Course Information Form (CIF)

Course Code: CNH 171

Course Title: Introduction to CNH Powertrains

Department: Agricultural Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0605
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 2-2-3
Credit Hour Distribution:

Lecture: 2	Lab: 2	Clinical: 0	**Total: 3**

General Course Information

Catalog Description

Case New Holland (CNH) drive trains and components of agricultural and construction equipment (CE), clutch systems, transaxles, differentials, axles, emphasis on disassembly, reassembly and component identification.

General Course Objectives

- Learn operating principles of traction clutch systems.
- Learn theory and power flow through gear transmission.
- Learn theory and power flow through power shift transmissions.
- Learn theory and power flow through differential, range, and speed transmissions.
- Learn proper transmission disassembly and reassembly skills following company manuals.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

Credit in CNH 133

Methods of Evaluation

Students will be given 12 objective exams, 10 lab practicals, and 10 performance exams.

Instructional Materials and Additional Supplies

Heavy Equipment Power Trains and Systems, 978-1-63563-228-6
Students will need the required tool sets for the CNH Service Technician program.

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
Traction Clutches	1. Describe and demonstrate operating principles of all types of traction clutches. 2. Follow power flow through clutch and torque amplifier.	5	4	0
Power Flow: Gear Transmissions	1. Describe and demonstrate theory and power flow of gear transmissions. 2. Identify how a gear reduction is done, what gear ratios are, and what counter shafts are used for. 3. Identify how reverse is achieved in a transmission. 4. Disassemble and reassemble a gear transmission complete.	7	9	0
Power Flow: Power Shift Transmission	1. Describe and demonstrate theory and power flow of a power shift transmission, how a planetary gear set works, how a clutch pack functions, and how oil flows in a power shift transmission. 2. Disassemble and reassemble a power shift transmission complete.	9	12	0
Power Flow: Differentials	1. Describe and demonstrate theory of differential, ring and pinion gear ratios, gear backlash, and gear tooth patterns. 2. Disassemble and reassemble a differential complete.	5	3	0
Power Flow: Mechanical Front Drive Front Axles	1. Describe and demonstrate theory and power flow through a mechanical front-wheel drive (MFD) front axle. 2. Identify differential ratio from outboard final drive ratio. 3. Disassemble and reassemble complete.	4	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0