

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



Physics Undergraduate Study Program
Physics Department
Physics of Imaging
MFF 2873/ 2 Credits

Lecturer Coordinator:
Drs. Gede Bayu Suparta, M.S., Ph.D.

**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
<i>MFF 2873</i>	<i>Physics of Imaging</i>	<i>T: 2</i>	<i>P: ...</i>	<i>ODD</i>	<i>Elective</i>	<i>None</i>
Short Description	<p>The Physics of Imaging course is an elective course of 2 credits in the 2021 curriculum of the Physics Undergraduate Study Program, Universitas Gadjah Mada, which can be taken in Odd semesters. To be able to take this course, students are recommended to have completed the Electronics course. In the 2021 Curriculum of the Physics Undergraduate Study Program, this course is associated with competencies in the Knowledge Aspect (PLO 2) and the Long Life Learning/Self-Development Aspect (PLO 5).</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	Knowing and Understanding the basic concepts of Image Physics				
	CO2	Knowing and understanding Instruments in Image physics				
	CO3	Know and understand imaging methods				
	CO4	Know and understand the Application of Image Physics in the industry				
The Correlation of CO to Learning Materials and Methods, and Time Allocation	Learning Materials		Learning Methods		Time Allocation	
	CO 1	Basic Concept: Digital image	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 1	Digital image acquisition system	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 1	digital image formats	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 1	digital image quality	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 1	Digital image processing	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 2	Instruments: Digital photography, digital microscope,	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 2	Thermal camera, Inspection Camera	TCL-SCL mixed		<i>2X50 minutes</i>	
	Midterm exam/Project Task Results/Case Analysis Results					
	CO 3	Imaging methods: photo images, panoramic images,	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 3	video image, time-lapsed image (cinema),	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 3	incognito image, 3D image	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 4	Industrial Application: Visual inspection,	TCL-SCL mixed		<i>2X50 minutes</i>	
	CO 4	surveillance, biometrics	TCL-SCL mixed		<i>2X50 minutes</i>	

	<i>CO 4</i>	iridology, palmistry		<i>2X50 minutes</i>				
	<i>CO 4</i>	borescope, ultrasound.		<i>2X50 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	Listen, ask, answer questions and discuss							
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	CO2	CO3	CO4	
	Participatory Activity*							
	Project Results/ Case Study Results/ PBL Results*							
	Cognitive							
	Assignment	20			√	√	√	√
	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"> Allison, W., 2006, Fundamental Physics for Probe and Imaging, Oxford University Press, New York. . National Academic of Science, 1996, Mathematics and Physics of Emerging Biomedical Imaging, National Academic Press, Washington, Ch. 7-14. . Additional References: <ol style="list-style-type: none"> Relevant scientific journals and patents 							
Lecturers (Team Teaching)	1. Drs. Gede Bayu Suparta, M.S., Ph.D.							
Authorization	Date of Drafting	Lecturer Coordinator	Head of Curriculum Committee	Head of Study Program				

		<i>Drs. Gede Bayu Suparta, M.S., Ph.D.</i>		<i>Dr. Eng. Ahmad Kusumaatmaja, S.Si., M.Sc.</i>
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