

College of San Mateo

Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: 06/02/08

Department: ELEL

Number: 738

Course Title: Electrical Apprenticeship VIII Units: 1.5

Total Semester Hours: Lecture: 0.0 Lab: 90.0 Homework: 0.0 By Arrangement: 0.0

Length of Course

- Semester-long
 Short course (Number of weeks 15)
 Open entry/Open exit

Grading

- Letter
 Pass/No Pass
 Grade Option (letter or Pass/No Pass)

1. Prerequisite (Attach Enrollment Limitation Validation Form.)

Indenture in the Electrical Apprenticeship Inside Wireman Program, approved by the California State Division of Apprenticeship Standards.

2. Corequisite (Attach Enrollment Limitation Validation Form.)

None

3. Recommended Preparation (Attach Enrollment Validation Form.)

None

4. Catalog Description (Include prerequisites/corequisites/recommended preparation.)

738 Electrical Apprenticeship VIII (1.5)
(Formerly ELEL 708) 90 lab hours per semester. Prerequisite: Indenture in the Electrical Apprenticeship Inside Wireman Program, approved by the California State Division of Apprenticeship Standards. Second half of year four of a five-year Electrical Apprenticeship Program. Programmable logic controllers, controller fundamentals, ladder programming, NEC for electrical equipment.

5. Class Schedule Description (Include prerequisites/corequisites/recommended preparation.)

738 Electrical Apprenticeship VIII
Second half of year four of a five-year Electrical Apprenticeship Program. Programmable logic controllers, controller fundamentals, ladder programming, NEC for electrical equipment. Formerly ELEL 708. Prerequisite: Indenture in the Electrical Apprenticeship Inside Wireman Program, approved by the California State Division of Apprenticeship Standards.

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

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

Recognize the attributes of digital electronics
Recognize the attributes of Boolean Algebra
Recognize the attributes of programmable logic symbols
Construct and diagram programmable logic ladders using logic symbols

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. If this is the case, please simply indicate this in this section).*

Apply the knowledge and skills necessary to perform the job assignments expected of a fourth year inside wireman apprentice.

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

See Attached Topical Outline

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.) **If hours by arrangement are required by this course, indicate the additional instructional activity which will be provided during this time.**

Reading Assignments
Workbook Lab Assignments

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Completion of lab homework
Examination upon completion of each unit
Demonstrated competency by successful completion of lab assignments

11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

See Attached List

Prepared by:

(Signature)

Email address:

schneider@smccd.edu

Submission Date:

- I. Introduction to Programmable Logic Controllers
 - A. Attributes to Digital Electronics
 - B. Attributes to Boolean Algebra
 - C. Attributes to AND, OR, NAND, NOR, XOR, XNOR Logic Gates

- II. Programmable Controller Fundamentals
 - A. Introduction to Attributes of RSLogix@500
 - B. Introduction to Numbering System
 - C. Introduction to Ladder Programming

- III. Practical Application of Ladder Programming
 - A. Programming Simple Ladder Rungs
 - B. Developing and Implementing Ladder Programs
 - C. Using Timers and Counters in Ladder Logic Programs
 - D. Working with Shift Registers and Sequencers

- IV. Practical Application of NEC for Electrical Equipment
 - A. Classification of Hazardous Locations
 - B. Wiring Methods and Equipment for Hazardous Locations
 - C. General Electrical Equipment
 - D. Special Electrical Equipment

Representative Text Materials – ELEL 738

Callanan, Michael I., and Bill Wusunich. Electrical Systems Based on the 2005 NEC. Homewood, Illinois: American Technical Publisher, Inc., 2005.

Engle, John, and Michael Hassell, Stephen Lipster. Motor Control Textbook. Upper Marlboro, Maryland: NJATC Press, 2005

Mazur, Glen A. Test Instruments Applications Manual. Homewood, Illinois: American Technical Publisher, Inc. 2006.

National Fire Protection Associates, Inc. National Electric Code 2005. Quincy, Massachusetts: NFPA, 2004.

National Joint Apprenticeship and Training Committee. Code Calculations Textbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Codes and Practices Workbook 4. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Digital Electronics Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Job Information Workbook 4. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Motors Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Motor Controls Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Programmable Controller Concepts. Upper Marlboro, Maryland: NJATC Press, 2003.

National Joint Apprenticeship and Training Committee. Programmable Logic Controllers Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.