

Automotive Electronics

Course Outcome Summary

Course Information

Organization	Madison Area Technical College
Developers	John B. Sage
Development Date	7/15/2000
Revised Date	8/25/2000
Course Number	404-366
Instructional Level	Technical Diploma
Potential Hours of Instruction	54
Total Credits	2

Description

Basic automotive electronics including electrical principles and concepts through automotive semi-conductors and microprocessors are studied.

Types of Instruction

Instruction Type	Contact Hours	Credits
Classroom Presentation	18	
On Campus Laboratory	36	

Prerequisites

404-340 Minor Repair
404-335 Engine Performance

Exit Learning Outcomes

Core Abilities

- A Communicate effectively
- B Demonstrate critical thinking
- C Use science and technology
- D Learn effective social interaction

Competencies

- 1 **Practice safety and good work habits.**
Competence will be demonstrated:
 - a instructor observation**Criteria - Performance will be satisfactory when:**
 - a learner demonstrates safe work habits
 - b learner protects tools, equipment, and manuals
 - c learner protects models and customers property
 - d learner maintains clean and organized work areas
 - e learner demonstrates conservative use of shop supplies
- 2 **Diagnose vehicle electrical system using VAT 40.**
Competence will be demonstrated:
 - a written test

b lab activity

Criteria - Performance will be satisfactory when:

- a learner loads test battery
- b learner tests alternator output
- c learner tests starter draw
- d learner determines needed action

3 Diagnose vehicle electrical system with digital meter.

Competence will be demonstrated:

- a written test
- b lab accuracy

Criteria - Performance will be satisfactory when:

- a learner diagnoses vehicle electrical system with digital meter
- b learner tests available voltage
- c learner tests voltage drop
- d learner tests resistance

4 Diagnose automotive sensors using an oscilloscope.

Competence will be demonstrated:

- a lab activity
- b written test

Criteria - Performance will be satisfactory when:

- a learner connects an oscilloscope to a sensor circuit
- b learner adjusts oscilloscope to display appropriate wave pattern
- c learner diagnoses pattern for faults and determines needed action

5 Diagnose signal frequency using a digital multimeter.

Competence will be demonstrated:

- a lab activity
- b written test

Criteria - Performance will be satisfactory when:

- a learner connects a digital multimeter to a circuit
- b learner adjusts meter to the correct scale
- c learner interprets reading
- d learner diagnoses reading and determines needed action

6 Diagnose pulse width modulated circuits.

Competence will be demonstrated:

- a written test
- b lab activity

Criteria - Performance will be satisfactory when:

- a learner builds a pulse width modulated circuit
- b learner measures pulse width with an oscilloscope
- c learner measures the frequency with digital multimeter