MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Spring

CSE4057 Information Systems Security

COURSE DESCRIPTION FORM

Offering Department	Department of Computer Engineering		Technical Elective
Course Code	CSE4057		
Course Name	Information Systems Security		
Language of Instruction	English		
ECTS	5		
Contact Hours	Theoretical (T): 3	Practice (P):	Laboratory(L):
Pre-requisites	-		
Instructor	**Name**	Ömer KORÇAK	
	E-mail	omer.korcak@marmara.edu.tr	
Course Materials	**Mandatory**	1. Stallings, W., & Brown, L. (2012). Computer security. Principles and practice (2nd edition). 2. J.F. Kurose and K.W. Ross, Computer Networking: A Top Down Approach, 7/e (Chapter 8).	
	Recommended	1. Stallings, W., & Tahiliani, M. P. (2014). Cryptography and network security: principles and practice.	
Course Objectives	This course aims to teach some topics related to symmetric key and public-key cryptography, privacy, honesty, authentication, digital signatures, usability, anonymity, network security on various layers, web application security and OS security.		
Course Content			
Learning Outcomes	**LO1**	To have knowledge about cryptographic algorithms	
	LO2	To be able to apply cryptographic algorithms for privacy, authentication and data integrity	
	LO3	To be able to explain how to ensure security in application, transport, network and connection layers	
	LO4	To be able to explain security threats and solution methods in information systems	
	LO5	To be able to design and develop a safe system	

Program Outcomes		**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	**LO7**
PO4	Ability to devise (a), select, and use (b) modern techniques and tools needed for engineering practice (1); ability to employ information technologies effectively (2).		1a,1b			1a,1b,2		
PO13	Knowledge of mathematics, basic sciences (a), computer science (b) and engineering sciences (c) required for the design and analysis of complex electrical and electronic devices, software and systems including hardware and software.	a,b	b	b	b			

	No	**Week**	**Subjects**	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	**LO7**
Subjects (Knowledge, Skills and Behaviours), **Contributions of Subjects to Learning Outcomes,** **Assessment Methods**	**S1**	1	Introduction to Computer Security	MF						
	S2	2	Cryptography: Classical cryptography algorithms	MF						
	S3	3	Cryptography: Stream cipher, block encryption, CBC, DES, AES	MF,Q	MF,P			P		
	S4	4	Cryptography: Public-key encryption, RSA, Diffie-Helman, Elliptic Curve	MF,Q	MF,P			P		
	S5	5	Network security: email security, transport layer security, SSL		MF,P	MF,Q	MF	P		
	S6	6	Network security: Network layer security, IPSec, VPN		MF	MF,Q	MF			
	S7	7	Network security: WLAN security		MF	MF	MF			
	S8	9	Network security: Organizational security, fire walls, intrusion detection systems			MF	MF			
	S9	10	Network security: Case Studies			MF	MF	P		
	S10	11	Web application security: SQL injection, XSS				MF			
	S11	12	Web application security: CSRF and other attacks, prevention methods				MF			
	S12	13	Operating system security: buffer overflow, etc				MF			
	S13	14	Privacy and anonymity, TOR		MF		MF			

	No	**Type**	**Weight**	**Implementation Rule**	**Make-up Rule**
Assessment Methods and Weights	**MF**	Midterm, Final	70%	There will be a midterm and a final exam. Exams will be taken as closed books and lecture notes. Calculater is allowed.	Marmara University regulations will be followed for make-up exams.
	Q	Quiz	5%	There will be one or two quizzes.	
	P	Project	25%	There will be two projects. In the first project, cryptographic algorithms are applied and	

				tested. In the second project, a comprehensive system using these algorithms is developed.	
	TOTAL		100%		

Determining Letter Grades

- The letter grades will be determined based on the midterm and final exams and quizzes.
- In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.
- The final exam score and the total average score of the student must be at least 35 to pass the course.
- According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 40 out of 100.

Assessment	Midterm	Quiz	Project	Final	TOTAL
Weight	30	5	25	40	100

Teaching Method, Student Work Load

Time Applied by the Instructor

No	**Method**	**Explanation**	**Hours**
1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.	14x3=42
2	Problem Session/ Practice	Problems related to the course topics are solved on the board.	
3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.	
4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)	
5	Field Work	Students attend activities outside the campus.	
6	Midterm	Midterm exam is given during the midterm week.	2
7	Final	Final exam is given during the final exam week.	2
Estimated Time to be Allocated by a Student			
8	Poject	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.	8+24=32
9	Homeworks	The students solve the problems given as homework.	
10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.	13
11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.	32
12	Office Hour	Students ask questions to the instructor or the assistant during office hours.	2
Total			125

Academic Honesty

Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.