SPECIAL TOPICS: WIRELESS AND MOBILE NETWORKS
DERS KATALOG FORMU

Dersin Kodu: CSE585				**Dersin Adı**:			
Yarıyılı	**D + U + L**	**Kredisi**	**AKTS**	**Dersin Dili**	**Dersin Türü**	**İşleniş Yöntemi**	**Ön Koşulları**
	3+0+0	3	7	İngilizce	Seçmeli	Ders, ödev, proje	a rough knowledge of computer networks in general
Dersin Amacı				This course is intended to give an introduction to the field of mobile communications and focuses on digital data transfer in wireless networks.			
Dersin İçeriği				Introduction to wireless and mobile networks and network architectures, Cellular networks. Mobility and handoff management, Centralized wireless LANs and Mobile IP, Mobile transport protocols, Ad hoc wireless networks, Sensor networks, Satellite networks.			
Dersin Öğrenme Çıktıları				Understanding of mobile and wireless communications from a computer science point of view			
Dersin ISCED Kategorisi				48 Bilgisayar, 52 Mühendislik			
Ders Kitabı				Mobile Communications, Jochen Shiller, 2nd Edition, Addison and Wesley			
Yardımcı Kaynaklar				- Wireless Communications & Networks, William Stallings, 2nd Edition, Prentice Hall - Yi-Bing Lin, Imrich Chlamtac, "Wireless and Mobile Network Architectures," John Wiley, 2001 - T. S. Rappaport, 2nd Ed. Wireless Communications: Principles and Practice, Prentice-Hall, 2004			

HAFTALIK KONULAR

Hafta	Teorik Ders Konuları	Uygulama / Laboratuar Konuları
1	Introduction - Use-cases, applications - Short History - Challenges	
2	Wireless Transmission Fundamentals - Signals - Analog and Digital Data Transmission - Channel Capacity - Transmission Media - Signal Strength and Decibels	
3	Antennas and Propagation - Antennas - Propagation Modes - Line of Sight Transmission - Fading in the Mobile Environment	
4	Modulation Techniques - Signal Encoding Techniques - Digital Data, Analog Signals - Amplitude Shift Keying - Frequency Shift Keying - Phase Shift Keying	
5	Spread Spectrum - Concept - Frequency Hopping Spread Spectrum - Direct Sequence Spread Spectrum	
6	Medium Access Control - Motivation for Wireless MAC - SDMA, FDMA, TDMA, CDMA - Comparisons	
7	Satellite Systems - Basics, Types of Satellites - Routing, Handover and Localization - MAC Schemes	
8	Cellular Networks - Principles of Cellular Networks - First Generation Analog, AMPS - Second Generation TDMA, GSM	

9	Evolution of GSM in to 2.5G and 3G - New Data Services for GSM, HSCSD, GPRS, - 3G –UMTS, IMT2000, UMTS Architecture	
10	Wireless LANs - Characteristics, IEEE 802.11, PHY, MAC, IEEE 802.11 family (11a, b, g, h, i…)	
11	Wireless Personal Area Networks - Bluetooth, User Scenarios, Architecture, Protocol Stack - IEEE 802.15.1 and IEEE 802.15.2 - IEEE 802.15.4 (Low-Rate Wireless Personal Area Networks)	
12	- Mobile IP: Problems for IP in Wireless (Routing/Handoff) - Mobile Transport Layer, support for mobility	
13	Recent topics: Wireless Sensor Networks, Near field communication, Radio Frequency Identifier (RFID), participatory sensing, pervasive healthcare, ...	
14	Student Project Demonstrations	

DERSİN DEĞERLENDİRME SİSTEMİ

	Etkinlikler	**Adet**	**Katkı Oranı (%)**
Yarıyıl İçi Çalışmaları	**Kısa Sınavlar**	0	0
	Dönem Ödevi / Projesi	0	0
	Raporlar	0	0
	Bitirme Tezi/Projesi	0	0
	Seminer	0	0
	Ödevler	0	0
	Sunum	1	15
	Arasınavlar	1	25
	Proje	1	20
	Laboratuar	0	0
	Diğer (Derse katılım)	1	5
YARIYIL SONU SINAVI		1	35
Toplam		5	100

DERSİN BİLGİSAYAR MÜHENDİSLİĞİ PROGRAMI KAZANIMLARINA (ÇIKTILARINA) KATKISI

	Program Kazanımları (Çıktıları)	1	2	3
1	Ability develop and/or extend an advanced method in computer science			X
2	Ability to understand and implement in code a given proposal expressed in a technical paper			X
3	Ability to specify and search the literature relevant to a given problem in computer science			X
4	Awareness of the mathematical foundations of computer science solutions	X		
5	Awareness of the principles underlying current advanced technologies			X
6	Ability to express technical content verbally and in writing			X
7				
8				
9				
10				
11				

Katkı Derecesi: 1 düşük, 2 orta, 3 yüksek

AKTS - İŞ YÜKÜ TABLOSU

ETKİNLİKLER	Sayı	Süre (Saat)	İş Yükü
Ders Süresi	14	3	42
Yarıyıl Sonu Sınavı (Hazırlık Süresi Dahil)	1	30	30
Kısa Sınavlar	0	0	0
Dönem Ödevi / Projesi	0	0	0
Raporlar	0	0	0
Bitirme Tezi/Projesi	0	0	0
Seminer	0	0	0
Sınıf Dışı Çalışma Süresi	0	0	0
Ödevler	0	0	0
Sunum	1	25	25
Arasınavlar (Hazırlık Süresi Dahil)	1	25	25
Proje	1	50	50
Laboratuar	0	0	0
Toplam İş Yükü			172
Dersin AKTS Kredisi (Toplam İş Yükü / 25)			7

Revizyon/Tarih **23.09.13**	**Koordinatör / HAZIRLAYAN** **Yrd. Doç. Dr. Ayşegül Tüysüz Erman**	**ONAYLAYAN**