

DE ANZA COLLEGE
APPLIED TECHNOLOGIES DIVISION
COURSE OUTLINE

Degree Applicable

Automotive Technology 53B

Effective Quarter Fall 2003

I. Catalog Information

AUTO 53B

Automotive Electromechanical Systems

2 Units

Prerequisite: Completing course work towards a Degree or Certificate in Manufacturing & CNC Technology.

Advisories: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4); Mathematics 101

Four hours lecture-laboratory

Forty-eight hours lecture-laboratory per quarter

Electrical theories, testing and measuring procedures, circuit construction and schematic interpretation. Application of the principles of magnetism. Fundamentals of operation of semiconductors in electronic devices and controls.

II. Course Objectives

The student will:

- A. Explain the accepted theories surrounding the operation of both electrical and electromechanical machines
- B. Demonstrate a logical, scientific approach to the analysis of systems problems
- C. Interpret test equipment readouts and troubleshooting data in testing and diagnosing electrical problems

III. Essential Student Materials

Scientific calculator (T.I. 30 or equivalent)

IV. Essential College Facilities

Automotive electronics laboratory

V. Expanded Description: Content and Form

- A. Fundamentals of electrical circuits
 - 1. The Electron Theory
 - 2. Laws of circuitry and Ohms Law calculations
 - 3. Electrical symbols and wiring diagrams
 - 4. Meter usage and trouble-shooting techniques

- B. Power sources
 - 1. Electrochemical cells
 - 2. Commercial suppliers

- C. Fundamentals of magnetism
 - 1. Permanent magnetism
 - 2. Electromagnetism
 - 3. Motor and generator principles
 - 4. Relays and solenoids
 - 5. Transformers
 - 6. Applications

- D. Fundamentals of Semiconductors
 - 1. Diodes as check valves and rectifiers
 - 2. Transistors as switches and amplifiers
 - 3. Thyristors as regulators and controls

VI. Assignments

- A. Reading assignments

VII. Methods of Evaluating Objectives

- A. Problem-solving quizzes
- B. Objective midcourse examination
- C. A comprehensive objective final examination
- D. Attendance per department policy

VIII. Texts and Supporting References

- A. Text:

Chapman, Norm. *Principles of Electricity and Electronics for the Automotive Technician*.
Delmar, 2000, Albany, NY.