

Course Code: DPE 254

Course Title: Advanced Power Trains

Department: Agricultural Technologies

Effective Date: Summer 2026

PCS Code: 1.2 - Occupational/Technical Instruction

CIP Code: 47.0302

Repeatability: 0

Credit Hours

Catalog Notation: 2-2-3

Credit Hour Distribution:

Lecture: 2

Lab: 2

Clinical: 0

Total: 3

General Course Information

Catalog Description

Troubleshooting and diagnosis of power shift transmissions, pressure and flow testing of transmission oil pumps, pressure testing of clutch packs, calibration of transmission controllers, following step-by-step testing flowcharts for power train diagnostic work.

General Course Objectives

Students will learn proper diagnostic skills on power shift transmissions; how to use advanced diagnostic test equipment; how to calibrate electrically controlled transmissions; and how to develop troubleshooting skills as they pertain to transmissions.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

Credit in DPE 110 and DPE 135

Credit or concurrent enrollment in DPE 235

Methods of Evaluation

Students will be given a minimum of 4 chapter quizzes, 2 unit exams, and 12 lab practicals.

Instructional Materials and Additional Supplies

No textbook required. Uses manufacturers' tech manuals.

Course Content

General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Pressure Checking - Flow Checking Power Shift Transmissions	1. Demonstrate how to hook up test gauges and equipment. 2. Test for clutch pack leakages in flow rate transmission pumps. 3. Evaluate what is normal in a power shift transmission.	5	8	0
Troubleshooting a Power Shift Transmission	1. Demonstrate how to troubleshoot power shift transmissions using pressure readings. 2. Calibrate computer controlled transmissions. 3. Describe how to develop a troubleshooting path based on fault codes.	9	9	0
Shift Quality	1. Describe how to evaluate shift quality and change shift points. 2. Match transmission outputs with load demands.	2	7	0
Hydrostatic Drive Systems	1. Demonstrate how to flow rate charge pumps; how to take charge pump readings in forward, reverse and neutral; and how to take stall pressure readings. 2. Disassemble a hydrostatic pump.	6	4	0
Torque Converter	1. Describe how a converter works. 2. Test a torque converter. 3. Perform stall testing and describe what the results mean.	8	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0