5/29/2025	DATE	TEC	DIVISION
☑	REQUIRED COURSE	☐	NEW COURSE
☑	ELECTIVE COURSE	☑	REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	EET-087		**TITLE:** *(30 Characters Max)*		Prog Logic Controllers II						
SEM CR HRS:	2.0	**Lecture:**	1.0		**Lab:**	2.0	**ICCB Lab:**	2.0	**ECH:**	3.0	
Course Level:	☐ Gen Ed/IAI ☐ Baccalaureate/Non-IAI ☑ Career/Technical ☐ Dev Ed/Not in Degree Audit				**Clinical Practicum:**	0.0	**Work-based Learning:**	0.0	**WBL ECH:**	0.0	
Course PCS & CIP:	12 - 15.0613		**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**	150	**8 Wks**	300
Prerequisites:	EET-086 or APTC-046 or consent of instructor										
Corequisites:	None										
Catalog Description: (40 Word Limit)	This course covers advanced topics of PLC operation and programming, using Rslogix software and Allen Bradley PLCs. Topics include project creation analog I/O, math and data handling instruction, program flow and communication protocols. (Meets SACA Automation Specialist I C-207, C-208 and II C-309 credentials.)										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Standard 207.1 Start up and shut down a PLC system	1	2		
Standard 207.2 Configure an Ethernet/IP Driver	1	2		
Standard 207.3 Transfer programs between a PLC/PC via point-to-point Ethernet	1	2		
Standard 207.4 Transfer programs between a PLC/PC via USB serial	1	2		
Standard 207.5 Operate and monitor a PLC	1	2		
Standard 207.6 Connect, configure, and operate an HMI panel with Ethernet	1	1		
Standard 207.7 Configure PLC discrete I/O	1	1		
Standard 207.9 Create a PLC project	1	1		
Standard 208.1 Use status and diagnostic indicators to troubleshoot a PLC	1	1		
Standard 208.2 Troubleshoot PLC inputs and outputs	0.5	1		
Standard 208.3 Troubleshoot PLC power distribution system	0.5	1		
Standard 208.4 Troubleshoot a PLC processor	0.5	1		
Standard 208.5 Troubleshoot a PLC system with discrete I/O	0.5	1		
Standard 309.01 Program and operate a PLC logic program that uses analog instructions	2	4		
Standard 309.02 Troubleshoot a PLC program application that uses analog I/O	1	2		
Standard 309.03 Program and operate a PLC logic program that uses program control instructions	0.5	2		
Standard 309.04 Program and operate a PLC logic program that uses subroutine instructions	0.5	2		
TOTAL	15	28	0	0

EVALUATION							
QUIZZES	☑	**EXAMS**	☑	**ORAL PRES**	☑	**PAPERS**	☑
LAB WORK	☑	**PROJECTS**	☐	**COMP FINAL**	☑	**OTHER**	☐

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

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:

Standard 207.1 Start up and shut down a PLC system	3	Performance Indicators: 1. Power up and perform a normal shutdown of a PLC system. 2. Identify the parts of a PLC. Knowledge Indicators: 1. Describe the basic operation of a programmable controller (PLC). 2. Describe the component functions of a PLC. 3. Describe the operation of the PLC power supply circuit.
Standard 207.2 Configure an Ethernet/IP Driver	3	Performance Indicators: 1. Configure an Ethernet/IP Driver to permit PLC to PC communications. Knowledge Indicators: 1. Describe the function of Ethernet/IP driver software.
Standard 207.3 Transfer programs between a PLC / PC via point-to-point Ethernet	3	Performance Indicators: 1. Connect and configure a point-to-point PLC Ethernet network. 2. Download a PLC project from a PC via point-to-point Ethernet. 3. Upload a PLC project to a PC via point-to-point Ethernet. Knowledge Indicators: 1. Describe the basic operation of a point-to-point Ethernet network. 2. Describe the Ethernet IP address system for point-to-point. 3. Describe the basic operation of PLC programming software.
Standard 207.4 Transfer programs between a PLC / PC via USB serial	3	Performance Indicators: 1. Connect and configure a point-to-point PLC serial network. 2. Download a PLC project from a PC via point-to-point USB serial. 3. Upload a PLC project to a PC via point-to-point USB serial. Knowledge Indicators: 1. Describe the basic operation of USB serial communications. 2. Describe the USB configuration using PLC programming software.
Standard 207.5 Operate and monitor a PLC	3	Performance Indicators: 1. Change PLC operation mode to Run or Program. 2. Monitor PLC status using I/O indicators and software. Knowledge Indicators: 1. Describe the functions of PLC operation modes.
Standard 207.6 Connect, configure, and operate an HMI panel with Ethernet	2	Performance Indicators: 1. Connect and configure HMI panel with Ethernet network. 2. Download a project to an HMI panel via an Ethernet network. 3. Operate a basic HMI panel project with Ethernet network. Knowledge Indicators: 1. Describe the operation of a Human Machine Interface (HMI) panel. 2. Describe basic functions of an HMI panel project.

Standard 207.7 Configure PLC discrete I/O	2	Performance Indicators: 1. Configure PLC discrete I/O. 2. Identify a discrete I/O terminal given a tag. Knowledge Indicators: 1. Describe the memory organization of a typical PLC. 2. Describe types of discrete PLC I/O modules. 3. Describe how discrete I/O devices are interfaced to a PLC. 4. Describe the format of PLC instruction and I/O addresses. 5. Interpret a tag.
Standard 207.9 Create a PLC project	2	Performance Indicators: 1. Create a PLC project. 2. Enter and operate a PLC logic program. 3. Edit a PLC project. Knowledge Indicators: 1. Describe the elements of a PLC project.
208.1 Use status and diagnostic indicators to troubleshoot a PLC	2	Performance Indicators: 1. Use status and diagnostic indicators to troubleshoot a PLC. Knowledge Indicators: 1. Describe two levels of troubleshooting and give an application of each. 2. Describe types of PLC faults.
208.2 Troubleshoot PLC inputs and outputs	1.5	Performance Indicators: 1. Use status and diagnostic indicators to troubleshoot a PLC. Knowledge Indicators: 1. Describe two levels of troubleshooting and give an application of each. 2. Describe types of PLC faults.
208.3 Troubleshoot PLC power distribution system	1.5	Performance Indicators: 1. Troubleshoot a PLC processor. Knowledge Indicators: 1. Describe types of processor faults. 2. Describe methods of troubleshooting processor faults.
208.4 Troubleshoot a PLC processor	1.5	Performance Indicators 1. Troubleshoot a PLC processor. Knowledge Indicators 1. Describe types of processor faults. 2. Describe methods of troubleshooting processor faults.
208.5 Troubleshoot a PLC system with discrete I/O	1.5	Performance Indicators 1. Troubleshoot a PLC system with discrete I/O. Knowledge Indicators 1. Describe methods of systems troubleshooting. 2. Describe a 6-step PLC systems troubleshooting process.
Standard 309.01 Program and operate a PLC logic program that uses analog instructions	6	Performance Indicators: 1. Interpret a PLC logic program that uses analog input and output instructions. 2. Enter and operate a PLC logic program that uses analog input and output instructions. Knowledge Indicators: 1. Describe the operation of PLC analog input and output instructions. 2. Describe the basic operation/construction of analog input and output PLC modules. 3. Describe how devices are wired to analog input and output PLC modules.

Standard 309.02 Troubleshoot a PLC program application that uses analog I/O	3	Performance Indicators: 1. Troubleshoot a PLC program application that uses analog I/O. Knowledge Indicators: 1. Describe types of analog I/O faults. 2. Describe how to test analog I/O. 3. Describe how to troubleshoot PLC applications with analog I/O.
Standard 309.03 Program and operate a PLC logic program that uses program control instructions	2.5	Performance Indicators: 1. Interpret a PLC logic program that uses a program initialization instruction. 2. Enter and operate a PLC logic program that uses program initialization instructions. 3. Interpret a PLC logic program that uses an MCR instruction. 4. Enter and operate a PLC logic program that uses an MCR instruction. Knowledge Indicators: 1. Describe the operation of PLC program initialization instructions. 2. Describe the operation of PLC MCR instructions.
Standard 309.04 Program and operate a PLC logic program that uses subroutine instructions	2.5	Performance Indicators: 1. Interpret a PLC logic program that uses subroutine instructions 2. Enter and operate a PLC logic program that uses subroutine instructions 3. Interpret a PLC logic program that uses JUMP/LABEL instructions 4. Enter and operate a PLC logic program that uses JUMP/LABEL instructions Knowledge Indicators: 1. Describe the operation of PLC subroutine instructions. 2. Describe the operation of PLC JUMP/LABEL instructions.
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Outcomes*	**At the successful completion of this course, students will be able to:**
Course Outcome	Standard 207.3 Transfer programs between a PLC / PC via point-to-point Ethernet
Course Outcome	Standard 207.9 Create a PLC project
Course Outcome	Standard 309.04 Program and operate a PLC logic program that uses subroutine instructions
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.*