

9/22/2022 DATE

REQUIRED COURSE
 ELECTIVE COURSE

Technology DIVISION
 NEW COURSE
 REVISION

Lake Land College

Course Information Form

COURSE NUMBER:		APT-050		TITLE: (30 Characters Max)		Electrical Principles & Practices											
SEM CR HRS:		4		Lecture:		2		Lab:		4		ECH:		6			
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		SOE/ Internship:		0		SOE ECH:		0	
COURSE PCS #		12.150306		IAI Code								Contact Hours (Minutes Per Week)					
Repeatable (Y/N):		N		Pass/Fail (Y/N):		N		Variable Credit (Y/N):		N		Min:		Max:		16 Wks 300 8 wks 600	
Prerequisites:		None															
Catalog Description: (40 Word Limit)		This course is designed for students interested in the properties of electricity. Course focuses on theory and skills to prepare technicians for installation and troubleshooting of basic electrical circuits.															

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Non-Clinical Internship/ SOE
Electricity Principles	1	0		
Basic Quantities	1	1		
Ohms Law	2	3		
Energy	1	1		
Safety	1	2		
Math Principles	2	2		
Math Applications	2	2		
Numbering Systems	2	2		
Meters	2	5		
Symbols & Print Readings	3	5		
Circuit Conductors & Connections	2	5		
Series Circuits	2	5		
Parallel Circuits	2	5		
Series/Parallel Circuits	2	5		
Transformers Motors & Starters	3	7		
Resistance, Inductance, Capacitance	2	10		
TOTAL	30	60	0	0

EVALUATION			
QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input 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:	Electrical Principles & Practices
AUTHOR:	
PUBLISHER:	American Technical Publishers
VOLUME/EDITION/URL:	4th
COPYRIGHT DATE:	2013

TITLE:	Electricity & Electronics Lab Workbook	Digital Multimeter; Breadboard, Solderless; Scope Probe; MET040/042 HVC062 Kit
AUTHOR:	Gerrish, Dugger Jr., Roberts	
PUBLISHER:		
VOLUME/EDITION/URL:		
COPYRIGHT DATE:		

TITLE:	Electricity & Electronics	
AUTHOR:	Gerrish	
PUBLISHER:		
VOLUME/EDITION/URL:		
COPYRIGHT DATE:		

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>

Principles	1	Define materials within the atomic structure that is used to produce electricity.
Basic Quantities	2	Identify different materials used constructing electronic components.
Ohms Law	5	Illustrate and perform mathematical calculations or voltage, current and resistance within a working circuit.
Energy	2	Explain the process of transmitting electrical energy.
Safety	3	Discuss the importance of safe work practices. Discuss OSHA regulations, Material Safety Data sheets and how safety laws protect workers.
Math Principles	4	Explain different math notations, including metric notation, scientific and engineering notation.
Math Applications	4	Explain math principles using Ohms Law and the power formulas. Perform exercises using each formula.
Numbering Systems	4	Define each type of numbering system, including binary octal & hexadecimal. Explain color codes used in resistors & capacitors.
Meters	7	Describe basic instrument concepts. Define the steps of the proper measuring devices.
Symbols & Print Reading	8	Identify and apply different component symbols using software tools in diagrams & schematics.
Circuit Conductors & Connections	7	Describe different types of electrical connectors and illustrate the purpose of each style.
Series Circuits	7	Explain dividing voltage in a series configured circuit.
Parallel Circuits	7	Explain dividing current in a parallel-configured circuit.
Series/Parallel Circuits	7	Explain why circuits are in combination of series and parallel. Calculate and measure different configurations of these circuits.

Transformers, Motors & Starters	10	Describe the architecture of transformers. Explain the physical properties of different types of transformers. Define the basic operation of motors and generators.
Resistance, Inductance, Capacitance	12	Describe the methods of creating a magnetic field and state where they are used. Identify the different types of configurations of inductors. Explain the purpose of induction. Identify types of capacitance applications. Describe the purpose of capacitors.
Insert New Line Above this Line		
	90	

COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	<ul style="list-style-type: none"> • Utilize basic electrical instruments and measurements.
	<ul style="list-style-type: none"> • Summarize the inductive principles of electrical motors and transformers
	<ul style="list-style-type: none"> • Apply Ohm's Law
	<ul style="list-style-type: none"> • Draw and read electronic schematics

* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.