COURSE OUTLINE

DIVISION: Career and Technical Programs

COURSE: ELT 2205; Prototype Design and Fabrication

Date: 06/17/08

Credit Hours: 2

Prerequisite(s): None

Delivery Method:

- Lecture 1 Contact Hours (1 contact = 1 credit hour)
- Lab 1 Contact Hours (2 contact = 1 credit hour)
- Clinical 0 Contact Hours (3 contact = 1 credit hour)

Offered: Fall Spring Summer

IAI Equivalent –Only for Transfer Courses-go to http://www.itransfer.org:

CATALOG DESCRIPTION:
The design, layout, packaging and fabrication or electronic equipment. Individual project required.
GENERAL EDUCATION GOALS ADDRESSED

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.
☐ To communicate orally and in writing, socially and interpersonally.
☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.
☐ To work and study effectively both individually and in collaboration with others.
☐ To understand what it means to act ethically and responsibly as an individual in one’s career and as a member of society.
☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
☐ To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. State the normal temperature range of electronic solder
2. Locate and describe the eutectic composition of solder on a tin lead fusion chart
3. Describe the tools commonly used in soldering
4. Put into practice safety techniques employed while soldering
5. Interpret the various product specification of solder
6. Recognize the standards for acceptability and unacceptability of a solder joint
7. Use solder removal techniques
8. Assemble and inspect connection of a three-wire cable to a DB-25 connector in accordance with EIA RS-232C standard
9. Solder and desolder resistors, capacitors, transistors, and integrated circuits
10. Use static control equipment
11. Give a functional definition of quality and acceptable tolerance
12. Utilize and develop a Design Process
13. Work in small Teams
14. Utilize and develop a Trouble shooting plan

COURSE TOPICS AND CONTENT REQUIREMENTS:

Introduction to Lab and Safety
Bread Boarding
Intro to Vocabulary
Introduction to Symbols
Introduction to Cross-Reference and Substitution
Introduction to Electro Static Discharge
Wire Stripping and Tinning
Western Union Wire splice
Rattail and "T" Wire splice
Coax Cable Assembly
Turret Terminal Soldering and Desoldering
P.W.B. Soldering and Desoldering
Wire Wrapping
DVOM
Design Process
Redesign Process
Introduction to MIMIC
Quality
Work Place skills
Trouble Shooting

INSTRUCTIONAL METHODS:
Lecture
Demonstration
Working in groups
Laboratory exercises
Think Tank Modules
Quizzes

INSTRUCTIONAL MATERIALS:

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:
Required assignments: Methods of Evaluation:
Mandatory lab attendance A students' grade will be based on multiple
Weekly lab assignments measures of performance:
Short quizzes Completion of lab assignments
Assigned reading Quizzes based on lab and text assignments
Assigned homework Group projects
Midterm exams Completion of homework assignments
Lab practical exam Midterm, final, and lab final exams
Final exam

90% - 100% A Lab 30%
80% - 89.9% B Quizzes and Tests 40%
70% - 79.9% C Midterm and Final 30%
60% - 69.9% D
below 60% F

OTHER REFERENCES
### Course Competency/Assessment Methods Matrix

**ELT 2205: Prototype Design & Fabrication**

For each competency/outcome place an "X" below the method of assessment to be used.

<table>
<thead>
<tr>
<th>Assessment of Student Learning</th>
<th>Assessment Options</th>
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</thead>
<tbody>
<tr>
<td>Article Review</td>
<td>Case Studies</td>
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<tr>
<td>Group Projects</td>
<td>Lab Work</td>
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<tr>
<td>Oral Presentations</td>
<td>Pre-Post Tests</td>
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<tr>
<td>Quizzes</td>
<td>Written Exams</td>
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<tr>
<td>Artifact Self Reflection of Growth</td>
<td>Capstone Projects</td>
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<td>Comprehensive Exit Exam</td>
<td>Course Embedded Questions</td>
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<td>Multi-Media Projects</td>
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<td>Writing Samples</td>
<td>Portfolio Evaluation</td>
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<tr>
<td>Real World Projects</td>
<td>Reflective Journals</td>
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<tr>
<td>Applied Application (skills) Test</td>
<td>Oral Exit Interviews</td>
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<tr>
<td>Accreditation Reviews/Reports</td>
<td>Advisory Council Feedback</td>
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<td>Employer Surveys</td>
<td>Graduate Surveys</td>
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<tr>
<td>Internship/Practicum/Site Supervisor Evaluation</td>
<td>Licensing Exam</td>
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<tr>
<td>In Class Feedback</td>
<td>Simulation</td>
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<tr>
<td>Interview</td>
<td>Written Report</td>
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<tr>
<td>Assignment</td>
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</tbody>
</table>

#### Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.

1. State the normal temperature range of electronic solder
   - Direct: D  Indirect: I
   - Assessment Options: X
2. Locate and describe the eutectic composition of solder on a tin lead fusion chart
   - Direct: D  Indirect: I
   - Assessment Options: X
3. Describe the tools commonly used in soldering
   - Direct: D  Indirect: I
   - Assessment Options: X
4. Put into practice safety techniques employed while soldering
   - Direct: D  Indirect: I
   - Assessment Options: X
5. Interpret the various product specification of solder
   - Direct: D  Indirect: I
   - Assessment Options: X
6. Recognize the standards for acceptability and unacceptability of a solder joint
   - Direct: D  Indirect: I
   - Assessment Options: X
7. Use solder removal techniques
   - Direct: D  Indirect: I
   - Assessment Options: X
8. Assemble and inspect connection of a three-wire cable to a DB-25 connector in accordance with EIA RS-232C standard
   - Direct: D  Indirect: I
   - Assessment Options: X
### ELT 2205; Prototype Design & Fabrication

For each competency/outcome place an “X” below the method of assessment to be used.

| 10. Use static control equipment | Indirect | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 11. Give a functional definition of quality and acceptable tolerance | Indirect | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 12. Utilize and develop a Design Process | Indirect | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 13. Work in small Teams | Indirect | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 14. Utilize and develop a Troubleshooting plan | Indirect | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |