1/8/15	DATE	Technology	DIVISION
X	REQUIRED COURSE		NEW COURSE
	ELECTIVE COURSE	X	REVISION

LAKE LAND COLLEGE
Course Information Form

COURSE NUMBER MET 084 **TITLE** Technical Mechanisms

SEM CR HRS 3 **LT HRS** 2 **LAB HRS** 2 **SOE HRS** _____ **ECH** _____

COURSE PCS# _____ (Assigned by Administration)

Prerequisites: **TEC054 – Tech Math III, CAD 056 – CAD I**

Catalog Description (40 Word Limit):

Focuses on motion analysis of mechanical system components such as linkages, slider-crank mechanisms, working connectors, cams, gears and gear trains.

List the Major Course Segments (Units)	Lt Hrs	Lab Hrs
Introduction to Mechanisms and Kinematics	4	4
Vectors	3	3
Kinematic Analysis	4	4
Limiting Positions	2	2
Mechanism Design	4	4
Pivot Point Locations	1	2
Velocity Analysis	1	1
Cam Design	2	2
Follower Motion Schemes	1	1
Gears and Gear Trains	3	3
Mechanical Drive Setup Techniques	2	7

EVALUATION:

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

Textbook: **Title:** ***Machines and Mechanisms (Applied Kinematic Analysis)***

Author: **David H. Myszka**

Publisher: **Prentice-Hall Inc.**

Volume/Edition: **4th Edition**

Copyright Date: **2012**

Major Course Segment	Hours	Learning Outcomes The student will be able to:
Introduction to Mechanisms and Kinematics	8	Determine kinematic components and draw a kinematic diagram from a view of a complex machine.
Vectors Vector representation and addition	3	Use vectors to mathematically and graphically determine the displacement of links.
Vector components	3	Resolve component vectors into x and y components to determine the resultant vector magnitude and direction.
Kinematic analysis	8	Determine the position of all links in a mechanism as the driver link is displaced using analytical and graphical techniques.
Limiting Positions	4	Determine the limiting positions of a mechanism.
Mechanism Design	8	Determine the linkage dimensions, given the desired range of movement. (Kinematic Synthesis)
Pivot Point Locations	3	Use graphical techniques to locate pivot points to move follower between two prescribed positions.
Velocity Analysis	2	Solve the linear velocity of a point on a rotating link.
Cam Design Classification and displacement diagram	4	Identify the types of cams and followers. Determine the stroke and dwell locations from a cam displacement diagram.
Follower motion schemes	2	Recognize the cams motion of constant velocity, constant acceleration, harmonic or cycloidal from a displacement diagram.
Gears and Gear Trains Introduction and classification	3	Know gear types, terminology, be able to calculate angular velocity and torque.
Standard gear systems	3	Identify gear systems adopted by the USA Standards Institute, design a gear system, determine diametrical pitch, pitch diameter, number of teeth, and contact ratio.
Mechanical Drive Setup Techniques	9	Use mechanical drives trainers to mount and level motors, align couplers, install chain and gear drives

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

- Complete positional analysis of linkage systems.
- Determine the limiting positions of a follower linkage.
- Complete kinematic synthesis of a 4-bar linkage system.
- Identify different gear types.
- Solve the torque and speed of gear trains.
- Use proper techniques to install different mechanical drive systems.