

Course Number	CS 441	Course Title	Mobile and Wireless Computing				
Semester Hours	3	Course Coordinator	Koushik Sinha				
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							
SP20							
<p>Sinha, K., Ghosh, S.C., & Sinha, B. P. (2015). <i>Wireless Networks and Mobile Computing</i>. CRC Press. ISBN: 9781482227932.</p>							
References							
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 Student Outcomes							
SP20							
Outcome →	1	2	3	4	5	6	7
Assessed →	X	X	X	X	X	X	
Prerequisites by Topic							
<p>CS 330 with a grade of <i>C</i> or better or graduate standing, or consent of the instructor.</p>							

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 notes {3 classes}
11. Hands routing protocols for sensor networks, data centric protocols, hierarchical protocols, and location-based protocols {6 classes}

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.