INTRODUCTION TO ELECTRICAL ENGINEERING TECHNOLOGY
EET 1001

Class Hours: 0.0  Credit Hours: 1.0
Laboratory Hours: 3.0  Revised: Fall 08

Note: This course is not intended for transfer credit.

Catalog Course Description:

The student is introduced to electronic equipment, components, and software. Particular emphasis is given to the application of the multimeter, oscilloscope, function generator, power supply, and circuit simulation software. Practical soldering techniques are introduced and practiced. The student will be exposed to modern electronic systems, such as a microcontroller and a variety of electronic sensors, using a robotic system. An introduction to laboratory reports using application software is covered. Basic professional ethics, time management, and quality work habits are also discussed.

Entry Level Standards:

The student needs only an interest in electronics.

Prerequisites:

None

Textbook(s) and Other Course Materials:

Textbook:
None required. Student will be required to purchase Electronic Trainer Kit to be constructed as part of the course. Approximate cost: $110.00.

Tools required:
Needle nose pliers, wire cutters, wire strippers, phillips and slot screw driver, and soldering iron. Approximate cost: $40.00.

Reference:
How to Solder by Hewlett Packard

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How to Solder and Construct the Trainer</td>
</tr>
<tr>
<td></td>
<td>Introduction to Project and Time Management</td>
</tr>
<tr>
<td>2</td>
<td>Introduction to Schematics and Symbols</td>
</tr>
<tr>
<td></td>
<td>Construction of Digital/Analog Trainer</td>
</tr>
<tr>
<td>3</td>
<td>Introduction to Engineering Prefixes/Units</td>
</tr>
<tr>
<td></td>
<td>Construction of Digital/Analog Trainer</td>
</tr>
<tr>
<td>4</td>
<td>Component Color Code</td>
</tr>
<tr>
<td></td>
<td>Construction of Digital/Analog Trainer</td>
</tr>
</tbody>
</table>
II. Course Objectives:

A. Understand proper measurement techniques using multimeters. A, B

B. Understand oscilloscope operation. A, B

C. Understand soldering techniques. A, B, K

D. Understand Windows/Programs. B

E. Understand word processing basics. G

F. Understand schematic layout software. B, C

G. Understand the importance of Professional Ethics, time management, and quality work habits. I, K

H. Understand how to assemble a technical report. G, K, I

I. Understand basic micro-controller and electronic sensor concepts. A, B, C

J. Understand power supply and function generator operations. A, B

K. Recognize engineering prefixes and units. A, B

L. Recognize components by color code. A, B
*Letters after course objectives reference EET Program Outcomes (as required by ABET).

III. Instructional Processes*:

Students will:

1. Participate in classroom discussions which challenge their abilities to think creatively and visualize complex spatial and mathematical relationships to solve problems. *Mathematics Outcome*

2. Work in teams to conduct laboratory experiments and also to solve special problem assignments. These activities are designed to foster interpersonal skills in teamwork and develop and enhance leadership skills, students’ abilities to express ideas, and students’ abilities to reach consensus solutions for the team through negotiation. *Communication Outcome; Mathematics Outcome; Active Learning Strategy*

3. Use electronic test equipment to test electrical circuits constructed from schematics in the laboratory and acquire data. Use computers with applications software to simulate, analyze, and predict the behavior of electrical circuits. Compare expected responses to experimental responses of electrical circuits. Use the Internet for special assignments such as locating data sheets on electronic components. Use computers with word processing software to prepare reports. *Technological Literacy Outcome; Mathematics Outcome*

4. Prepare reports on laboratory experiments which include methodology, mathematical analyses of electrical circuit models, a comprehensive comparison of calculated results with experimental results, and conclusions. *Communication Outcome; Mathematics Outcome; Technological Literacy 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. Take resistance measurements using a multimeter. A

2. Take voltage measurements using a multimeter. A

3. Take current measurements using a multimeter. A

4. Make DC voltage measurements using an oscilloscope. B

5. Make AC voltage measurements using an oscilloscope. B

6. Make frequency measurements using an oscilloscope. B

7. Solder components on a printed circuit board neatly. C

8. Desolder and replace components on a printed circuit board. C

9. Use word processing to write a report. E, H
10. Use word processing with text files. E, H
11. Draw a schematic using available software. F
12. View any file in any directory of either floppy or hard drive. D
13. Copy files from any directory to any other directory. D
14. Delete files in any directory. D
15. View a directory and identify executable programs. D
16. Write simple programs for microcontroller. I
17. Read sensor data with microcontroller. I

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

V. Evaluation:

A. Testing Procedures: 35% of grade

20% - Quiz and lab grades will be averaged to provide 20% of final grade.
15% - Comprehensive exam will provide 15% of final grade.

B. Laboratory Expectations: 65% of grade

40% - Completion of the Trainer will provide 40% of the final grade.
25% - Completion of the Trainer Lab Report will provide 25% of the final grade. This report will be graded on content, grammar, spelling, and form. Students may cooperate and assist each other in the construction of the Trainer. All tests and the lab report are individual work and must be done by each student without assistance. Each week the student could be given a grade based on mastery of lab practices. This could be combined with test to determine the grade.

C. Field Work:

N/A

D. Other Evaluation Methods:

N/A

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93 – 100</td>
<td>A</td>
</tr>
<tr>
<td>88 – 92</td>
<td>B+</td>
</tr>
<tr>
<td>83 – 87</td>
<td>B</td>
</tr>
<tr>
<td>78 – 82</td>
<td>C+</td>
</tr>
<tr>
<td>70 – 77</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>
VI. 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 Learning, 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 Learning.

Attendance for Lab: Attendance is required to all lab sessions unless excused by the instructor. Students missing more than four unexcused sessions will receive an “F” and no credit will be received. Students tardy past half an hour will be considered absent.

B. Academic and Classroom Misconduct:

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. In addition to other possible disciplinary sanctions that may be imposed as a result of academic misconduct, the instructor has the authority to assign either (1) an F or zero for the assignment or (2) an F for the course.

C. Accommodations for Disabilities:

If you need accommodations because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Please see the instructor privately after class or in his/her 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 or 131 or by phone: 694-6751 (Voice/TTY) or 539-7153.