

Module code	SP-2201		
Module Title	Experiments in Physics		
Degree/Diploma	Bachelor of Science (Applied Physics)		
Type of Module	Major Core		
Modular Credits	4	Total student workload	10 hours/week
		Contact hours	4 hours/week
Prerequisite	SP-1201 Basic Experimental Skills in Physics		
Anti-requisite	None		
Aims			
This module in general aims to encourage students to develop laboratory skills including planning of experiments, recording data, processing data and writing scientific reports. Specific experiments are chosen to expose students to the study of vibration and wave phenomena.			
Learning Outcomes:			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	0%	<ul style="list-style-type: none"> - define and identify a simple harmonic motion - describe using mathematical expressions the mechanics of vibratory systems, including, free, damped and forced oscillations - describe using mathematical expressions, a traveling wave - apply the principle of superposition to explain the concepts of wave interference and standing waves 	
Middle order :	30%	<ul style="list-style-type: none"> - develop a habit for routine recording and analysis of experimental data 	
Higher order:	70%	<ul style="list-style-type: none"> - develop written presentation skills through preparation and writing of formal reports of experiments - develop oral presentation skills through project talks to a small peer audience 	
Module Contents			
<ul style="list-style-type: none"> - Introduction to the theory of vibration and waves - Introduction to vibrating systems - Mathematical description of vibratory motion with special attention on simple harmonic motion - The mathematical expressions for describing free, damped and forced oscillations will be developed using complex number approach to the solution of the associated second order differential equations. - A mathematical description of mechanical waves is introduced and the concept of traveling waves is emphasized. Wave functions for harmonic waves are explored to describe characteristics of waves - The concept of superposition of waves will be used to introduce the phenomena of wave interference and standing waves - The module concludes with selected experiments in oscillatory mechanics and wave phenomena. These includes simple pendulum, compound pendulum, spring load vibrating system, spring e/m damped system, driven oscillation, resonance in waves and wave-particle nature of light 			
Assessment	Formative assessment	Problem-solving and feedback	
	Summative assessment	<ul style="list-style-type: none"> Examination: 0% Coursework: 100% - 4 class tests (40%) - 4 lab reports (50%) - 1 oral presentation (10%) 	