

Dept Number	CS 441	Course Title	Mobile and Wireless Computing							
Semester Hours	3	Course Coordinator	Kemal Akkaya							
Catalog Description	<p>Concepts of mobile and wireless systems are presented. These concepts include, but are not limited to, Routing and Medium Access for Mobile Ad hoc and Wireless Sensor Networks, Mobile IP, Wireless LAN and IEEE 802.11. Hands-on group lab experience is an integral component in the course.</p>									
Textbooks										
References										
Ad Hoc Wireless Networks by Murthy and Manoj, 1 st Ed., Prentice Hall, 2004.										
Course Learning Outcomes										
<ul style="list-style-type: none"> • Understand the characteristics and challenges of wireless communication and radio propagation. • To learn various routing and media access protocols specifically designed for mobile and wireless networks. • To learn to design and implement wireless communication protocols using real-life sensors and/or simulation tools. 										
Assessment of the Contribution to Program Outcomes										
Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →	X	X	X	X	X	X	X	X		X
Prerequisites by Topic										
CS 330 with a grade of <i>C</i> or better, or consent of the instructor.										

Major Topics Covered in the Course

1. Introduction: review of OSI layering, networking basics {3 classes}
2. Review of TCP/IP physical layer (signals), data link layer (MAC protocols), and network layer (routing protocols) {4 classes}
3. Basics of wireless communications: radio propagation, antennas, fading, spread spectrum {3 classes}
4. MAC protocols for wireless networks: hidden & exposed terminal problems, MACA, MACAW {3 classes}
5. Wireless LAN, IEEE 802.11 {3 classes}
6. Mobile IP {3 classes}
7. Routing protocols for Mobile Ad-hoc Networks, DSR, AODV, TORA, DSDV, Multicasting, QoS routing {6 classes}
8. Overview of sensor networks, tiny OS {3 classes}
9. MAC protocols for sensor networks {3 classes}
10. Hands-On labs with motes {3 classes}
11. Hands routing protocols for sensor networks, data centric protocols, hierarchical protocols, and location-based protocols {6 classes}