



جمهورية مصر العربية

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research



المعهد العالى للحاسبات وتكنولوجيا المعلومات
مدينة الشروق - القاهرة
شعبة علوم الحاسب

Course specification

Course Code: CS 413

Course Title: Computer Security

Academic Year: /

Course specification
(CS 413 – Computer Security)

Course Outline	
Faculty:	<i>HICIT- (Higher Institute for Computers & Information Technology-El Shorouk Academy)</i>
Programme(s) on which the course is given:	Undergraduate program in Computer Science
Major or minor element of programme:	Compulsory
Department offering the program	Department of Computer Science
Department offering the course:	Department of Computer Science
Level	Fourth Level
Date of specification approval	DD/MM/2022

Basic Information			
Code:	CS 413	Title:	Computer Security
Prerequisites:	CS 312 Analysis of Algorithms		
Weekly Hours:			
Lecture: 2	Exercise: -	Practical : 2	Total: 3 credit hours

Professional Information
<p><u>Course Aims:</u></p> <p>This course aims to give the student the knowledge and practice of how to secure various components of the computer system. After completion this course, the student should be able to identify the various threats to computer system and information exchanged over the network, and how to counter them, to be aware of various cryptosystem, and the most updated technology which is block chain and cryptocurrency technology.</p>

Program ILOs Covered by Course			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A1,A4,A6,A10	B2,B3,B12	C9, C10	D1, D8

Intended learning outcomes of course (ILOs)

a. Knowledge and Under-Standing:

- a1. Understanding the definition of the various threats, security. Services, protection techniques over the exchanged information
- a2. Understanding the definition of the symmetric-key cryptosystems, asymmetric-key cryptosystems, and hybrid cryptosystems

b. Intellectual Skills:

- b1. Evaluate the computer assets and define security requirements
- b2. Think over the security problems and schemes in various cryptosystems (symmetric, asymmetric, and hybrid cryptosystems)

c. Professional and practical skills

- c1. Specify basic security issues.
- c2. Apply counter measure for information exchange threats.

d. General and transferable skills

- d1. Work effectively as an individual and as a member of a team.
- d2. Write structural report.

Contents

Topic	Contact Hours	
	lecture	Lab
Introduction to computer security / database / program / OS, network, and physical security	6	6
Security threats, protection services, and protection mechanisms.	9	9
Symmetric-key cryptosystems: classical techniques / modern techniques	9	9
Public-key cryptography	6	6
Hybrid cryptosystems	6	6
Block Chain concepts and applications	3	3

Teaching and learning methods

Method	Used
Lectures	√
Tutorial Exercises	√
Practical Lab	√
Discussions.	√
Self – Learning (Reading material, Websites search,)	√
Group work	√
Presentation	√
Problem solving/problem solving learning based	√
Case study	√
Synchronous E-Learning	-
Video lectures	√
Asynchronous E-Learning	√

Student assessment methods & Schedule

Methods	Used	Week#
Midterm Exam	√	8
Final Exam	√	16
Course Work & Quizzes	√	2-14
Practical Exam		

Assessment Weight

Assessment	Weight %
Mid Term Exam	20%
Final Exam	60%
Course Work & Quizzes	20%
Total	100

Course Work & Quizzes

Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

List of references

Essential books (textbooks)	Cryptography and network security: principles and practice 6th edition by William Stalling.
Course notes	E-Learning Portal
Recommended books	
Periodicals, website	
Videos link	

Required Facilities

Tools & SW (Technology facilities):	<ul style="list-style-type: none"> - MS project SW Package for schedule projects - MS power point SW package for presentation - MS word SW package for system documentation preparation 	
Teaching facilities:	Whiteboard	
	Computer Lab	
	Data show	√
	E-Learning	√
	Videos	√
	Website	√

Course Content/ILO Matrix

Course Contents	Knowledge & understanding		Intellectual skills		Professional and practical skills		General	
	a1	a2	b1	b2	c1	c2	d1	d2
Introduction to computer security / database / program / OS, network, and physical security	x		x		x	x		
Security threats, protection services, and protection mechanisms.	x		x		x	x		
Symmetric-key cryptosystems: classical techniques / modern techniques		X	x	x	x	x		
Public-key cryptography		x	x	x	x	x		
Hybrid cryptosystems		x			x	x		

Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding		Intellectual skills		Professional and practical skills		General	
	a1	a2	b1	b2	c1	c2	d1	d2
Lectures	x	x	x	x	x	x		
Tutorial Exercises			x	x	x	x		
Reading material								
Websites search								
Research and reporting								
Problem solving								
Group work								
Case study								
Practical Lab								
Discussions.			x	x	x	x	x	x

Assessment Methods /ILOs Matrix

Assessment Methods	Knowledge & understanding				Intellectual skills		Professional & practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
Mid Term Exam	x	x	x	x	x	x	x	x		
Final Exam	x	x	x	x	x	x	x	x		
Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x

Course ILOs Vs Program ILOs												
Prog ILOs Course ILOs		Knowledge & understanding				Intellectual skills			Professional and practical skills		General	
		A1	A4	A6	A10	B2	B3	B12	C9	C10	D1	D8
Knowledge and Understanding	a1	x	x	x	x							
	a2	x	x	x	x							
Intellectual skills	b1					x	x	x				
	b2					x	x	x				
Professional and practical skills	c1								x			
	c2									x		
General skills	d1										x	
	d2											x

Course Coordinator : ()

Head of Department: Dr. Ahmed El-Abbassy ()

Date: --/--/2023