

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES & SKILLED TRADES DIVISION
JOHN DEERE TECH
COURSE SYLLABUS
September 9, 2025

I. CATALOG DESCRIPTION

Course Number: JDAT1220
Course Title John Deere Intro to Hydraulics and Powertrains
Prerequisite(s): JDAT1111, JDAT1121

Catalog Description: Introduction to basic hydraulic and power train concepts. Theory of construction, operation, and diagnosis of hydraulic and power train components, systems, and assemblies. Subjects include gears, bearings, seals, differentials, clutches, planetary operation, final drives, transmissions, pumps, motors, valves, actuators, circuits, test equipment operation, safety and schematics.

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

II. COURSE OBJECTIVES: *Course will:*

- A.** Introduce concepts of hydraulics.
- B.** Explore the rules of Pascal's Law.
- C.** Identify hydraulic systems and components.
- D.** Demonstrate the correct use of seals and sealants.
- E.** Train students in identification and use of symbols and schematics.
- F.** Examine power train components and drive lines.
- G.** Discuss power train adjustments.
- H.** Identify power train failures and utilize repair procedures.
- I.** Introduce hybrid transmission operation and construction.
- J.** Demonstrate diagnostic procedures and equipment.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

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

- 1. Describe fundamental hydraulic principals
- 2. Recite and comprehend Pascal's law
- 3. Identify power train components
- 4. Evaluate power train diagnostic procedures
- 5. Identify various types of hydraulic systems
- 6. Read and comprehend hydraulic symbols and schematics
- 7. Demonstrate safe use of an accumulator charging station
- 8. Describe proper bearing installation and removal procedures
- 9. Identify dangerous situations to avoid during service
- 10. Identify seal types and configurations
- 11. Demonstrate proper seal installation procedures
- 12. Explain the multi-functions of a planetary assembly

13. Properly connect hydraulic components into a system
14. Describe the fundamental theory of hybrid transmissions
15. Describe the operation of PFC hydraulic systems
16. Identify priority and non-priority functions
17. Describe torque and power relationships within a power train
18. Demonstrate proper gear set assembly and adjustment
19. Complete certification for hydraulics
20. Identify gear types and characteristics

B. GENERAL EDUCATION LEARNING OUTCOME:

GELO #3: Critical Thinking & Problem Solving

1. Synthesize information to arrive at reasoned solutions to problems.
2. Acquire and integrate knowledge and construct relationships across disciplines.

IV. CONTENT/TOPICAL OUTLINE

- A. Hydraulic and power train safety
- B. Theory of power transmission
- C. Function and operation of power train components
- D. Theory of hydraulic principals
- E. Function of hydraulic components
- F. Operation of hydraulic systems
- G. Hydraulic symbol and schematic reading
- H. Diagnostic flowchart theory
- I. DTC's and calibration
- J. Hybrid principles

V. INSTRUCTIONAL MATERIALS

Required text(s): John Deere Fundamentals of Service, Hydraulics and Power Trains

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