SEMESTER LEARNING ACTIVITY PLANS (SLAP)

SEMESTER ODD 2022/2023

Physics Undergraduate Study Program

Physics Department

Basic Physics Experiments I

MFF 1013/ 1 Credits

Lecturer Coordinator:

Teaching Team of Basic Physics Laboratory

UNIVERSITAS GADJAH MADA

FACULTY OF MATHEMATICS AND NATURAL SCIENCE

2022

	Universitas Gadjah Mada Faculty of Mathematics and Natural Science Physics Department / Physics Undergraduate Study Program Semester ODD 2022/2023	**Document Number :** ……

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Code	Course Name	Credits (Credits)		Semester	Status	Prerequisite
MFF 1013	*Basic Physics Experiments I*	*T: 1*	*P: …*	*ODD*	*Compulsory*	*None*

Short Description	The Basic Physics Experiments I course is a compulsory subject of 1 credit in the 2021 FMIPA UGM Physics Study Program curriculum. The general objective of organizing this Courses is to provide mastery of scientific knowledge related to material physics. In the 2021 curriculum of the Physics Study Program, this course is linked to competence in the knowledge aspect (PLO 2), general skill aspects (PLO 3), specific skill aspects (PLO 4), and long-life learning/self-development aspects (PLO 5). Learning is based on a face-to-face schedule in the laboratory for eight weeks, with meetings held for 180 minutes each week. The steps are to do the theory of error before starting the practicum. Then the practicum activities and the next are used for responses or final practicum assessments. Evaluation for students for course assessment is carried out in a summative and formative manner. Summatively, it is manifested in written form as pretests, practicum reports, and responses carried out in a series of practicums. The formative evaluation is manifested in the form of practicum in groups and independent activities of writing practicum reports. The monitoring process is carried out by looking at student activities during the practicum process, such as attendance in practicum, skills in mastering tools, understanding of the material being presented, and student performance in doing independent assignments in the form of practicum reports given.	
Program Learning Outcomes (PLO) Imposed on the Course	***PLO 2***	Knowledge. Able to explain theoretical concepts and principles of classical and modern physics and able to apply basic concepts of physics and related mathematical methods in finding solutions to physical problems.
	PLO 3	General Skills. Able to communicate the results of problem studies and physical behavior both in writing and verbally, as well as being able to lead and collaborate at various levels of roles in a team.
	PLO 4	Special Skills. Able to design and carry out experiments/theoretical reviews, able to identify a physical problem based on the results of observations and experiments, and able to operate related technologies.
	PLO 5	Long Life Learning. Able to analyze various alternative solutions to physical problems and conclude them for appropriate decision-making, both in familiar and new problems.
Course Outcomes (CO)	**After completing this course, students are expected to be able to:**	
	CO1	Students can explain the concepts that underlie optical phenomena and relate them to the basic concepts [PLO 2 PLO 4 PLO 5].
	CO2	Students can explain the concepts of electrical phenomena and relate them to the basic concepts obtained. [PLO 2 PLO 4 PLO 5].
	CO3	Students can explain the concepts of mechanical phenomena and relate them to the basic concepts obtained [PLO 2 PLO 4 PLO 5].
	CO4	Students can convey their experiments' results in a written report [PLO 3].
	CO5	Students can work individually or in groups in experiments [PLO 3].

The Correlation of CO to Learning Materials and Methods, and Time Allocation		**Learning Materials**	**Learning Methods**	**Time Allocation**
	CO 1, CO 2, CO 3, CO 4, CO 5	Gravity acceleration	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Coefficient of long expansion	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Boyle's Law	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Water Cooling	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Muffled vibration	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Spring constant	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	The flow of water in the capillary tube	**CBL**	***1X50 minutes***
	Midterm exam/Project Task Results/Case Analysis Results			
	CO 1, CO 2, CO 3, CO 4, CO 5	Stem oscillation	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	Equivalence of Heat-Electricity	**CBL**	***1X50 minutes***
	CO 1, CO 2, CO 3, CO 4, CO 5	**Final Test**	**CBL**	***5X50 minutes***
	Final exams/ Project Task Results/Case Analysis Results			
Learning Methods	**CBL (Case Based Learning): Pretest, Presentation of material and some display material, Hands-on experiments using available set-ups, Making reports**			
Student Learning Experience	**Learn to study and review the practical Acceleration of gravity, Coefficient of long expansion, Boyle's Law, Water Cooling, Damped vibration, Spring constant, Water flow in a capillary tube, Bar oscillation, and Heat-Electrical Equivalence.**			
Access to Learning Media/ LMS and Offline and Online Percentage	Offline (Experimental tool) and Online (Zoom Meeting, Google Meet, Google Classroom)			

Assessment Methods and Synchronization with CO	**Assessment Methods**	**Assessment Percentage**	**Criteria/ Indicators**	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
	Participatory Activity*							

	Project Results/ Case Study Results/ PBL Results*							
	Cognitive							
	Pretest	**10**		√	√	√		
	Practicum	**20**		√	√	√	√	√
	Practicum Report	**40**		√	√	√	√	√
	Final Test	**33**		√	√	√	√	√
	Total	**100**						
	*) can also be obtained from the Midterm or Final Exam as the result of participatory activities or project/ case study results. According to IKU 7, the percentage of project results/ case study/ PBL results is at least 50%.							

References	**Main References;** 1. Buku Panduan Praktikum Fisika Dasar II.
Lecturers (*Team Teaching*)	1. Teaching Team of Basic Physics Laboratory

Authorization	**Date of Drafting**	**Lecturer Coordinator**	**Head of Curriculum Committee**	**Head of Study Program**
		Tim teaching Lab Fisika Dasar		*Dr. Eng. Ahmad Kusumaatmaja, S.Si., M.Sc.*