

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

AUT 6 - Automotive Electrical Systems Lecture

2 Unit(s)

Prerequisite(s): AUT 41 (or concurrent enrollment)

Co-requisite(s): AUT 7

Recommended Prep: AUT 1

Transfer Status: CSU

35 hours Lecture

This course introduces the theory, operation, and repair in the areas of electrical/electronics systems. Battery function and diagnosis including hybrid vehicle battery function and charging are covered. Topics also include vehicle lighting systems, starting and charging systems, and the electrical accessories that function in a modern vehicle.

II. OBJECTIVES

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

- A. Describe the theory and operation of the systems and components related to batteries.
- B. Describe the theory and operation of car starting systems.
- C. Describe the purpose of car charging systems.
- D. Describe the theory and operation of the systems, sub systems, and components in the areas of automotive lighting systems.
- E. Differentiate multiplex classes and Controller Area Network (CAN) communication systems.
- F. Describe the theory and operation of automobile's electrical accessories.
- G. Explain the purpose and function of supplemental restraint system.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

		Lecture
<u>Topics</u>		<u>Hours</u>
1. Types of batteries		5.00
2. Starting systems		5.00
3. Charging systems		5.00
4. Electrical lighting systems		5.00
5. Vehicle communication networks and multiplex systems principles		5.00
6. Electrical accessories, audio, power windows and navigation systems		5.00
7. Passive seat belts systems and Supplemental restraint systems theory and operation		5.00
Total Hours		35.00

IV. METHODS OF INSTRUCTION

- A. Lecture
- B. Instructor Demonstrations
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Discussion
- E. Problem-Solving Sessions

- F. Reading Assignments
- G. Multimedia Presentations

V. METHODS OF EVALUATION

- A. Exams/Tests
- B. Homework
- C. Class participation
- D. Final Examination
- E. Class Discussion

VI. EXAMPLES OF ASSIGNMENTS

- A. Reading Assignments
 - 1. Read the VAT-40 instructions in your text and be prepared to discuss battery testing procedures in class.
 - 2. Read the chapter on supplemental restraint systems and be prepared to discuss safety precautions in class.
- B. Writing Assignments
 - 1. Complete the charging systems section in your key notes book.
 - 2. Write a one page summary on your reading of air bag handling.
- C. Out-of-Class Assignments
 - 1. Perform the 17 self-study modules assigned by American Honda. Your instructor will confirm that you have completed the required modules.
 - 2. Complete the homework on starting systems and pass the associated test with a score of 70% or better.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

- A. Hollembeak, B. Automotive Electricity & Electronics. 6th Edition. Cengage, 2015.

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