■ ECE/CS 4984 ■ Wireless Networks and Mobile Systems
Class Schedule ■

Week	*Lecture Session*	*In-Class Lab Session*	*At-Home Exercises and Projects*
1	• Class introduction • Fundamentals: Technology overview	• L1a: Operating system issues • L1b: Establishing wireless connections • L1c: Observer and IEEE 802.11 traffic	• E1: Network measurement and monitoring utilities
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2	• Fundamentals: Wireless environment, IEEE 802.11 and Bluetooth, TCP/IP	• L2a: Equipment distribution • L2b: Configuring IEEE 802.11a and IEEE 802.11b access points • L2c: Configuring ad hoc 802.11b WLAN • L2d: IEEE 802.11a throughput • L2e: Tracing packets using Ethereal	• E2: IEEE 802.11b throughput and the effect of encryption, range, and interference [*Due* one week]
3	• Middleware: Role of middleware and application program interfaces	• L3: Using Microsoft's VS.NET and .NET CF to develop a standalone PocketPC application	• E3: Microsoft .NET CF development process [*Due one week]*
4	• Middleware: Client-server computing	• L4a: Wireless web services access to a from a PocketPC using Microsoft's .NET CF • L4b: Wirelss web services access using WAP emulation	• E4: Development of a .NET CF service for wireless access [*Due one week*]
5	• Middleware: Peer-to-peer and ad hoc computing, service discovery	• L5a: Configuring UPnP and development tools • L5b: Experiencing P2P service discovery, service control, and file synchronization using UPnP SDK	• P5: Develop a PowerPoint controller client application for a PocketPC using UPnP and 802.11b [*Due one month*]
6	• Wireless Networks: 802.11 medium access control, Bluetooth	• L6a: Configuring Bluetooth piconets • L6b: Interference between Bluetooth and 802.11b • L6c: Bluetooth protocol analyzer	• E6: Analysis of 802.11b and Bluetooth interference data [*Due* two weeks] • **Take-home midterm exam** [*Due one week*]
	Break		
7	• Wireless Networks: Mobility in LANs	• L7: Analyzing effects of RTS/CTS on throughput and effectiveness in solving hidden terminal and exposed terminal problems	• E7: Analysis of RTS/CTS throughput data [*Due one week*]
8	• Mobile Networks: IP routing overview, MANET routing algorithms	• L8 Delay, throughput, connectivity, and overhead in MANET routing protocols	• E8: Case study of reactive and proactive MANET routing algorithms [*Due one week*]

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9	• Mobile Networks: IP addressing, IP routing, Mobile IP	• L9: Delay, throughput, addressing, and overhead in Mobile IP	
10	• Mobile Networks: Nomadic services, DHCP, NAT, VPNs	• L10a: Tracing NAT • L10b: Configuring and tracing operation of DHCP	• P10: Design and implement a wireless "hot spot" service using NAT and DHCP [*Due* one month]
11	• Mobile Networks: Security in wireless LANs and mobile networks	• L11a: Protocol analysis of IEEE 802.11 security. • L11b: Observing IEEE 802.11 security vulnerabilities • L11c: Configuring VPNs and monitoring operation and overhead	• E11: Case study of WPA and IEEE 802.11i versus WEP [*Due* one week]
12	• Mobile Applications: Location and context-aware pervasive computing	• L12: Context-aware PocketTV application running on PocketPC using 802.11b	
13	• Conclusion: Current research in wireless and mobile systems	• L13: Research demonstrations	
14	• Conclusion: Course summary	• P11 demonstrations (scheduled) • Equipment return	
15	• **In-Class Final Exam**		