

ELEC 300L Course Outline as of Fall 1997

CATALOG INFORMATION

Dept and Nbr: ELEC 300L      Title: BASIC SOLDERING  
Full Title: Basic Soldering Skills for Electronics  
Last Reviewed: 5/6/2004

| Units   |      | Course Hours per Week |      | Nbr of Weeks | Course Hours Total |       |
|---------|------|-----------------------|------|--------------|--------------------|-------|
| Maximum | 1.00 | Lecture Scheduled     | 0    | 17.5         | Lecture Scheduled  | 0     |
| Minimum | 1.00 | Lab Scheduled         | 3.00 | 3            | Lab Scheduled      | 52.50 |
|         |      | Contact DHR           | 0    |              | Contact DHR        | 0     |
|         |      | Contact Total         | 3.00 |              | Contact Total      | 52.50 |
|         |      | Non-contact DHR       | 0    |              | Non-contact DHR    | 0     |

Total Out of Class Hours: 0.00

Total Student Learning Hours: 52.50

Title 5 Category: AA Degree Non-Applicable  
Grading: P/NP Only  
Repeatability: 03 - May Be Taken for a Total of 3 Units  
Also Listed As:  
Formerly: ELEC 200L

**Catalog Description:**  
Basic Soldering Skills for Electronics is a 45-hour hands-on training course designed to provide the student with the necessary knowledge and skill to attain proficiency in producing high reliability solder connections. This course is suitable for individuals with no prior knowledge of electronic soldering techniques as well as the advanced electronic student. This course covers approximately ten individual soldering lessons that are based on current industrial, military, and NASA practices. Basic printed-circuit board (PCB) rework techniques as component removal and PCB repair of open traces and lifted pads.

**Prerequisites/Corequisites:**

**Recommended Preparation:**  
Concurrent enrollment in ELEC 300 (formerly ELEC 200).

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: A 45-hour hands-on course designed to provide the student with the knowledge & skills to produce high reliability solder connections. Course is designed for students with no

previous soldering experiences as well as the advanced electronic student. Approximately ten soldering lessons are covered based on current industrial, military & NASA requirements. (P/NP Only)

Prerequisites/Corequisites:

Recommended: Concurrent enrollment in ELEC 300 (formerly ELEC 200).

Limits on Enrollment:

Transfer Credit:

Repeatability: May Be Taken for a Total of 3 Units

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                      |                      |                   |                  |
|----------------------|----------------------|-------------------|------------------|
| <b>AS Degree:</b>    | <b>Area</b>          | <b>Effective:</b> | <b>Inactive:</b> |
| <b>CSU GE:</b>       | <b>Transfer Area</b> | <b>Effective:</b> | <b>Inactive:</b> |
| <b>IGETC:</b>        | <b>Transfer Area</b> | <b>Effective:</b> | <b>Inactive:</b> |
| <b>CSU Transfer:</b> |                      | <b>Effective:</b> | <b>Inactive:</b> |
| <b>UC Transfer:</b>  |                      | <b>Effective:</b> | <b>Inactive:</b> |

**CID:**

**Certificate/Major Applicable:**

Not Certificate/Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

The student will be able to:

1. identify and determine the value of common components normally connected to electronic circuits by soldering.
2. explain the soldering process.
3. select the proper small hand tools required for soldering.
4. prepare and maintain a soldering iron.
5. demonstrate proper wire stripping and tinning techniques.
6. solder wires and component leads to turret, cup, bifurcated, hook, and pierced terminals.
7. solder axial and radial lead components, DIP and flat packs, and TO-5 packs to a PCB.
8. demonstrate component removal by wicking and continuous vacuum.
9. demonstrate the repair of open traces and lifted pads from single and double sided PCBs.

### **Topics and Scope:**

1. Preparing and maintaining the soldering iron.
2. Soldering to: turret terminals, cup terminals, bifurcated terminals, and hook terminals.
3. Soldering axial lead components to printed-circuit boards.
4. Soldering dual inline packs (DIP) to printed-circuit boards.

5. Soldering TO-5 type packages to printed-circuit boards.
6. Soldering planar-mounted components (Flat Packs) to printed circuit boards.
7. Basic PCB rework techniques: Component removal, repair of open traces, and repair of lifted pads.

### Assignment:

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving  
0 - 0%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, Performance exams

Skill Demonstrations  
60 - 90%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, Completion

Exams  
10 - 30%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

ATTENDANCE AND CLASS PARTICIPATION

Other Category  
0 - 10%

### Representative Textbooks and Materials:

HIGH RELIABILITY INTERCONNECTION TECHNOLOGY by Pace Incorporated.