

10/31/2024

DATE

☒ REQUIRED COURSE
☐ ELECTIVE COURSE

TEC DIVISION
☒ NEW COURSE
☐ REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	APT-061		TITLE: (30 Characters Max)		Hydraulic Maintenance I								
SEM CR HRS:	1.5	Lecture:	1		Lab:	1	ICCB Lab:	1	ECH:	2			
Course Level:	<input type="checkbox"/> Gen Ed/IAI <input type="checkbox"/> Baccalaureate/Non-IAI		<input checked="" type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/Not in Degree Audit		Clinical Practicum:	0	Work-based Learning:	0	WBL ECH:	0			
COURSE PCS #	12 - 15.0303		IAI Code:		N/A			Contact Hours (Minutes/Week)					
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:		Max:		16 Wks	100	8 Wks	200
Prerequisites:	APT-054 or APTC-054 or consent of the instructor												
Corequisites:	None												
Catalog Description: (40 Word Limit)	This course covers all aspects of basic Hydraulic maintenance and servicing. (Meets Certified Industry 4.0 Automation Specialist I C-256 Hydraulic Maintenance 1 credential.)												

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Standard 256.1 Apply hydraulic maintenance safety procedures	2	2		
Standard 256.2 Install O-rings in hydraulic components	2	2		
Standard 256.3 Install and adjust hydraulic fittings	2	2		
Standard 256.4 Connect and disconnect hydraulic hoses and fittings	2	2		
Standard 256.5 Connect and disconnect hydraulic steel tubing and fittings	2	2		
Standard 256.6 Maintain hydraulic filters	2	2		
Standard 256.7 Analyze hydraulic reservoir fluid	2	2		
Standard 256.8 Service hydraulic reservoir fluid	2	2		
Standard 256.9 Install and adjust hydraulic components	2	2		
TOTAL	18	18	0	0

EVALUATION			
QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input checked="" type="checkbox"/>	PAPERS <input type="checkbox"/>
LAB WORK <input checked="" type="checkbox"/>	PROJECTS <input type="checkbox"/>	COMP FINAL <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>

COURSE MATERIALS	
TITLE:	Instructor supplied
AUTHOR:	
PUBLISHER:	
VOLUME/EDITION/URL:	
COPYRIGHT DATE:	

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Standard 256.1 Apply hydraulic maintenance safety procedures	4	Performance Indicators 1. Apply safety procedures during assembly/disassembly of hydraulic systems. Knowledge Indicators 1. Describe hydraulic maintenance hazards.
Standard 256.2 Install O-rings in hydraulic components	4	Performance Indicators 1. Install an O-ring in an inside, outside part features. 2. Install an O-ring using an O-ring installation tool. Knowledge Indicators 1. Describe the operation of an O-ring. 2. Describe how O-rings are specified.

Standard 256.3 Install and adjust hydraulic fittings	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Install threaded port fittings in hydraulic components. 2. Install straight-thread fittings in hydraulic components. 3. Install swivel hose fittings in hydraulic components. 4. Use a torque wrench to install hydraulic fittings to specification. 5. Identify size and type of hydraulic fittings. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Describe how hydraulic fittings are specified. 2. Describe how to orient hydraulic fittings for hose and tubing connection.
Standard 256.4 Connect and disconnect hydraulic hoses and fittings	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Connect and disconnect hydraulic hose and swivel fittings. 2. Identify the size and type of hydraulic hose. 3. Install hose/ tubing brackets and clips. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Describe how hydraulic hoses are specified.
Standard 256.5 Connect and disconnect hydraulic steel tubing and fittings	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Connect and disconnect hydraulic steel tubing to pipe thread and straight thread fittings. 2. Identify size and type of hydraulic tubing. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Interpret hydraulic pipe and tubing specifications.
Standard 256.6 Maintain hydraulic filters	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Determine delta P across a filter using built-in indicator. 2. Determine when to change a filter based on observation and manufacturer's documentation. 3. Replace a spin-on filter. 4. Replace a cartridge filter. 5. Interpret filter specifications. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Explain how filters are specified. 2. Describe the operation of filter types: strainer, spin-on and cartridge. 3. Explain when to change a strainer.
Standard 256.7 Analyze hydraulic reservoir fluid	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Inspect hydraulic fluid visually for presence of water or contaminants. 2. Inspect hydraulic fluid using feel/smell for excess temperature, lubricity. 3. Sample oil for lab testing. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Describe how hydraulic oil is specified. 2. Describe the effects of excess temperature and water on hydraulic system operation. 3. Describe hydraulic system applications of oil analysis. 4. Describe hydraulic system applications of thermography and IR guns.
Standard 256.8 Service hydraulic reservoir fluid	4	<p>Performance Indicators</p> <ol style="list-style-type: none"> 1. Clean hydraulic reservoir fluid using a filter cart. 2. Change hydraulic reservoir fluid using a filter cart. 3. Use manufacturer's manuals to determine correct oil specifications. 4. Determine if an oil specification meets machine requirements. 5. Inspect hydraulic reservoir fluid levels and add fluid. <p>Knowledge Indicators</p> <ol style="list-style-type: none"> 1. Describe the operation of a hydraulic filter cart.

Standard 256.9 Install and adjust hydraulic components	4	Performance Indicators 1. Replace a hydraulic cartridge valve. 2. Install a body-ported hydraulic valve. 3. Install and align a hydraulic cylinder. 4. Install a subplate-mounted hydraulic valve. 5. Bleed a hydraulic cylinder. Knowledge Indicators 1. Describe the function of hydraulic system bleeding.
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Outcomes*	At the successful completion of this course, students will be able to:
Course Outcome	Install O-rings in hydraulic components.
Course Outcome	Maintain hydraulic filters.
Course Outcome	Install and adjust hydraulic components.
Primary Laker Learning Competency	Creative Thinking & Problem Solving: Students think creatively to solve problems.
Secondary Laker Learning Competency	Communication: Students communicate through the exchange of information.

*Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.