AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Wireless and Mobile Communication Systems								
Course Code	EEE534		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The aim of this course is to introduce students the theory, architecture, protocols and techniques in wireless and mobile systems.								
Course Content	Propagation and System Planning, Wireless Access, Cellular Systems, Wireless Network Standards, Wireless Sensor Networks, Multihop/mesh/relay networks, Cooperative communications, Radio resource management in cellular networks								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)	Lec. Mümtaz YILMAZ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	30
Assignment	6	20
Project	1	30

Recommended or Required Reading	
1	Wireless Communications, A. Goldsmith, Cambridge University Press, 2005.
2	Wireless Communications: Principles and Practice, T. S. Rappaport, Prentice Hall, 2nd Edition, 2002.
3	Fundamentals of Wireless Communications, D. Tse and P. Viswanath, Cambridge University Press, 2005.

Week	**Weekly Detailed Course Contents**	
1	Theoretical	Introduction to wireless communication systems
2	Theoretical	Radio wave propagation in the mobile environment: Free-space propagation, propagation mechanisms,large scale and small scale fading, path loss models
3	Theoretical	Statistical channel models: narrowband and wideband models, System Planning: mobile radio link design, and introduction to radio network planning
4	Theoretical	Overview of wireless access networks: multiple access technologies, noise and interference in wireless communication systems, diversity reception
5	Theoretical	MIMO communication: MIMO narrowband channel model, transmit diversity and spatial multiplexing
6	Theoretical	Evolution of cellular systems, principles and operation of cellular systems, narrowband systems: FDMA and TDMA systems, frequency planing, and capacity
7	Theoretical	CDMA systems
8	Intermediate Exam	Midterm Exam
9	Theoretical	OFDMA systems.
10	Theoretical	Wireless LANs, wireless MANs, short range wireless networks, standards, capabilities and applications, broadband wireless networks, and integration of different types of wireless networks
11	Theoretical	Wireless LANs, wireless MANs, short range wireless networks, standards, capabilities and applications, broadband wireless networks, and integration of different types of wireless networks
12	Theoretical	Introduction to sensor networks and applications, issues in sensor networks in comparison to conventional wireless networks, special design considerations in energy conservation, routing etc.
13	Theoretical	Multihop/mesh/relay networks, Cooperative communications
14	Theoretical	Radio resource management in cellular networks
15	Theoretical	Radio resource management in cellular networks
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	6	3	3	36
Project	1	14	0	14
Individual Work	14	3	0	42
Midterm Examination	1	9	3	12
Final Examination	1	9	3	12
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
25 hour workload is accepted as 1 ECTS				

Learning Outcomes	
1	Be familiar with the architecture and protocols of typical wireless communications networks
2	Be aware of some routing algorithms, multiple-access principles etc.
3	Possess knowledge of cellular wireless communications systems
4	Be aware of the techniques and basic principles of wireless LANs, wireless ad-hoc networks, wireless sensor networks, etc.
5	Select a wireless technology or a combination of technologies to suit a given application.

Programme Outcomes *(Electrical and Electronics Engineering Master)*	
1	Developing and intensifying knowledge that requires expertise in the area of Electrical-Electronics Engineering, and gaining the skills necessary to analyze and solve problems using this knowledge
2	Grasping the inter-disciplinary interaction related to Electrical-Electronics Engineering, interpreting and forming new types of knowledge by combining the knowledge from Electrical-Electronics Engineering and the knowledge from various other disciplines
3	Developing new approaches to solve the complex problems arising in Electrical-Electronics Engineering, coming up with solutions while taking responsibility and carrying out a specific study independently
4	Assessing the knowledge and skill gained in the area of Electrical-Electronics Engineering with a critical view
5	Transferring the current developments and one’s own work in Electrical-Electronics Engineering, to other groups in written, oral and visual forms
6	The ability to control the collecting, interpreting, practicing and announcing processes of the Electrical-Electronics Engineering related to data taking into consideration scientific, cultural and ethical values and the ability to teach these values to others
7	Developing application plans concerning the subjects related to Electrical-Electronics Engineering and the ability to evaluate the end results of these plans within the frame of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	4	4	4	4	4
P2	4	4	4	4	4
P3	4	4	5	4	4
P4	4	4	4	4	4
P5	4	4	4	4	4
P6	4	4	4	4	4
P7	4	4	4	4	4