Web Site: http://elearning.ju.edu.jo

Course Coordinator: Dr. Omar Sultan Al-Kadi

Course Description:
This course provides an introduction to information security and privacy. The course covers Cryptography, Digital Signature, Key Management, Authentication, Authorization, Steganography, Privacy, Risk Analysis, and applies the information security methods and managements to the development of information security within healthcare systems.

Intended Learning Outcomes (ILO):
On successfully completing the module, the students are expected to have gained good knowledge of:

A-Knowledge and understanding: with the ability to ...
• Al)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.
• AS) Understand Cryptographic hash functions.
• A6) Understand Steganography, watermarking and information hiding.
• A7) Understand Access Control
• A8) Understand the roles and responsibilities of different actors involved in healthcare systems
• A9) Understand healthcare information regulation.
B- Intellectual skills: with the ability to ...
• B1) Distinguish between different security models.
• B2) Distinguish between public and symmetric key encryptions.
• B3) Explain some classical encryption methods.
• B4) Explain cryptographic hash functions
• BS) Distinguish between different steganography techniques.
• B6) Identify the different authentication and authorization techniques
• B7) Identify code vulnerabilities.
• B8) Identify security requirements in healthcare systems
C- Subject specific skills - with ability to ...
• C1) Analyze mathematical formula
• C2) Analyze computational aspects related to public key cryptography.
• C3) Analyze computational aspects related to symmetric key cryptography.
• C4) Develop a secure healthcare system.

D-Transferable skills - with ability to …
• D1) Work in a group in order to represent mathematically specific subject.
• D2) Communicate effectively by oral and written means.

Textbook and Materials:

- Information Security: Principles and Practice, Mark Stamp, Wiley, 2nd edition, 2011.
- Healthcare Information Security and Privacy, Sean Murphy, McGraw Hill, 2014.

Course Objectives

On completion of this course, students should be able to:

- Understand Cryptography and its elements: Symmetric key, public key, hash function, random number generators.
- Develop knowledge in various aspects of information security and privacy
- Understand security and privacy in the domain of health informatics.

Attendance and Responsibilities:

Students are responsible for class attendance and for all material covered in class. It is the students' responsibility to turn in their homework assignments to their instructors by the announced due date/time.

Class Participation:

Class participation will account for a small percentage of the grade; participation requires reading ahead the assigned material before each class session and being engaged in class discussions, and actively participating in group activities.

Tentative Schedule: *(The coverage order is subject to change as the instructor sees fit)*

Week(s)	Topics:	ILOs	ABET Outcomes	ILOs
1	Introduction	A1, A2, B1	A	T: Lecture L:CH 01 A:Assignments, Midterm, Final
2,3	Cryptography	A1,A2,A3,A4, B1,B3	a	T: Lecture L:CH 02 A:Assignments, Midterm, Final
4,5	Symmetric Key Cryptography	A3,B2,C1,C3	a,b,c,i	T: Lecture L:CH 03 A:Assignments, Midterm, Final
6	Public Key Cryptography	A4,B2,C1,C2	a,b,c,i	T: Lecture L:CH 04 A:Assignments, Midterm, Final
7	Hash Function; Secret Sharing ; Random Numbers	A5,B4,C1	a,b,c,i	T: Lecture L:CH 05; A:Assignments, Midterm, Final
8	Information Hiding	A6,B5,C1	a,c	T: Lecture L:CH 05 + lecture notes; A:Assignments,

				Midterm, Final
8	Midterm exam			
9	Authentication	A7,B6,C4	c,j	T: Lecture L:CH 07 A:Assignments, Midterm, Final
10	Authorization	A7, B1,B6,C4	a,c,j	T: Lecture L:CH 08 A:Assignments, Midterm, Final
10	Software and Web Security	B7,C4	c,i	T: Lecture L:CH 11 + lecture notes A:Assignments, Midterm. Final
11	Healthcare Overview	A1,A8,A9	e,j	T: Lecture and discussion; L:Murphy book ;A:Assignments, Final
12	Healthcare Information Privacy and Security Management	A1,A8,A9,B8, C4	c,e,j	T: Lecture and discussion; L:Murphy book ;A:Assignments, Final
13, 14	Project Discussion and Presentation	D1,D2	c,e,j	A: Presentations
15	Revision	-	-	-
16	Final	-	-	-

Grading and Evaluation Criteria: 100 points distributed as follows:

Weight	Criteria
30%	Midterm Exam
20%	Assignments, class participants, Presentation
50%	Final Exam

Intended (Tentative) Grading Scale:

Range	LG	الحرف	Range	LG	الحرف	Range	LG	الحرف
90 - 100	**A**	أ	**74 - 77**	**B-**	**ب-**	**56 - 60**	**D+**	**د+**
86 - 89	**A-**	أ-	**70 - 73**	**C+**	**ج+**	**50 - 55**	**D**	**د**
82 - 85	**B+**	ب+	**66 - 69**	**C**	**ج**	**45 - 49**	**D-**	**د-**
78 - 81	**B**	ب	**61 - 65**	**C-**	**ج-**	**0 - 44**	**F**	**هـ**

Additional Reading

- Digital Watermarking andSteganography:Fundamentals and Techniques, Frank Shih, CRC Press, 2nd Edition, 2017.
- Introduction to Modem Cryptography, Katzand Lindell, CRC Press, 2nd Edition, 2014
- A Course in Number Theory and Cryptography, Neal Koblitz, Springer, 2012. C to ra h and In ormation Securi , Pach hare, PHILearnin ,2015.

Regulations:

1. Every student is expected to completely adhere to the exams dates and projects strict deadlines, absolutely no exceptions will be given.
2. Maximum allowable absence 15% of number of Lectures/Semester

- الامتناع المدبر عن حضور المحاضرات أو الدروس أو عن الأعمال الاخرى التي تقضي الأنظمة بالمواظبة عليها ، وكل تحريض على هذا الامتناع سوف يؤدي الى حرمان الطالب من المادة المعنية.
- في حالة التغيب عن امتحان ال Mid Term لن يكون هناك امتحان تعويضي الا في حالة وجود عذر وحالة طارئة من المستشفى. على الطالب ابراز العذر لمدرس المادة في فتره لا تتجاوز الثلاثة ايام من تاريخ الامتحان, وللمدرس الحق في قبول او رفض العذر , وحسب التعليمات.

- **Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For the final complaints, there will be a committee to review grading the final exam.**
- **For more details on University regulations please visit http://www.ju.edu.jo/rules/index.htm**