12/11/14	DATE	Technology	DIVISION
	REQUIRED COURSE		NEW COURSE
	ELECTIVE COURSE	X	REVISION

LAKE LAND COLLEGE
Course Information Form

COURSE NUMBER MET042 **TITLE** AC Circuits

SEM CR HRS 2.5 **LT HRS** 1.5 **LAB HRS** 2 **SOE HRS** _____ **ECH** _____

COURSE PCS# _____ (Assigned by Administration)

Prerequisites: **MET040 – DC Circuits**

Catalog Description (40 Word Limit): This course presents the theory of AC electricity and the Application of transformers and distribution equipment.

List the Major Course Segments (Units)	Lt Hrs	Lab Hrs

Magnetism
Transformers
Inductance and RL Circuits
Capacitance and RC Circuits
Tuned Circuits and RCL Networks

EVALUATION:

Quizzes		**Exams**	X	**Oral Pres**		**Papers**	
Lab Work	X	**Projects**		**Comp Final**	X	**Other**	

Textbook:

Title: **Electricity & Electronics**

Author: **Gerrish, Dugger, Roberts**

Publisher: **Goodheart Willcox Co. Inc.**

Volume/Edition: 10th

Copyright Date: 2009

Major Course Segment	Hours	Learning Outcomes
Magnetism		* Explain the basic principles. * State the three laws of magnetism. * Describe the link between electric current and magnetism. * Explain Rowland's law. * Discuss various types of relays and the manner in which they work. * Describe the use of magnetic shields.
Transformers		* Explain the operation of a transformer. * Discuss the relationship between mutual induction and transformers. * Describe the effect of self induction. * Calculate the various values of currents and voltages in transformer circuits. * List three types of transformer losses. * Identify delta and wye transformer connections. * Discuss grounding an electrical circuit. * Explain troubleshooting procedures for transformers. * Describe several special transformer applications.
Inductance and RL Circuits		* Define the terms inductor and inductance. * Explain how inductance affects a current. * Describe an RL circuit's transient response. * Define mutual inductance. * Describe the effect of inductance in ac circuits. * Explain and compare true power and apparent power. * Use various measuring and computing methods to determine the values of currents and voltages in inductive circuits.
Capacitance and RC Circuits		* Define capacitance and capacitor. * Identify the many different types of capacitor. * Describe the transient response of a capacitor. * Explain how a capacitor behaves in a dc circuit. * Discuss the effect of capacitance on an ac circuit. * Describe the results of combining capacitance and resistance in a circuit.
Tuned Circuits and RCL Networks		* Explain resonant frequency and how it affects various RCL circuits. * Calculate a resonant frequency. * Discuss the characteristics of a series RCL circuit at its resonant frequency. * Discuss the characteristics of a parallel RCL circuit at its resonant frequency. * Calculate circuit Q and bandwidth. * Describe filtering action.

* List four types of filters and explain their action.

Course Outcomes: At the successful completion of this course, students will be able to:

- Demonstrate AC conversions.
- Summarize circuit analysis of inductance in series and parallel.
- Summarize circuit analysis of transformer circuits.
- Summarize analysis of capacitance in series and parallel.