

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES & SKILLED TRADES DIVISION
JOHN DEERE TECH
COURSE SYLLABUS
September 10, 2025

I. CATALOG DESCRIPTION

Course Number: JDAT2320
Course Title John Deere Electrical and Electronics II
Prerequisite(s): JDAT1130, JDAT1220

Catalog Description: This course provides a review of electrical fundamentals, and correct and safe operation of multimeters. An introduction to John Deere electrical systems are included, as well as troubleshooting techniques for circuit diagnosis using electrical wiring diagrams and schematics. An introduction to basic electronics is part of this course along with procedures and use of a digital multi-meter in electrical circuits. Techniques of circuit diagnosis using electrical schematics. Function, operation and testing of semiconductors and transistors. Microprocessor operation, including inputs and outputs. Testing of machine circuits including CAN system, LIN system, lighting, accessory, instrumentation, and gauges. Lab projects include the repair procedures and testing of cranking motors and alternators. Safety is stressed in this course.

Credit Hours: 6
Class Hours: 38
Lab Hours: 158
Total Contact Hours: 196

II. COURSE OBJECTIVES: *Course will:*

- A. Review basic electrical fundamentals.
- B. Review basic charging and starting circuit diagnostics.
- C. Allow hands on experience testing component operation.
- D. Allow hands on circuit diagnostics using a digital multimeter.
- E. Explain Basic CAN BUS (Controller Area Network) operation.
- F. Explain LIN BUS (Local Interconnect Network) operation.
- G. Allow students to use Service Advisor as a diagnostic tool
- H. Allow students to diagnose lighting and accessory circuits.
- I. Allow students to use machine self diagnostics and monitors to aid in diagnostics.
- J. Allow students to use Service Advisor to properly use diagnostic charts, wiring diagrams, and wiring schematics.
- K. Show students the proper wiring repair procedure.
- L. Allow students to use a digital multi-meter to read voltage, amperage, and resistance.
- M. Allow students to use a digital multi-meter to test diodes, measure duty cycle, and determine pulse width.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

- 1. Explain basic electrical fundamentals.
- 2. Explain basic electrical components.

3. Perform system inspection and diagnostics.
4. Perform system testing and adjusting.
5. Explain basic charging and starting system operation.
6. Identify and explain CAN BUS system.
7. Identify and explain LIN BUS system.
8. Explain basic operation of thermistor.
9. Explain basic operation of a potentiometer.
10. Explain basic operation of a Hall Effects sensor.
11. Explain basic operation of pressure switches.
12. Use Service Advisor diagnostics to retrieve service codes and aid in system diagnostics.
13. Use system self-diagnostics and monitor displays to aid in diagnostics.
14. Diagnose and service glow plug system components.
15. Identify different types of connectors.
16. Repair and replace connectors and connector bodies.
17. Properly repair wiring.
18. Use troubleshooting charts.
19. Read wiring diagrams and schematics.
20. Use a digital multi-meter to read voltage, amperage, and resistance.
21. Use a digital multi-meter to test diodes.
22. Use a digital multi-meter to measure duty cycle.
23. Use a digital multi-meter to determine pulse width.

B. GENERAL EDUCATION LEARNING OUTCOME:

GELO #3: Critical Thinking & Problem Solving

1. Collect, identify, interpret and analyze data.
2. Synthesize information to arrive at reasoned solutions to problems.
3. Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE

- A. Review of basic electrical
- B. Components operation
- C. Introduction to system electrical schematics and wiring diagrams
- D. Testing electrical circuits
- E. Starting and charging systems
- F. CAN BUS
- G. Electronic ignition and fuel injection systems
- H. Lighting and accessories
- I. Connectors
- J. Connector and wiring repair lab
- K. Monitors and controllers
- L. Sensors and actuators
- M. Diagnosis and testing
- N. Reading electrical diagrams and schematics
- O. Digital multi-meters
- P. Electronics lab

V. INSTRUCTIONAL MATERIALS

Required text(s): John Deere Fundamentals of Service, Electrical/Electronics

Other material(s): Required tool set
Safety glasses (regulation Z87)

Leather shoes/work boots
John Deere uniform
Colored pencils
Notebook
Writing instruments
RACF identification and password

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture
2. Small and large group discussion
3. Video presentations
4. Demonstrations
5. Project boards
6. Flip charts
7. Handouts
8. Observations
9. Field trips

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Notebook (if required)
2. Quizzes
3. Tests
4. Presentations
5. Demonstrations

Grading will follow the SCC Standard Grade Scale Policy. See **Course Information Document** for specific details on how the course grades are calculated.

VIII. SPECIFIC COURSE REQUIREMENTS:

- A.** Students must complete all tests, projects, assignments, and notebook (if required).
- B.** Students must earn a final grade of 70% (2.0) or higher.
- C.** Program safety rules will be followed. See the **Course Information Document** for any additional safety rules established by the instructor.
- D.** Safety belts will be worn at all times, on or in any motorized vehicle, if equipped.
- E.** Attendance and participation. See **Course Information Document** for attendance and participation policy.