

## SYLLABUS

**DATE OF LAST REVIEW:** 4/23/2020  
**CIP CODE:** 47.0613  
**SEMESTER:** Departmental Syllabus  
**COURSE TITLE:** Electrical/Electronics Systems  
**COURSE NUMBER:** DEVT 0120  
**CREDIT HOURS:** 5  
**INSTRUCTOR:** Departmental Syllabus  
**OFFICE LOCATION:** Departmental Syllabus  
**OFFICE HOURS:** Departmental Syllabus  
**TELEPHONE:** Departmental Syllabus  
**EMAIL:** Departmental Syllabus  
*KCKCC-issued email accounts are the official means for electronically communicating with our students.*

**PREREQUISITES:** None

**REQUIRED TEXT AND MATERIALS:** Please check with the KCKCC bookstore, <http://www.kkcccbookstore.com> for the required text for your particular class.

**COURSE DESCRIPTION:** Electrical/Electronic Systems studies the principles of electricity through operations and testing procedures and provides an introduction to electronics. Diagnostics and repair of battery, starting and charging electrical systems are covered, in addition to practical applications of the principles of electricity. Electronic management programs are referenced and studied. (KBOR aligned)

**METHOD OF INSTRUCTION:** A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

### **COURSE OUTLINE:**

- I. Electrical/Electronic Systems
  - A. Research vehicle service information
  - B. Demonstrate knowledge of electrical/electronic series using Ohm's Law.
  - C. Demonstrate proper use of test equipment when measuring source voltage.

- D. Demonstrate knowledge of problems in electrical/electronic circuits.
- E. Use wiring diagrams during diagnosis of electrical/electronic circuit problems.
- F. Demonstrate knowledge of the function, operation, and testing of electronic system components.
- G. Inspect, test, repair and/or replace components of electrical/electronic systems.

## II. Battery System

- A. Identify battery type and system configuration.
- B. Confirm and test proper battery capacity for application.
- C. Inspect battery and related components.
- D. Charge battery.
- E. Jump-start vehicle using a booster battery and jumper cables or auxiliary power supply.
- F. Check low voltage disconnect (LVD) systems.
- G. Inspect, clean and service battery.
- H. Inspect, clean, repair and/or replace battery boxes and related components.
- I. Identify electrical/electronic modules that require reinitialization/code entry after reconnecting battery.

## III. Starting System

- A. Demonstrate understanding of starter system operations.
- B. Perform starter circuit cranking voltage and drop tests.
- C. Inspect and test starter control circuit switches and related components.
- D. Diagnose and differentiate between electrical and engine mechanical problems.
- E. Perform starter current draw tests.
- F. Remove and replace starter.

## IV. Charging System

- A. Identify and understand operation of the generator (alternator).
- B. Test instrument panel mounted voltmeters and/or indicator lamps.
- C. Inspect, adjust, and/or replace generator (alternator) drive belt and related components.
- D. Inspect cables, wires, and connectors in the charging circuit.
- E. Perform charging system voltage, amperage output and AC ripple tests.
- F. Perform charging circuit voltage drop tests.
- G. Remove, inspect, and/or replace generator (alternator).

## V. Lighting Systems

- A. Identify and inspect lighting systems.
- B. Diagnose and repair lighting systems.
- C. Identify electronic components of lighting systems.
- D. Describe and diagnose fault warnings.
- E. Understand proper use of electrical/electronic service tools.
- F. Understand data link systems.

## **EXPECTED LEARNER OUTCOMES:**

- A. The student will be able to demonstrate knowledge about electrical/electronic systems.
- B. The student will be able to demonstrate knowledge of battery systems.
- C. The student will be able to diagnose and repair battery system problems.
- D. The student will be able to demonstrate knowledge of starting systems.

- E. The student will be able to demonstrate knowledge of charging systems.
- F. The student will be able to demonstrate knowledge of lighting systems.

**COURSE COMPETENCIES:**

Upon successful completion of this course:

*The student will be able to demonstrate knowledge about electrical/electronic systems.*

- 1. The student will be able to apply Ohm's Law.
- 2. The student will be able to identify general electrical systems components.
- 3. The student will be able to analyze basic electrical systems.
- 4. The student will be able to interpret electrical schematics and circuits.

*The student will be able to demonstrate knowledge of battery systems.*

- 5. The student will be able to identify battery construction and operating principles.

*The student will be able to diagnose and repair battery system problems.*

- 6. The student will be able to demonstrate knowledge of how to repair battery system problems.

*The student will be able to demonstrate knowledge of starting systems.*

- 7. The student will be able to identify starting system components.
- 8. The student will be able to analyze starting system components.
- 9. The student will be able to repair starting systems.

*The student will be able to demonstrate knowledge of charging systems.*

- 10. The student will be able identify charging systems components.
- 11. The student will be able to analyze charging systems.
- 12. The student will be able to repair charging systems.

*The student will be able to demonstrate knowledge of lighting systems.*

- 13. The student will be able to inspect lighting systems.
- 14. The student will be able to repair lighting systems.
- 15. The student will be able to identify electronic components.
- 16. The student will be able to identify fault warnings.
- 17. The student will be able to demonstrate proper use of electrical/electronic service tools.
- 18. The student will be able to identify data link systems.

**ASSESSMENT OF LEARNER OUTCOMES:** Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

**SPECIAL NOTES:**

This syllabus is subject to change at the discretion of the instructor. Materials included is intended to provide an outline of the course and rules that the instructor will adhere to in

evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

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