



GROSSMONT-CUYAMACA
COMMUNITY COLLEGE DISTRICT

Grossmont-Cuyamaca College Community District
Articulation Agreement

High School Course	Credits	College Course	Units
Auto Electrical Systems 1, 2	10.0	AUTO 122 Automotive Electrical Systems	5.0 Units
High school(s): Monte Vista High School		College: Cuyamaca College	

1. **Course Prerequisites**

None

2. **Recommended Preparation**

None

3. **College Course Description**

Basic principles of electricity as applied to automobiles. Comprehensive investigation of automotive electrical systems including periodic maintenance, diagnosis, component servicing and adjustment. Students will be expected to complete associated tasks in the shop as specified by NATEF (National Automotive Training Educational Foundation). Preparation for ASE A-6 Certification.

4. **Required Content for Articulation**

Lecture Topics:

- A. Electron theory
- B. Conductors and insulators
- C. Voltage, amperage, resistance
- D. Direct and alternating current
- E. Semi-conductors
- F. Ohms law
- G. Series, parallel circuits
- H. Resistance in series and parallel circuits
- I. Voltage drops
- J. Magnetism
- K. Electromagnets
- L. Storage battery
- M. Starting motors
- N. Charging system
- O. Supplemental Restraint Systems (air bags)
- P. Body computer system and components
- Q. Wiring diagrams
- R. Other electrical units of automobile

Lab Topics:

- A. Introduction and safety
- B. Laboratory procedures
- C. Equipment operation
- D. Battery service and diagnosis
- E. Starting system diagnosis and repair
- F. Charging system diagnosis and repair
- G. Safe diagnosis and repair of Supplemental Restraint Systems (air bags)
- H. Diagnosis and repair of body computer system and components
- I. Electrical system troubleshooting
- J. Servicing other electrical components

5. Required Competencies (SLOs) for Articulation

Students will be able to:

- A. Demonstrate standardized safety and hazardous waste handling practices.
- B. Apply electrical operating theory to diagnosis of vehicle electrical problems.
- C. Read and interpret automotive electrical wiring diagrams to aid in the diagnosis of automotive electrical problems.
- D. Perform wiring and soldering repairs to industry acceptable standards.
- E. Apply theory of operation and industry accepted diagnostic procedures to the repair of battery, starting and charging systems.
- F. Using prescribed industry standards, correctly utilize test equipment and tools to diagnose automotive electrical systems.
- G. Utilize manufacturers' repair information and technical service bulletins for accurate diagnosis and repair.

6. Assessment Methods

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- A. Quizzes, written exams, and hands-on performance exams that measure students' ability to safely identify necessary action or repair, diagnose and measure electrical systems, and perform necessary tasks related to electrical repair. Students will also take the ASE A-6 Certifications test.
- B. Practical exercises that measure students' progress toward mastering tasks related to diagnosis, replacement, repair, testing, and adjustment of electrical related systems and components.
- C. Skills-based summative assessment that measures students' ability to successfully complete the necessary NATEF tasks related to diagnosis, replacement, repair, testing, and adjustment of electrical systems and components.

8. Texts and other supporting materials (software, etc.)

NATEF Curriculum

9. Criteria for Course Articulation

- a. High school and college teachers attend articulation meetings to determine curriculum alignment and articulation competency rubric.
- b. Student must pass high school course with a grade of "B" or better for **BOTH** semesters and demonstrate mastery of all course competencies.

Agreement was based on Statewide Career pathways Project Template: Yes No

Articulation meeting held: **November 28, 2018**

Effective date: **Fall 2018**

Expiration date: **December 1, 2021**

High School Signatures

Michael Fleming 3-6-19
Teacher Date

Michael Fleming
Teacher (print name)

[Signature] 3/6/2019
Principal Date

Joel Tropp
Principal (print name)

College Signatures

[Signature] 3-13-19
Instructor/Division Chair, Cuyamaca Date

Bred McCombs
Instructor/Division Chair (print name)

[Signature] 3-13-19
Dean of Career Education, Cuyamaca Date

Larry McCombs
Dean of Career Education (print name)

Monte Vista High School
High School