Computer Security

Course Code:

CSE 439

Course Period:

Autumn

Course Type:

Area Elective

Credits:

3

Theoric:

3

Practice:

0

Laboratory Hour:

0

ECTS:

5

Course Language:

English

Course Coordinator:

Onur Demir [1]
Courses given by:

Onur Demir [1]
Course Objectives:

The aim of this course is to provide students with knowledge in basics computer security concepts on the network security part mostly, principles for providing security, tools, platforms and applications that provide security.

Course Content:

CSE 439 is a course on network and computer security. Topics covered include the following: Security Concepts and Terminology – Threats, Challenges, Cryptology Cryptanalysis, Single Key and Public Key Systems, Hash Algorithms, Network Security, Applications, Authentication, Email, IP and Web Security Applications, Network Attack Types, Denial of Service Attacks and Defenses, System Security – Intruders, IDSs, Malicious Software, and Firewalls, Operating System Security Concepts.

Course Methodology:

1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study

Course Evaluation Methods:

A: Testing, B: Experiment, C: Homework, D: Project

Course Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Adequate knowledge in confidentiality, integrity and authentication.	1	1,2	A,C
2) Adequate knowledge in single key and public key encryption, authentication mechanisms.	1	1,2	A,C
3) Adequate knowledge in security platforms, tools and applications such as Kerberos, PGP, IPSEC.	1	1,2	A,C
4)Adequate knowledge in network security issues, attacks, solutions.	1	1,2	A,C

COURSE CONTENT

Week	Topics	Study Materials
1	BASICS – SECURITY PRINCPLES, ATTACKS, SERVICES	Textbook
2	CRYPTOLOGY – GOALS, HISTORY, CRYPTANALYSIS	Textbook
3	SINGLE KEY ENCRYPTION	Textbook
4	PUBLIC KEY ENCRYPTION, HASHING	Textbook
5	AUTHENTICATION	Textbook

6	KERBEROS	Textbook
7	MIDTERM EXAM I	Textbook
8	IPSEC	Textbook
9	NETWORK SECURITY CONCEPTS, DOS ATTACKS	Textbook
10	INTRUSION DETECTION	Textbook
11	VIRUSES	Textbook
12	FIREWALLS	Textbook
13	MIDTERM EXAM II	Textbook
14	PRESENTATIONS	Textbook

RECOMMENDED SOURCES

Textbook	Lecture Notes: http://cse.yeditepe.edu.tr/v2/en/academic/course-pages [2]
Additional Resources	Cryptography and Network Security Principles and Practices, 4th edition W. Stallings, ISBN 0-13-187316-4

MATERIAL SHARING

Documents	
Assignments	
Exams	

ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-terms	2	60
Assignment	5	20
Presentation	1	20
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		**100**

COURSE'S CONTRIBUTION TO PROGRAM

No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.					**X**
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.					
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.					
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.					
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.					
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.					
7	Ability to communicate effectively both orally and in writing; knowledge of a minimum of one foreign language.					
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.					
9	Awareness of professional and ethical responsibility.					
10	Information about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.					
11	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety; awareness of the legal consequences of engineering solutions.					

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	9	4	36
Hours for off-the-classroom study (Pre-study, practice)	14	3	42
Midterm examination	2	2	4
Presentation	1	10	10
Homework	5	6	30
Final examination	1	2	2
Total Work Load			124
Total Work Load / 25 (h)			4.96
ECTS Credit of the Course			5