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

I. CATALOG DESCRIPTION

Course Number: JDAT1130
Course Title John Deere Engines and Fuel Systems
Prerequisite(s): JDAT1111, JDAT1121

Catalog Description: This course deals with basic physical principles, operation and construction of two- and four-stroke cycle engines. It includes ignition timing of four-stroke cycle engines to factory specifications. Basic diagnostic engine test procedures will be practices on spark and compression ignition engines. This course also covers the types of internal combustion engine cooling systems, lubrication systems, air intake systems, exhaust systems, and fuel systems. Also covered is the basic theory, construction and operation of the engine valve train and the cylinder head, including valve timing and adjustments of actual John Deere engines. Also included are design, construction, operation, and service methods for the following engine and fuel system components: crankshafts, connecting rods, piston assemblies, cylinder liners, bearings, fuel injection pumps, fuel injection nozzles and related engine accessories. Lab activities include disassembly, inspection, measurements, reassembly, and adjustments performed on John Deere engines. Shop safety is stressed at all times.

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

II. COURSE OBJECTIVES: *Course will:*

A. Cover completion of a compression test.
B. Cover completion of a cylinder balance test.
C. Cover safely removing and installing an engine on a chassis.
D. Cover safely installing an engine on a stand.
E. Cover disassembling an engine.
F. Cover inspecting engine and fuel system components.
G. Cover cleaning engine and fuel system components.
H. Cover measuring components.
I. Cover diagnosing component failures.
J. Cover correctly assembling and installing components.
K. Cover correctly assembling an engine.
L. Cover correctly inspecting and adjusting a complete engine and fuel system.
M. Cover operating and testing an engine.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

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

1. Install test equipment for a compression test
2. Complete a compression test
3. Understand the results of the compression test
4. Install test equipment for a cylinder balance test
5. Complete a cylinder balance test
6. Understand the results of the cylinder balance test
7. Remove and install an engine from a chassis correctly
8. Install an engine on a rotating stand correctly
9. Disassemble an engine using the correct procedure
10. Inspect engine components
11. Identify and understand the operation of the engine components
12. Correctly disassemble the engine components and clean properly
13. Correctly measure and understand the measurements from the engine components
14. Identify Piston failures
15. Identify Cylinder failures
16. Identify Bearing failures
17. Identify seal failures
18. Identify valve train failures
19. Identify fuel system components
20. Identify fuel injection nozzles
21. Identify fuel injection nozzle failures
22. Repair fuel injection nozzles
23. Identify fuel injection pump types
24. Identify fuel injection pump failures
25. Reassemble engine components using the correct procedure
26. Reassemble an engine using the correct procedure
27. Correctly adjust valve lash
28. Correctly adjust and test an operating engine
29. Correctly verify correct engine operation

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. Evaluate the validity of arguments, alternatives, data, outcomes, and/or impacts of actions.
4. Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE

A. How an Engine Works
B. Safety Rules for Engines
C. Basic Engine Repair
D. Diesel Fuel Systems
E. Intake and Exhaust Systems
F. Lubrication Systems
G. Cooling Systems
H. Governing Systems
I. Engine Test Equipment and Service Tools

J. Diagnosis and Testing
K. Engine Tune-up

V. INSTRUCTIONAL MATERIALS

Required text(s): John Deere Fundamentals of Service Engines
Other material(s): Required tool set
Safety glasses
Leather work boots
John Deere uniform
Colored pencils
Notebook
Writing instruments
Purchase of material to build the engine lifting fixture

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. Transparencies
5. Demonstrations
6. Project boards
7. Flip charts
8. Handouts
9. Observations
10. Assigned lab projects
11. 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. Lab grades
5. Attendance/class conduct

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.