


Virginia Tech ■ ECE/CS 4984 ■ Wireless and Mobile Systems Design
Class Schedule (Updated 2/19/03)

<i>Week</i>	<i>Lecture Session</i>	<i>In-Class Lab Session</i>	<i>At-Home Exercises and Projects</i>
1 (1/14)	<ul style="list-style-type: none"> • Class introduction • Fundamentals: Technology overview (DaSilva) 	<ul style="list-style-type: none"> • L1a: Operating system issues • L1b: Establishing wireless connections 	<ul style="list-style-type: none"> • E1: Network measurement and monitoring utilities [<i>Due 1/23</i>]
2 (1/21)	<ul style="list-style-type: none"> • Fundamentals: Wireless environment, IEEE 802.11 and Bluetooth, TCP/IP (DaSilva) 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • E2: IEEE 802.11b throughput and the effect of encryption, range, and interference [<i>Due 1/30</i>]
3 (1/28)	<ul style="list-style-type: none"> • Middleware: Role of middleware (Chen) 	<ul style="list-style-type: none"> • L3a: Configuring Intel PCP/UPnP and Microsoft Embedded Visual Tools • L3b: Using Microsoft's eVC++ to develop a standalone stock quote application running on PocketPC 	<ul style="list-style-type: none"> • E3: Configuration of Sun J2ME and standalone Java-based stock quotes application for PocketPC [<i>Due 2/6</i>]
4 (2/4)	<ul style="list-style-type: none"> • Middleware: Client-server computing (Chen) 	<ul style="list-style-type: none"> • L4a: Wireless web access to a stock quote service running on a laptop from PocketPC using Microsoft's Embedded Visual Tools/Pocket SOAP and Mobile Internet toolkit • L4b: Wireless web access to a stock quote service running on laptop from WAP/iMode emulators running on another laptop 	<ul style="list-style-type: none"> • E4: Wireless web access to a public stock quote service from Pocket PC using J2ME/kSOAP [<i>Due 2/13</i>]
5 (2/11)	<ul style="list-style-type: none"> • Middleware: Peer-to-peer and ad hoc computing (Chen) 	<ul style="list-style-type: none"> • L5: Experiencing P2P service discovery, service control, and file synchronization using Intel and Microsoft UPnP SDK 	<ul style="list-style-type: none"> • P5: Develop a peer-to-peer PowerPoint presentation controller application between a Windows laptop (running PowerPoint) and a PocketPC system (the controller) using Intel and Microsoft UPnP SDK and 802.11b [<i>Due 3/20</i>]
6 (2/18)	 Cancelled due to snow		
7 (2/25)	<ul style="list-style-type: none"> • Wireless Networks: 802.11 medium access control, Bluetooth (DaSilva) 	<ul style="list-style-type: none"> • L6a: Configuring Bluetooth piconets • L6b: Interference between Bluetooth and 802.11b 	<ul style="list-style-type: none"> • E6: Analysis of 802.11b and Bluetooth interference data [<i>Due 3/13</i>] • Take-home Midterm Exam (covering Weeks 1-7). [<i>Available 2/28, Due 3/11</i>]

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8 (3/11)	<ul style="list-style-type: none"> Wireless Networks: Mobility in LANs (DaSilva) 	<ul style="list-style-type: none"> L7: Analyzing effects of RTS/CTS on throughput and effectiveness in solving hidden terminal and exposed terminal problems 	<ul style="list-style-type: none"> E7: Analysis of RTS/CTS throughput data [Due 3/20]
9 (3/18)	<ul style="list-style-type: none"> Mobile Networks: IP routing overview, MANET routing algorithms (Midkiff) 	<ul style="list-style-type: none"> L9: Delay, throughput, connectivity, and overhead in MANET routing protocols 	<ul style="list-style-type: none"> E9: Case study of reactive and proactive MANET routing algorithms [Due 3/27]
10 (3/25)	<ul style="list-style-type: none"> Mobile Networks: IP addressing, IP routing, Mobile IP (Midkiff) 	<ul style="list-style-type: none"> L10: Delay, throughput, addressing, and overhead of Mobile IP 	
11 (4/1)	<ul style="list-style-type: none"> Mobile Networks: Nomadic services, DHCP, NAT, security, VPNs (Midkiff) 	<ul style="list-style-type: none"> L11a: Configuring VPNs and monitoring operation and overhead L11b: Configuring and tracing operation of DHCP 	<ul style="list-style-type: none"> P11: Design and implement a "hot spot" service using NAT and DHCP [Due 4/29]
12 (4/8)	<ul style="list-style-type: none"> Mobile Applications: Database services in wireless mobile environments (Chen) 	<ul style="list-style-type: none"> L12: On-demand data access versus broadcast-based data access 	<ul style="list-style-type: none"> E12: Performance analysis of flat versus broadcast disk organizations in providing wireless database access services [Due 4/17]
13 (4/15)	<ul style="list-style-type: none"> Mobile Networks: TCP and end-to-end performance in wireless networks (Midkiff) 	<ul style="list-style-type: none"> L13: TCP Vegas versus TCP Reno 	
14 (4/22)	<ul style="list-style-type: none"> Mobile Applications: Location and Context-Aware Pervasive Computing (Chen) 	<ul style="list-style-type: none"> L14: Context-aware PocketTV application running on PocketPC using 802.11 	
15 (4/29)	<ul style="list-style-type: none"> Wrap-up Equipment return 		
16 (5/6)	<ul style="list-style-type: none"> In-Class Final Exam (Tuesday, May 6 at 4 p.m.) 		