

College of San Mateo

Course Outline

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

Date: 06/02/08

Department: ELEL

Number: 737

Course Title: Electrical Apprenticeship VII 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.)

737 Electrical Apprenticeship VII (1.5)
(Formerly ELEL 707) 90 lab hours per semester. Prerequisite: Indenture in the Electrical Apprenticeship Inside Wireman Program, approved by the California State Division of Apprenticeship Standards. First half of year four of a five-year Electrical Apprenticeship Program. Motors, motor control devices, motor control diagrams.

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

737 Electrical Apprenticeship VII
First half of year four of a five-year Electrical Apprenticeship Program. Motors, motor control devices, motor control diagrams. Formerly ELEL 707. 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 Magnetism in relationship to motors
- Recognize the various configurations of motors
- Recognize and apply motor starters to various motors
- Recognize and apply operating and indicating devices
- Recognize and apply motor control diagrams for alternating and direct current motors

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. Understand the Attributes of Motors
 - A. Understand the Attributes of Magnetism, Electromagnetism, and Induction
 - B. Understand the Attributes of Rotating Magnetic Fields in Relationship to a Polyphase Motor
 - C. Understand the Attributes of Various Motors
 - D. Understand the Implementation of Electronic Variable Speed Controls for Motors
 - E. Understand the Installation of Motors, Pulleys, and Couplings

- II. Understand and Apply Motor Control Devices
 - A. Understand the Attributes of Motor Control
 - B. Understand and Apply Motor Starters
 - C. Understand the Attributes of Contactors and Control Relays
 - D. Understand and Apply Manual Operating and Indicating Devices
 - E. Understand and Apply Automatic Operating and Indicating Devices

- III. Understand and Apply Motor Control Diagrams
 - A. Design and Diagram Motor Control Drawing
 - B. Design and Diagram Motor Control Drawings for Direct Current Motors
 - C. Understand and Apply Alternating Current Motor Speed Control
 - D. Understand and Apply Troubleshooting Techniques

Representative Text Materials – ELEL 737

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.

Michaelis, Ron, and Roger Mutti, Jim Overmyer, Otto Taylor. A11 About Motors. Clifton Park, New York: Thomson-Delmar Learning, 2005

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

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. Orientation 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.