



AL IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY  
COLLEGE OF ENGINEERING  
DEPARTMENT OF CIVIL ENGINEERING

Course Information	
Course Code, Number & Name	PHYS119 Physics I Lab. <b>Total Credits: 1</b> (Theory Hours: 0, Lab Hours: 2)
Prerequisite/s	None, Co-Requisite: PHYS117 Physics I

Course Description
Laboratory work related to the topics covered in PHYS117 Physics I.

Textbook (Theory)	
Title	Physics
Author	Halliday D. and Resnick R.
Publisher	John wiley & sons

Course Contents (Laboratory)
<p><b>Introduction:</b> Fundamentals of Data, Analysis and graphs, Student gain experience in the graphical presentation and interpretation of data.</p> <p><b>Experiment 1:</b> Measurements and Uncertainties: Use of various measuring devices such as ruler, Werner caliper and micrometer, and then to estimate the errors of measurements performed.</p> <p><b>Experiment 2:</b> Free Fall: Demonstrate that the acceleration due to gravity of an object is constant, and to determine the numerical value of that acceleration.</p> <p><b>Experiment 3:</b> Conservation of mechanical Energy: Confirming the law of conservation of mechanical energy, and verifying by graph that the total mechanical energy <math>E</math>, of any isolated system of objects that interact only through conservative forces, is defined as the sum of the kinetic and potential energies.</p> <p><b>Experiment 4:</b> Simple Pendulum: A mass <math>m</math> hanging at the end of a string of length <math>L</math>. The period of a pendulum as oscillatory motion is measured as a function of string length, from which the acceleration due to gravity could be calculated.</p> <p><b>Experiment 5:</b> Force Table and Forces in Equilibrium: Determine the force which balance the forces experimentally and checked the results by using the components &amp; graphically methods for adding forces.</p> <p><b>Experiment 6:</b> Elastic Constant &amp; Hooke's Law: on the mass applied and the spring constant will be studied.</p> <p><b>Experiment 7:</b> Simple Harmonic motion: Measure the position of an oscillating mass as a function of time, The dependence of oscillation period on the mass applied and the spring constant will be studied.</p> <p><b>Experiment 8:</b> Newton's second law for friction: Friction air track will be used to test the validity of Newton's Second Law, by calculating the acceleration "<math>a</math>" of the trolley and friction coefficient of certain surface.</p> <p><b>Experiment 9:</b> Motion with constant velocity: A moving object experiences a change in its position in a certain time. For constant velocity, the change in position over each equivalent time period is constant. Students will graph the position vs. time of a moving car. The graph will be a straight line whose slope is the car's velocity.</p> <p><b>Experiment 10: Ohm's Law:</b> Confirming Ohm's law, determining the equivalent resistance of two resistors in parallel connection and comparing with the resistances of the individual resistors, determining the equivalent resistance of two resistors in series connection and comparing with the resistances of the individual resistors.</p>

Academic Coordinator

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