Basic Physics Practicum II

Module Name :	Basic Physics Practicum II
Module Level :	Undergraduate
Code :	32251041
Sub-heading, if applicable :	
Classes, if applicable :	
Semester :	2st
Module coordinator :	Dwi Susanti, M.Pd
Lecturer(s) :	Dwi Susanti, M.Pd Lari Andres Sanjaya, M.Pd
Language :	Indonesian
Classification within the curriculum :	Compulsory course

Type of Teaching	Contact hours per week during the semester	Class Size
Lecture (Expository, discussion, exercise)	50 minutes	40

Workload	Total workload of this course 45,3 hours (1,5 ECTS) per semester which consist of 13,34 hours (0,44 ECTS) classroom activity, 16 hours (0,53 ECTS) structured task, and 16 hours (0,53 ECTS) per semester.
Credit points :	1.5 ECTS
Prerequisite course(s) :	-
Course Outcomes :	After taking this course the student have ability to : CLO73. Students have an understanding of the objectives, scope CLO74. material, strategy and evaluation of lectures (understand and agree on the Practicum contract). CLO75. agree on the Practicum contract). CLO76. Able to analyze and criticize the concepts of the basics of physics. CLO77. Able to build an understanding of the basics of physics CLO78. Able to implement the basics of physics. CLO79. Able to design the basics of physics experiments

Content :	1. Refractive Index
	    1.1 Determining the refractive index of a solution
	    1.2 Finding the critical angle of a solution
	
	2. Mirrors
	    2.1 Determining the focal point of concave and convex mirrors
	    2.2 Finding the object distance and image distance in concave and convex mirrors
	
	3. Lens Properties and Image Defects

	3.1 Lens refraction properties
	3.2 Determining the focal length of a lens
	3.3 Image defects caused by lenses
	
	4. Microscope
	4.1 Using a microscope
	4.2 Microscope working principle
	4.3 Image magnification
	
	5. Spectrometer
	5.1 How to use a spectrometer
	5.2 Determining the angle of deviation
	5.3 Finding the refractive index of a prism
	
	6. Polarimeter
	   6.1 How to use a polarimeter
	   6.2 Determining the sugar content of a solution
	
	7. Oscilloscope
	   7.1 How to use an oscilloscope
	   7.2 Determining Lissajous patterns
	   7.3 Determining frequency
	
	8. Alternating Current
	   8.1 Characteristics of alternating current
	   8.2 Impedance of alternating current
	   8.3 Resonance analysis
	
	9. Incandescent Lamp Characteristics
	   9.1 Incandescent lamp characteristics
	   9.2 Measuring resistance in lamps
	   9.3 Interpreting electrical diagrams
	
	10. Resistors and Ohm's Law
	   10.1 Calculating resistor resistance values
	   10.2 Building series and parallel circuits
	
	11. Kirchhoff's Laws
	   11.1 Kirchhoff's laws
	   11.2 Measuring equivalent resistance
	
	12. Transformer
	   12.1 Working principle of a transformer
	   12.2 Measuring power loss, winding, turns ratio, and
	           regulation values

Study/exam achievements:	Examination are conducted as unit test, as following

No	Assesment Object	Assesment Technique	Weight
1	Project Based Learning	Non-test in the form of a report, Preliminary Report, Final Report	60%
2	Midterm Test	Presentation skills/ argumentation	15%
3	Final Test	UAP	15%
4	Attendance	Presence list	10%

Media :	Computer/laptop, internet, projector, laboratory equipment.
Literatures :	1. Tim Dosen Fisika Dasar Jurusan Fisika FMIPA UNJ, "Panduan Praktikum Fisika Dasar I", Laboratorium Fisika Dasar, Jurusan Fisika FMIPA, UNJ, 2013. 2. Tipler, P. A., & Mosca, G. (2007). Physics for scientists and engineers. Macmillan. 3. Halliday, Resnick, Jearl Walker, "Principles of Physics 9th", John Wiley, 2011. 4. Indrasari, W., & Rustana, C. E. (2021, February). Development a practicum tools to measure the speed of the air using Arduino Uno Microcontroller. In Journal of Physics: Conference Series (Vol. 1816, No. 1, p. 012109). IOP Publishing. 5. Silva, G. D. S. F., & Villani, A. (2021). The Physics Teaching Practice course and the student-teachers' activity in the beginning of the supervised practicum at schools+. Caderno Brasileiro de Ensino de Física, 38(3), 1561- 1588.