Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for NAUT CA6

CONCEPTS OF ELECTRICAL/ELECTRONIC SYSTEMS

Effective: Fall 2021

I. CATALOG DESCRIPTION:
NAUT CA6 — Noncredit

This class is lecture only and non-credit. Automotive electrical/electronic systems, including electrical circuits, Ohm's Law, battery, starting, charging, ignition, fuel, accessories, brakes, chassis, suspension, steering, HVAC, and wiring systems. Emphasis on diagnosis of electrical troubles, assembly, repair of components, and diagnostic equipment usage.

Grading Methods:
Pass/No Pass

Discipline:
- Automotive Technology

Noncredit Category
I - Short-Term Vocational

	MIN
Total Noncredit Hours:	54.00

II. PREREQUISITE AND/OR ADVISORY SKILLS:

III. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Use problem-solving skills to categorize systems faults in automotive circuits and make needed repairs;
B. Identify types of ignition systems;
C. Describe and evaluate fuel control circuits for proper operation;
D. Explain the fundamentals of electronic and electrical theories;
E. Demonstrate safe and appropriate hazardous material handling;

IV. CONTENT:
A. Electrical test equipment
1. Digital volt meters, for diagnosing electrical and electronic components and systems
2. Volt Amp Tester (VAT), for diagnosing Batteries, Charging systems, starting systems
B. Problem solving
1. Classify type of electrical faults
2. Evaluate needed diagnostic procedure
3. Research proper diagnostic path as outlined by the manufacture or industry standards and make needed repairs
C. Identifying types of ignition systems
1. Standard, electronic, high energy, distributor, non-distributor
2. Safety precautions while diagnosing
3. Identify circuitry, current theory and concepts
D. Fuel control
1. Identify type of controller
2. Describe trigger mechanism
3. Categorize type of injectors used
4. Evaluate proper operation of system
5. Explain scanner readings, meter readings and scope readings
E. Fundamentals of electronics and electrical theory
1. Explain Ohm's Law
2. Perform Electrical Conversion factors
3. Research and list manufactures specifications
F. Circuit and wire repairs
1. Produce sound diagnostic approach to identify faults
G. Hazardous material handling
H. Professional environment

V. METHODS OF INSTRUCTION:
A. **Lecture** -

VI. TYPICAL ASSIGNMENTS:
A. Lecture based assignments
1. Lecture on Ohm's Law
B. Text reading

1. Read Chapter One

VII. EVALUATION:
Methods/Frequency

A. Exams/Tests
monthly
B. Quizzes
weekly

VIII. TYPICAL TEXTS:
1. Duffy, James. *Modern Automotive Technology.* 9 ed., Goodheart-Wilcox, 2020.
2. Johanson, Chris. *Automotive Electricity and Electronics.* 5 ed., Goodheart Wilcox, 2021.

IX. OTHER MATERIALS REQUIRED OF STUDENTS:
A. Computer with internet access