

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



Physics Undergraduate Study Program

Physics Department

Basic Physics I

MFF 1011/ 3 Credits

Lecturer Coordinator:

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Dr. Eko S.

Dr. Mirza S.

**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
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Code	Course Name	Credits (Credits)		Semester	Status	Prerequisite
<i>MFF 1011</i>	<i>Basic Physics I</i>	<i>T: 3</i>	<i>P: ...</i>	<i>ODD</i>	<i>Compulsory</i>	<i>None</i>
Short Description	<p>The Basic Physics 1 course is a mandatory three-credit course in the 2021 Curriculum for the Undergraduate Physics Study Program, Faculty of Mathematics and Natural Sciences UGM. The general purpose of holding this Constitutional Court is to provide students with mastery of fundamental concepts regarding the phenomena of motion of objects, fluids, waves, and heat. In the 2021 curriculum for the Physics Study Program, this course is associated with competencies in the Knowledge aspect (PLO 2) and the Long life learning/self-development aspect (PLO 5). Learning is carried out based on a face-to-face schedule in class for 14 weeks, with each week's meeting held for 300 minutes. Four weeks during the lecture period are used for the Mid-Semester Examination and the Final Semester Examination, each of which is scheduled for two weeks by the Academic Section of FMIPA UGM. Evaluation for students for course assessment is carried out summatively and formatively. Summatively manifested in the form of written exams, both Mid-Semester Examination and the Final Semester Examination, which takes the longest time for 120 minutes. The formative evaluation is realized through independent assignments for each student. The form of independent activity is completing a task/homework given to students to be completed independently at home. The monitoring process is carried out by looking at student activities during the lecture, such as attendance in lectures, questions and answers and discussions on the material being presented, and student performance in assignments, independently in the form of homework given.</p>					
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 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	Explain concepts and solve cases in the motion of objects.				
	CO2	Explaining concepts and solving cases in fluids, waves, and heat.				
The Correlation of CO to Learning Materials and Methods, and Time Allocation	Learning Materials			Learning Methods		Time Allocation
	CO 1	Introduction: Explanation of RPKPS, physical quantities, dimensions, units, and vectors		TCL-SCL mixed		3X50 minutes
	CO 1	Linear Motion: 1D Motion, GLB, GLBB, Free fall motion.		TCL-SCL mixed		3X50 minutes
	CO 1	Newton's Laws and Forces: The concept of force, Newton's Laws.		TCL-SCL mixed		3X50 minutes
	CO 1	Work, Power, and Energy		TCL-SCL mixed		3X50 minutes

	CO 1	Linear momentum and angular momentum: collisions and moments of inertia.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 1	Rotational Dynamics of Rigid Bodies.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 1	Keseimbangan dan Elastisitas.		TCL-SCL mixed	<i>3X50 minutes</i>
Midterm exam/Project Task Results/Case Analysis Results					
	CO 2	Gravity.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	fluid.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	Vibration.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	Wave.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	Sound.		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	heat 1		TCL-SCL mixed	<i>3X50 minutes</i>
	CO 2	heat 2		TCL-SCL mixed	<i>3X50 minutes</i>
Final exams/ Project Task Results/Case Analysis Results					
Learning Methods	SCL (Student Centered Learning): Project-based learning (Team-based Project)/Case-based learning/PBL/other SCL methods				
Student Learning Experience	Learn to examine and examine each topic that is taught.				
Access to Learning Media/ LMS and Offline and Online Percentage	Offline (LCD, PPT Slide, Whiteboard, Laptop) and Online (Zoom Meeting, Google Meet, Google Classroom)				
Assessment Methods and Synchronization with CO	Assessment Methods	Assessment Percentage	Criteria/ Indicators	CO1	CO4
	Participatory Activity*				
	Project Results/ Case Study Results/ PBL Results*				
	Cognitive				
	Midterm Exam	50		√	
	Final Exam	50			√
	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. Halliday, D. Resnick, R and Walker, J., 2018, Fundamentals of Physics: Extende, tenth edition, John Wiley & Sons, Inc. USA.. 2. Tipler, P. A. Mosca, G., 2008, Physics for Scientists and Engineers, sixth edition, W. H. Freeman and Company, New York, USA.. 3. Serway, R.S. dan Jewett, 2014, Physics for Scientists and Engineers, ninth edition, Brooks/Cole Cengage Learning, Singapore.. 			
Lecturers (Team Teaching)	<ol style="list-style-type: none"> 1. Dr. Mitrayana 2. Dr. Moh. Ali Joko 3. Dr. Eko S. 4. Dr. Mirza S. 			
Authorization	Date of Drafting	Lecturer Coordinator	Head of Curriculum Committee	Head of Study Program
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