

9/15/2022 DATE

☐ REQUIRED COURSE
☐ ELECTIVE COURSE

MSD DIVISION
☐ NEW COURSE
☒ REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	PHY-130	TITLE: (30 Characters Max)		College Physics I							
SEM CR HRS:	4	Lecture:	3	Lab:	3	SOE/ Internship:		0	ECH:	6	
Course Level:	<input checked="" type="checkbox"/> Gen Ed / IAI <input type="checkbox"/> Baccalaureate /Non-IAI		<input type="checkbox"/> Career/Technical <input type="checkbox"/> Dev Ed/ Not in Degree Audit		Clinical Practicum:	0	SOE/ Internship:		0	SOE ECH:	0
COURSE PCS #	11 - 40.0801		IAI Code		P1 900L		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:	Pre-requisite MAT-132 (Or High School Trigonometry)										
Catalog Description: (40 Word Limit)	This course covers Newtonian Mechanics, heat, fluid motion. Intended for students in the pre-professional areas, arts and sciences, and four year technology majors. It is not intended for students who plan to major (or minor) in physics or engineering. LAB FEE										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Non-Clinical Internship/ SOE
Introduction: Dimensional Analysis/Measurement/Units	2	3		
Motion in One Dimension	5	6		
Vectors and Two Dimensional Motion	4	6		
Newton's Laws and Plane Motion	7	6		
Work and Energy	5	6		
Momentum and Collisions	4	3		
Circular Motion and the Law of Gravity	4	3		
Objects in Equilibrium; Rotational Dynamics	4	6		
Fluids	2	0		
Thermodynamics	8	6		
TOTAL	45	45	0	0

EVALUATION			
QUIZZES <input 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:	Physics
AUTHOR:	James S. Walker
PUBLISHER:	Addison Wesley
VOLUME/EDITION/URL:	4th
COPYRIGHT DATE:	2014

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Measurement	5	<ul style="list-style-type: none"> Calculate conversions within the metric system as well as between metric and English systems of units. Measure quantities accurately with various devices, such as calipers and micrometers.
Motion in One Dimension	11	<ul style="list-style-type: none"> Calculate distance, velocity and acceleration using the kinematic equations. Construct and interpret graphs of various kinematical situations.
Vectors and 2-D Motion	10	<ul style="list-style-type: none"> Use displacement, velocity and acceleration vectors. Demonstrate projectile motion.
Newton's Laws	13	<ul style="list-style-type: none"> Apply the three Newtonian laws to both conceptual and quantitative problems. Draw free body diagrams

Work and Energy	11	· Demonstrate the relationship between work and kinetic energy. Use the conservation of energy in problem solving
Momentum and Collisions	7	· Use conservation of linear momentum in problem solving. Apply the impulse-momentum relationship.
Circular Motion	7	· Demonstrate the relationship between linear and circular motion. Apply to orbits.
Objects in Equilibrium/Rotational Dynamics	10	· Use of force and torque equilibrium equations in problem solving. Demonstrate the concepts of rotational inertia and conservation of angular momentum.
Thermodynamics	14	· Demonstrate how temperature and such concepts as specific heat and thermal conductivity. Demonstrating of the first and second law of thermodynamics and use of these laws in problem solving.
Fluids	2	· Discussion of Archimedes' Principle and the Bernoulli effect.
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90		

COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	• Analyze the motion (acceleration, velocity and position) of an object both analytically and graphically.
	• Demonstrate Newton's three laws of motion and apply to objects to find unknown forces or accelerations.
	• Use work-energy and impulse-momentum methods to analyze systems of objects.
	• Calculate the net torque acting on a rigid body and its resulting motion.
	• Demonstrate and apply the universal law of gravitation.
	• Calculate the heat energy involved in various processes and apply the first law of thermodynamics.

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