Pellissippi State Community College
Master Syllabus

WIRELESS TECHNOLOGY
CSIT 2770

Class Hours: 3.0
Credit Hours: 4.0
Laboratory Hours: 3.0
Revised: June 2009

Instructor:
Office:
Phone:
Email:

NOTE: This course is not intended for transfer credit.

Catalog Course Description:
A study of wireless and communication systems. Topics include principles of radio frequency and WiFi, modulation/demodulation, testing equipment, security, coding, antennas, wireless system electronics, and wireless optical systems.

Entry Level Standards:
The student MUST be familiar with basic operations of standard PCs (personal computers). The student must have math, writing, verbal and English language skills at the college entry level.

Prerequisites: CSIT 1730 or consent of instructor

Textbook(s) and Other Course Materials:

1. *CWNA Guide to Wireless LANs, Second Editions*, Mark Ciampa, Course Technology, ISBN: 978-0-619-21579-8.
2. *Deploying Secure 802.11 Wireless Networks with Microsoft Windows*, Joseph Davies, Microsoft Press, ISBN: 978-0-7356-1939-5.
3. *Wireless# Guide to Wireless Communications*, Mark Ciampa and Jorge Olenewa, Course Technology, ISBN: 978-1-4188-3699-3.

This field of study is changing so rapidly that any textbook will more than likely be changed every time this class is offered. The class also relies heavily on online and reference materials.

I. WEEK/UNIT/TOPIC BASIS:

Week(s)	Topic(s)
1-2	Course introduction; introduction to wireless technology terms, concepts, and methods
2-3	Basic computer/wireless mathematics; electricity; electronics
4-5	Antennas
6-7	WPAN-Wireless Personal Area Networks
8-9	WLAN- Wireless Local Area Networks
9-10	WMAN- Wireless Metropolitan Area Networks
10	WWAN- Wireless Wide Area Networks

Week(s)	Topic(s)
11-12	Satellite Fixed Broadband Wireless
12-13	RFID- Radio Frequency Identification
13	Wireless Communications in Business
13-14	Networking PCs via Wireless
14	Diagnosing and Troubleshooting System Problems
15	Final Projects/Exam

II. COURSE OBJECTIVES:*

A. Develop a working understanding of the terminology, hardware devices, and system software (device drivers, etc.) and associated wireless devices. III, II, V, IX, X
B. Exhibit knowledge of diagnosing and troubleshooting PCs and wireless devices' problems. II,III,V
C. Exhibit knowledge of installing, configuring, and upgrading wireless communications components and software. II, IX
D. Exhibit proficiency in written and oral communications about computers and wireless communications. I,IX

*Roman numerals after course objectives reference goals of the NETW program.

III. INSTRUCTIONAL PROCESSES:*

Students will:

1. Solve problems by diagnosing and troubleshooting wireless communications problems. *Technological Literacy, Transitional Strategy, Active Learning*
2. Solve problems encountered in the installation, configuration, and upgrading of wireless communications systems. *Technological Literacy, Transitional Strategy, Active Learning*
3. Participate in problem-solving teams. *Communication, Transitional Strategy, Active Learning*
4. Handle and examine modern computing and communications systems devices. *Technological Literacy, Transitional Strategy, Active Learning*
5. Prepare documents for management explaining wireless system problems and the need for new systems, upgrades, networks, etc. *Communication, Technological Literacy, Transitional Strategy, Active Learning*
6. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Social/Behavioral Sciences Outcome*

*Strategies and outcomes listed after instructional processes reference TBR's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. EXPECTATIONS FOR STUDENT PERFORMANCE:*

Upon successful completion of this course, the student should be able to:

1. Use terminology associated with computer science, data processing, and networking/communications systems fields. A,B,C,D,E
2. Use computer hardware and software. A,B,C,D,E
3. Identify basic terms, concepts, and functions of wireless system modules, including how each module should work during normal operation. A,B,C,D,E
4. Identify basic procedures for adding and removing field replaceable modules in wireless devices. A,D,E
5. Identify available IRQs, DMAs, and I/O addresses and procedures for configuring them for wireless device installation. A,B,C,D,E
6. Identify common peripheral ports, associated cabling, and their connectors for wireless communications. A,E
7. Identify proper procedures for installing and configuring antennas. A,E
8. Illustrate an understanding of system architecture, I/O devices, and wireless networking A
9. Identify proper procedures for installing and configuring wireless devices .A,E
10. Identify proper procedures for installing and configuring WPAN devices. A,E
11. Identify proper procedures for installing and configuring WLAN devices. A,E
12. Identify concepts and procedures relating to handling RF (radio frequency) components. A,E
13. Identify hardware methods of system optimization and when to use them. A,D,E
14. Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. A,D
15. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers. A,D
16. Identify the purpose of various types of preventive maintenance products and procedures and when to use/perform them. A,D,E
17. Identify procedures and devices for protecting against environmental hazards. A,D,E
18. Identify the potential hazards and proper safety procedures relating to lasers and high-voltage equipment. A,D,E
19. Identify WMAN components and operations.
20. Identify ESD (Electrostatic Discharge) precautions and procedures, including the use of ESD protection devices. A,D,E
21. Identify WWAN components and operations. A
22. Identify the categories of wireless technology, their locations, and physical characteristics. A
23. Identify the most popular type of wireless networking devices, their components, and their architecture (for example, antennas, access points, necessary cabling, etc.). A
24. Identify basic networking concepts, including how a network works. A
25. Identify procedures for swapping and configuring network interface cards. A,E
26. Identify the ramifications of repairs on the network. A,D,E
27. Identify ways to navigate the operating system and how to get to needed technical information. A,B,C
28. Recognize common system problems and determine how to resolve them. A,B,C,D

*Letters after performance expectations reference the course objectives listed above.

V. EVALUATION:

A. Testing Procedures:

There will be a minimum of four (4) tests. An alternative is to have examinations after each chapter /subject has been completed. There will be no make-up tests unless prior arrangements are made with the instructor.

B. Laboratory Expectations:

Lab attendance is required. Assignments must be completed and submitted before the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as scheduled.

C. Field Work:

Field experiences to wireless communications installations (cellular, radio, TV, etc.) are planned, and these experiences are MANDATORY for completion of this course. Points will be awarded for attending these experiences and completing a laboratory report on each.

D. Other Evaluation Methods:

Pop-Quizzes and "Outside-Class" take-home assignments will be given.

E. **Grading Scale:** (based on the maximum number of points possible in a semester)

93 – 100	A
88 – 92	B+
83 – 87	B
78 – 82	C+
73 – 77	C
65 – 72	D
Below 65	F

VI. POLICIES:

A. Attendance Policy:

Pellissippi State Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. *(Pellissippi State Online Catalog)*

B. Academic Dishonesty:

Plagiarism, cheating and other forms of academic dishonesty are prohibited. A student guilty of academic misconduct, either directly or indirectly through participation or assistance, is immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions that may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F or a zero for the exercise or examination or to assign an F in the course. *(Pellissippi State Online Catalog)*

C. Computer Usage Guidelines:

College-owned or –operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State's computing resources in an effective, efficient, ethical and lawful manner. *(Pellissippi State Online Catalog)*

D. Accommodation for Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins134 or 126 or by phone: 694-6751(Voice/TTY) or 539-7153. More information is available at www.pstcc.edu/departments/swd/