Industrial Power Technology CTAG Alignment

This document contains information about ONE (1) Career-Technical Articulation Number (CTAN) for the Industrial Power Technology Career-Technical Assurance Guide (CTAG).

The CTAN is below:

1. Hydraulics and Pneumatics Systems

1. <u>Hydraulics and Pneumatics Systems</u>: CTAN alignment with the Industrial Power Technology Pathway in the Agriculture and Environmental Systems Career Field Technical Content Standards of the Ohio Department of Education

General Course Description: This course focuses on skills and technologies essential for students to learn physical principles of hydraulics. They will diagnose problems, test system components, properly maintain hydraulic circuits and diagnose and test problem areas in hydraulics systems of agricultural and industrial power equipment.

Advising Notes:
Student must access credit within 3 years of program completion.
Student must earn a C or better in the secondary course.

Semester Credit Hours: 2.0

All Learning Outcomes indicated with an asterisk are essential and must be taught.

Alignment:

Learning Outcomes The student will be able to:	The Ohio Department of Education Agriculture and Environmental Systems Career Field Competencies aligned from the course titled: Hydraulics and Pneumatics (ODE Course Code 010225)
1. Understand and identify the dangers associated with fluids under high pressure and follow all safety practices.*	**<u>Outcome 1.12 Site and Personal Safety Procedures</u>** 1.12.1. Use Occupational Safety and Health Administration (OSHA) defined procedures for identifying employer and employee responsibilities, working in confined spaces, managing worker safety programs, using ground fault circuit interrupters (GFCIs), maintaining clearance and boundaries and labeling. 1.12.2. Interpret safety signs and symbols. 1.12.3. Interpret personal safety rights according to the employee Right to Know plan. 1.12.4. Describe how working under the influence of drugs and alcohol increases the risk of accident, lowers productivity, raises insurance costs, and reduces profits.

	1.12.5. Identify the location of emergency flush showers, eyewash fountains, Safety Data Sheets (SDSs), fire alarms and exits. 1.12.6. Identify procedures for the handling, storage, and disposal of hazardous materials. 1.12.7. Select, use, store, maintain and dispose of personal protective equipment (PPE), appropriate to job tasks, conditions and materials. 1.12.8. Identify safety hazards and take corrective measures. 1.12.9. Identify, inspect, and use safety equipment appropriate for the task. 1.12.10. Follow established procedures for the administration of first aid and contact emergency medical personnel when necessary. 1.12.11. Set up for ergonomic workflow. 1.12.12. Apply inspection, rejection criteria, hitch configurations, and load handling practices to slings and rigging hardware. **Outcome 4.1 Tool, Stationary and Mobile Equipment Maintenance** 4.1.2. Ensure the presence and functionality of safety systems and hardware. 4.1.3. Identify potential hazards and limitations related to the use of hand tools, power tools, and stationary equipment. 4.1.4. Maintain machinery, equipment, instrument and facility cleanliness, appearance and safety.
2. Describe the principles of power hydraulics. *	**Outcome 4.11 Hydraulic Systems** 4.11.2. Describe the physical and mechanical principles of hydraulics. 4.11.3. Explain the features, benefits, and applications of the different types of hydraulic and hydrostatic systems.
3. Identify and explain the function of each component of a hydraulic system.*	**Outcome 1.2 Leadership and Communications** 1.2.1. Extract relevant, valid information from materials and cite sources of information. 1.2.2. Deliver formal and informal presentations. 1.2.3. Identify and use verbal, nonverbal and active listening skills to communicate effectively. 1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose. 1.2.6. Use proper grammar and expression in all aspects of communication. 1.2.11. Write professional correspondence, documents, job applications, and résumés. 1.2.12. Use technical writing skills to complete forms and create

	reports. **<u>Outcome 4.11 Hydraulic Systems</u>** 4.11.4. Describe the application and operation of major components including pumps, motors, valves, and accumulators.
4. Use hydraulic schematics to analyze, diagnose, test, and troubleshoot.*	**<u>Outcome 4.11 Hydraulic Systems</u>** 4.11.1. Interpret symbols and schematic drawings related to hydraulic system design. 4.11.5. Test and diagnose operating systems. 4.11.6. Test, diagnose and repair or replace fluid conveyance components (e.g., hoses, lines, fittings). 4.11.7. Test and diagnose electronic controls for hydraulic systems. 4.11.8. Evaluate system cleanliness to determine efficiency. 4.11.11. Measure flow rate, pressure, and temperature
5. Develop a preventative maintenance program for a hydraulic system.*	**<u>Outcome 4.11 Hydraulic Systems</u>** 4.11.6. Test, diagnose and repair or replace fluid conveyance components (e.g., hoses, lines, fittings). 4.11.8. Evaluate system cleanliness to determine efficiency. 4.11.12. Prevent contamination of a hydraulic system.