ABDULLAH GÜL UNIVERSITY
ABDULLAH GÜL UNIVERSITY **INSTITUTE OF SCIENCE** **ELECTRIC and COMPUTER ENGİNEERING ANABİLİM DALI** **INDIVIDUAL COURSE DESCRIPTION**

Course Title	Code	Semester	T+U Hours	Credit	ECTS
COMPUTER NETWORKS	ECE-511	FALL	3 + 0	3	10

Prerequisities and co-re-requisities	None

Type	Elective
Language	English
Coordinator	Assoc. Prof. V. Çağrı Güngör
Instructor	Assoc. Prof. V. Çağrı Güngör
Adjunt	None
Aim	This course provides a comprehensive overview of computer networks and mobile communications technologies. The topics include computer networks, Internet, TCP/IP, transport layer protocols, routing layer protocols, medium access control protocols, wireless channel models, cellular networks and wireless local area networks. After completing the course, students will get a basic understanding about the computer networks and mobile communications, and related problem solving discipline using mathematics / engineering principles.
Learning Outcomes	1.An ability to design and develop algorithms for communication and computer networking problems 2.An ability to develop test and monitoring programs for communication networks and wireless systems 3. An ability to analyze and evaluate the performance of Internet 4. An ability to design and develop cross-layer protocol for communication and computer networks 5. An ability to analyze and evaluate the performance of wireless ad hoc networks 6. An ability to analyze and evaluate the performance of wireless local area networks 7. An ability to analyze and evaluate the performance of cellular networks
Course Content	• An overview of computer networks • Internet and TCP/IP • Transport layer protocols • Routing layer protocols • MAC layer protocols • Wireless Channel Models • Queuing Theory • Network and mobility management • Wireless Local Area Networks • Cellular Networks • Wireless Ad Hoc Networks • Cross Layer Protocols and Review

WEEKLY TOPICS AND PRELIMINARY STUDY		
Week	**Topics**	**Prelimanary Study**
1	An overview of computer networks	The relevant book chapters and materials from the literature
2	Description and review of Internet and TCP/IP Protocol Stack	The relevant book chapters and materials from the literature
3	Description and review of Transport layer protocols	The relevant book chapters and materials from the literature
4	Description and review of Routing layer protocols	The relevant book chapters and materials from the literature
5	Description and review of MAC layer protocols	The relevant book chapters and materials from the literature
6	Queuing Theory	The relevant book chapters and materials from the

		literature
7	Queuing Theory (Continued)	The relevant book chapters and materials from the literature
8	Midterm Exam	
9	Description and review of Wireless Channel Models	The relevant book chapters and materials from the literature
10	Description and review of Network and mobility management	The relevant book chapters and materials from the literature
11	Description and review of Wireless Local Area Networks	The relevant book chapters and materials from the literature
12	Description and review of Wireless Ad Hoc Networks	The relevant book chapters and materials from the literature
13	Description and review of Cross Layer Protocols	The relevant book chapters and materials from the literature
14	Description and review of Cellular Networks	The relevant book chapters and materials from the literature
15	Project Presentations	
16	Final Exam	

SOURCES	
Lecture Notes	Lecture slides
Other Sources	**Course Textbook:** **Additional Materials** • W. Stallings, "Data and Computer Communications," Prentice Hall, 8th edition, 2007. • B. Forouzan, "Data Communications and Networking," McGraw-Hill, 4th edition, 2007. • B. A. Black, et al., "Introduction to Wireless Systems," Prentice Hall, 2008

COURSE MATERIALS SHARING	
Documents	
Homeworks	7
Exams	1 Midterm Exam and 1 Final Exam

EVALUATION SYSTEM		
SEMESTER STUDY	**NUMBER**	**CONTRIBUTION**
MIDTERM	1	30
Homeworks	7	35
FINAL EXAM	1	35
TOTAL		100

Course Category	
Sciences and Mathematics	50%
Engineering	50%
Social Sciences	0%

RELATIONSHIPS BETWEEN LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS						
No	Program Qualifications	Contribution Level				
		1	2	3	4	5
1	Skills of using Mathematical, Science and Engineering Knowledge in Advanced Research					x
2	Skills of analyzing, designing and/or implementing an original system which will solve					x

	an Engineering Problem					
3	Skills of using software, hardware and modern measurement instruments for advanced research in one's field of expertise					x
4	Skills of planning, detailing and doing independent research					x
5	Skills of following literature, making and/or listening technical presentation, writing academic level article				x	
6	Skills of finding original ways by means of innovative thinking and questioning					x

Increasing from 1 to 5

ECTS / WORK LOAD TABLE			
Activities	Number	Duration (Hours)	Total Work Load
Course Length (includes exam weeks: 16x total course hours)	16	3	48
Out-of-class Study Time (Pre-study, practice)	16	5	90
Internet search, library work, literature search	16	3	48
Homework	7	13	91
Midterm	1	15	15
Final Exam	1	20	20
Total Work Load			312
Total Work Load / 30			312/30
Course ECTS Credit			10