UNITED INTERNATIONAL UNIVERSITY
Department of Computer Science and Engineering (CSE)
Course Syllabus

1	**Course Title**	Physics Laboratory
2	**Course Code**	PHY 106 / PHY 2106
3	**Trimester and Year**	Spring, 2021
4	**Pre-requisites**	Fundamental Physics
5	**Credit Hours**	1
6	**Section**	D
7	**Class Hours**	Sunday (2:30 pm-5:00 pm)
8	**Class Room**	Room # Virtual Lab
9	**Course website**	www.elms.uiu.ac.bd/courses/Spring2021/SOSE/Sp21:PHY106(D)
10	**Instructor's Name**	Md. Asaduzzaman (MAn)
11	**Email**	asad@ins.uiu.ac.bd
12	**Office**	619, Please call on 01912367977, if necessary.
13	**Counselling Hours**	Saturday (11.00-2.00 pm), Sunday (11.00-2.00 pm), Tuesday (11.00-2.00 pm), Wednesday (11.00-2.00 pm).
14	**Text Book**	1. PRACTICAL PHYSICS by Dr. Giasuddin Ahmad
15	**Reference**	1. A Textbook of Practical Physics by Dr. Samir Kumar Ghosh. 2. Practical Physics by R. K. Shukla and Anchal Srivastava.
16	**Course Contents (approved by UGC)**	
17	**Course Outcomes (COs)**	

COs	**Description**
CO1	Measure the radius of curvature and focal length, time period of a bar pendulum, radii of newton's ring, length of loops at resonance, time period of spring mass-system, radius of oscillatory bar and time period, moment of inertia of suspended cylinder, period of torsional oscillation, radius of capillary tube, height of water meniscus, Draw T vs D, D^2 vs No. of ring, l vs m, T^2 vs m graph.
CO2	Observe SHM, torsional oscillation, resonance, capillary action, interference.
CO3	Compute refractive index, acceleration due to gravity, radius of curvature of plano-convex lense, frequency of tuning fork, spring constant and effective mass of a spring, Young's modulus of steel, Rigidity Modulus of steel, Surface tension of water.

18	**Simulation Methods**	Website based simulator. Two websites are followed here: 1. https://vlab.amrita.edu/ 2. https://phet.colorado.edu/en/simulations/filter?sort=alpha&view=grid

19	**Teaching Methods**	Lecture, Case Studies, Project Developments.

20 CO with Assessment Methods

CO	Assessment Method	(%)
-	Attendance	10%
1,2,3	Class Performance	10%
1,3	Report/Viva	20%
1,3	Presentation (on Project)/Quiz	15%
1,3	Mid Term	25%
1,2,3	Final Exam	20%

21 Mapping of COs and Program outcomes

COs	Program Outcomes(POs)											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	Yes											
CO2	Yes	Yes										
CO3	Yes											

22 Lab Outline

Class	Topics/Assignments	COs	Lab Outcomes/Activities
Lab 0	**i.** Making groups with a suitable number of students. **ii.** Introduce with the different instruments of the laboratory room. **iii.** Announce about the safety of the Lab. **iv.** Making details and discussions about the rules and regulations of the practical lab.	1,2,3	Lecture, Q/A
Lab1	Verification of Ohm's law by measuring resistance in series and parallel circuits.	1,3	Lecture, Q/A, Team work, Problem solving
Lab2	Determination of the value of the Acceleration due to Gravity (g) with the help of a compound (bar) pendulum	1,2,3	Lecture, Q/A, Team work, Assignment, Problem solving, Instant class assessment, Graph checking, Oral presentation
	Experiment-1 & Experiment-2	1,2,3	**Quiz-1** (Experiment review)
Lab3	Determination of the gravitational acceleration (g) by using a simple pendulum and verification of the formula $T = 2\pi\sqrt{\frac{L}{g}}$.	1,2,3	Lecture, Q/A, Team work, Assignment, Problem solving, Graph checking
Lab4	Determination of the spring constant and effective mass of a given spiral spring.	1,2,3	Lecture, Q/A, Team work, Assignment, Problem solving, Oral presentation

	Experiment-1 Experiment-2 Experiment-3 Experiment-4	1,2,3, 4	Mid Viva (Experiment review 1-4 with oral questions)
MIDTERM QUIZ			
Lab5	Verification of Kirchhoff's voltage and current law.	1,2,3	Lecture, Q/A, Mathematical Problem Solving, Team work, Assignment, Graph checking
Lab6	Determination of the radius of curvature of a plano-convex lens by Newton's rings method.	1,3	Lecture, Q/A, Mathematical Problem Solving, Team work, Assignment, Data checking
	Experiment-5 & Experiment-6	1,2,3	**Quiz-2** (Experiment review)
Lab7*	*Determination of the frequency of a tuning fork by Melde's apparatus.	1,2,3	Lecture, Mathematical Problem Solving, Team work, Assignment
Lab8	Determination of the Young's modulus of the given material bar by non-uniform bending using pin and microscope method.	1,2, 3	Lecture, Q/A, Mathematicl Problem Solving, Team work, Assignment, Data checking
Lab9	Determination of the moment of inertia of the given disc using Torsion pendulum by the method of oscillations (Dynamic Method).	1,2, 3	Lecture, Q/A, Mathematicl Problem Solving, Team work, Assignment, Data checking
	Experiment-5 Experiment-6 Experiment-7 Experiment-8	1,2,3	Final Written Exam (Experiment review 5-8 with discussions questions and others)
	Final Exam	Final	Final

Appendix 1: Assessment Methods

Assessment Types	**Marks**
Attendance	10%
Class Performance	20%
Report/Viva	10%
Presentation (on Project)	15%
Mid Term	20%
Final Exam	35%

Appendix 2: Grading Policy

Letter Grade	Marks %	Grade Point	Letter Grade	Marks%	Grade Point
A (Plain)	90-100	4.00	C+ (Plus)	70-73	2.33
A- (Minus)	86-89	3.67	C (Plain)	66-69	2.00
B+ (Plus)	82-85	3.33	C- (Minus)	62-65	1.67
B (Plain)	78-81	3.00	D+ (Plus)	58-61	1.33
B- (Minus)	74-77	2.67	D (Plain)	55-57	1.00
			F (Fail)	<55	0.00

Appendix-3: Program outcomes

POs	Program Outcomes
PO1	An ability to apply knowledge of mathematics, science, and engineering
PO2	An ability to identify, formulate, and solve engineering problems
PO3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
PO4	An ability to design and conduct experiments, as well as to analyze and interpret data
PO5	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
PO6	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
PO7	A knowledge of contemporary issues
PO8	An understanding of professional and ethical responsibility
PO9	An ability to function on multidisciplinary teams
PO10	An ability to communicate effectively
PO11	Project Management and Finance
PO12	A recognition of the need for, and an ability to engage in life-long learning