

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
COMPUTER SECURITY	CSE531		3 + 0	3	10

Prerequisites	
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Language of Instruction	English
Course Level	Master's Degree
Course Type	Technical Elective
Course Coordinator	
Instructors	Assist. Prof. Onur Demir
Assistants	
Goals	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.
Content	CSE 539 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 Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Adequate knowledge in confidentiality, integrity and authentication.	5	1,2	A,C
2) Adequate knowledge in single key and public key encryption, authentication mechanisms.	5	1,2	A,C
3) Adequate knowledge in security platforms, tools and applications such as Kerberos, PGP, IPSEC.	5,11	1,2	A,C
4) Adequate knowledge in network security issues, attacks, solutions.	5,11	1,2	A,C
5) Ability to analyze scientific publications.	4	4	D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
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Assessment Methods:	A: Testing, B: Experiment, C: Homework, D: Project
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COURSE CONTENT		
Week	Topics	Study Materials
1	BASICS - SECURITY PRINCIPLES, 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	Textbook
8	IPSEC	Textbook
9	NETWORK SECURITY CONCEPTS, DOS ATTACKS	Textbook
10	INTRUSION DETECTION	Textbook
11	VIRUSES	Textbook
12	FIREWALLS	Textbook
13	PRIVACY and ANONYMITY	Textbook
14	PRESENTATIONS	Textbook

RECOMMENDED SOURCES	
Textbook	Lecture Notes: http://cse.yeditepe.edu.tr/v2/en/academic/course-pages
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	1	40
Assignment	5	30
Presentation	1	30
Total		100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		30
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		70
Total		100

COURSE CATEGORY	Expertise/Field Courses
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COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution				
		0	1	2	3	4
1	Ability to reach wide and deep knowledge through scientific research in the field of Computer Science and Engineering, evaluate, interpret and apply.					
2	Ability to use scientific methods to cover and apply limited or missing knowledge, and to integrate the knowledge of different disciplines.					
3	Ability to construct Computer Science and Engineering problems, develop methods to solve the problems and use innovative methods in the solution.					
4	Ability to develop new and/or original ideas and algorithm; develop innovative solutions in the design of system, component or process.			X		
5	Ability to have extensive knowledge about current techniques and methods applied in Computer Engineering and their constraints.					X
6	Ability to design and implement analytical modeling and experimental research, solve and interpret complex situations encountered in the process.					
7	Ability to use a foreign language (English) at least at the level of European Language Portfolio B2 in verbal and written communication.					
8	Ability to lead in multidisciplinary teams, develop solutions to complex situations and take responsibility.					
9	Ability to pass process and the results in Computer Science and Engineering field, in national and international area in or outside of the field, systematically and clearly in written or oral form.					
10	Awareness of the social, legal, ethical and moral values, and the ability to conduct research and implementation work within the framework of these values.					
11	Awareness of the new and emerging applications in Computer Science and Engineering field, and the ability to examine them and learn if necessary.			X		

12	Ability to describe the social and environmental dimensions of Computer Science and Engineering applications.								
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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)	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	14	5	70
Midterm examination	1	3	3
Presentation	5	10	50
Homework	1	75	75
Final examination	1	3	3
Total Work Load			240
Total Work Load / 25 (h)			9,6
ECTS Credit of the Course			8