

**SEMESTER LEARNING ACTIVITY PLANS
(SLAP)
SEMESTER ODD 2022/2023**



Physics Undergraduate Study Program
Physics Department
Measurement Technique in Physics
MFF 1061/ 2 Credits

Lecturer Coordinator:
Drs., Sunarta, M.S.

**UNIVERSITAS GADJAH MADA
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
2022**



Universitas Gadjah Mada

Faculty of Mathematics and Natural Science
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Document Number :

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Code	Course Name	Credits (Credits)		Semester	Status	Prerequisite
<i>MFF 1061</i>	<i>Measurement Technique in Physics</i>	<i>T: 2</i>	<i>P: ...</i>	<i>ODD</i>	<i>Compulsory</i>	<i>None</i>
Short Description	<p>The Measurement Technique in Physics course is indispensable for students majoring in physics, who will later play a role in developing science and technology to understand better and apply their knowledge.</p> <p>This course will be presented the Definition of Measurement and the importance of taking measurements correctly; How to process measurement data; introduction of measuring instruments, understanding of tolerances for measurement results, rejecting observational data that deviate too much from the criteria used in data analysis, choosing the suitable measurement method; compare the results of the multi-methods and conclude which method is suitable and draw conclusions about the weighted results; make graphs of observations and analyzes correctly; and taught how to make accurate reports, so that the results can be justified scientifically.</p> <p>Many physics graduates work as research experts or lecturers who must also be able to research so that they can master measurement methodologies and be skilled in processing measurement data so that this course can provide sufficient provisions for the profession. Besides that, students also have to do research for their final project. This cannot be separated from the problem of observation and data processing, so since lectures, they must be equipped with the abilities that the measurement method course will give.</p>					
Program Learning Outcomes (PLO) Imposed on the Course	<i>PLO 2</i>	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.				
	<i>PLO 5</i>	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:					
	<i>CO1</i>	Having a "common sense" of measurement is high.				
	<i>CO2</i>	Mastering the process of analyzing measurement data and using measuring methods appropriately. So get accurate results.				
	<i>CO3</i>	Able to conduct rejection of measurement results data that is suspected of deviation from the expected data.				
	<i>CO4</i>	Able to analyze data with correct regression.				
	<i>CO5</i>	Able to compare the results of multiple methods, choose the best method, and produce a weighted value.				
	<i>CO6</i>	Able to appropriately develop measurement methodology and selecting instruments for object detection.				
		Learning Materials		Learning Methods	Time Allocation	

	Study Results/ PBL Results*								
	Cognitive								
	Homework	10		√	√	√	√	√	√
	Quiz	10		√	√	√	√	√	√
	Midterm Exam	40		√	√	√	√	√	√
	Final Exam	40		√	√	√	√	√	√
	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; <ol style="list-style-type: none"> 1. Taylor, J. R.1992. An Introduction to Error Analysis. University Science Book.California.. 2. Bevington, P. R.1999. Data Reduction and Error Analysis for the Physical Science. Mc Graw-Hill Book Co.. 3. Dulfer G, H & Fadeli., 1974. Metode Pengukuran & Analisa Data; FIPA-UGM.. 4. Darmawan Djonoputro; 1984. “Teori Ketidakpastian Menggunakan satuan SI”; ITB.Bandung.. 5. Staf Lab. Fisika Dasar, Jurusan Fisika-FMIPA UGM; 2012; “Petunjuk Praktikum Fisika Dasar Jurusan Fisika”; FMIPA-UGM Yogyakarta.. 6. Sunarta; Laporan LIT-2017 “Metode Jembatan Wheatstone untuk deteksi besaran Kelistrikan”; Dana Masyarakat UGM tahun 2017. 								
Lecturers (Team Teaching)	Drs., Sunarta, M.S.								
Authorization	Date of Drafting	Lecturer Coordinator			Head of Curriculum Committee		Head of Study Program		
		Drs., Sunarta, M.S.					Dr. Eng. Ahmad Kusumaatmaja, S.Si., M.Sc.		