WIRELESS TECHNOLOGY

CSIT 2770

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Date Revised: Fall 2012

NOTE: This course is not intended for transfer credit.

Catalog Course Description:
A study of wireless communication systems. Topics include principles of radio frequency and Wi-Fi, 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

Textbook(s) and Other Course Materials:

Required:

Recommended/References:

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.

Important Note: This class covers the technological aspects of wireless communications systems. It is NOT a class that covers PCs or operating systems (Windows, UNIX, Linux, etc.). The class covers radio receivers and transmitters, antennas, transmission lines, various networked wireless systems such as Personal Area Networks, Local Area Networks, Wide Area Networks, satellites, radio frequency identification systems, and the FCC licensing options for amateurs and commercial operators.

I. Week/Unit/Topic Basis:

Week  Topic
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 WMAN- Wireless Wide Area Networks
11-12 Satellite Fixed Broadband Wireless
12-13 RFID- Radio Frequency Identification
13 Wireless Communications in Business
13-14 Networking PCs via Wireless/FCC Technician License Preparation
14 FCC Technician License Preparation
15 Final Projects/Exam/FCC License Examination

II. Course Goals*:
The course will:

A. Provide student with a working understanding of the terminology, hardware devices, system software (device drivers, etc.), and associated wireless devices. II, III, IV, V, VIII, IX

B. Develop student’s skills in diagnosing and troubleshooting PCs and wireless devices’ problems. I, II, III, IV, IX

C. Provide student with hands-on experience installing, configuring, and upgrading wireless communications components and software. I, II, III, IV, IX

D. Expand student proficiency in written and oral communications about computers and wireless communications. I, II, IX, X

*Roman numerals after course objectives reference goals of CSIT program.

III. Expected Student Learning Outcomes*:
Students will be able to:

1. Solve problems by diagnosing and troubleshooting wireless communications problems. A, B, C, D
2. Solve problems encountered in the planning, installation, configuration, and upgrading of wireless communications systems. A,B,C,D

3. Participate in wireless systems planning and problem-solving teams. D

4. Handle and examine modern computing and communications systems devices. A,B,C,D

5. Prepare documents for management explaining wireless system problems and the need for new systems, upgrades, networks, etc. A,B,C,D

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures: 70% of grade

   A minimum of three examinations will be given. An alternative evaluation plan is to administer examinations after each chapter is completed. Examinations not satisfactorily completed (missed) can NOT be made-up without documentation for the reason for the absence!

B. Laboratory Expectations: 20% of grade

   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. Laboratory expectations in this class will contribute at least 55% of the final grade! This laboratory expectation includes REQUIRED Field Trips!

C. Field Work: 10% of grade

   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:

   This course will also offer the opportunity to become LICENSED by the Federal Communications Commission (FCC) as an amateur and/or commercial licensee. Your instructor will discuss the extra-credit that will be awarded for completion of these FCC examinations.

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

   Points will be accumulated and a percentage of all possible points will be computer as shown on the grading scale below. To determine your final grade, calculate your total scores and subsequently the total possible points, and then compute your percentage of the total.

   You will be required to produce a current grade calculation periodically during the semester in order to assure you maintain current knowledge of your grades.

<table>
<thead>
<tr>
<th>Percentage of Total Points</th>
<th>Grade Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>93 – 100%</td>
<td>A</td>
</tr>
<tr>
<td>88 – 92%</td>
<td>B+</td>
</tr>
</tbody>
</table>
V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

This course uses wireless communications hardware not normally available out-of-class to students. Regular attendance is required for success in this class. Refer to the Class Policies document for more information.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations 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 Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at http://www.pstcc.edu/sswd/.

D. Other Policies:
**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)*

Behavior is expected to conform to Pellissippi State Catalog and to the normal classroom behavioral expectations to include:

- Do not use the keyboard or become involved in distracting conversations during presentations, discussions, and other teacher lead instructive processes.
- Do not eat, drink, or use tobacco products in the computer lab (Pellissippi State policy).
- Refrain from making noise that will distract other students especially during exams.
- Support other classmates and faculty.
- Arrive on time and prepared to contribute to classroom discussions. Late arrivals will be recorded as an absence without rationale or after four (4) instances of arriving late.
- Using cell phones for voice, text messaging, and data services, i.e. browsing, etc., is **NOT** allowed during class lectures, discussions, labs, and especially examinations. The instructor has the prerogative to ask a student to vacate the classroom/laboratory if this policy is violated during scheduled class/lab periods.