SEMESTER LEARNING ACTIVITY PLANS (SLAP)

SEMESTER ODD/EVEN 2022/2023

Physics Undergraduate Study Program

Physics Department

Research Methodology and Scientific Communication**)

MFF 2060/ 3 Credits

Lecturer Coordinator:

Dr. Fahrudin Nugroho
Prof. Dr. Eng. Kuwat Triyana, M.Si.

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/EVEN 2022/2023	**Document Number :** ……

SEMESTER LEARNING ACTIVITY PLANS (SLAP)

Code	Course Name	Credits (Credits)		Semester	Status	Prerequisite
MFF 2060	*Research Methodology and Scientific Communication**)*	*T: 3*	*P: …*	*ODD/EVEN*	*Compulsory*	*Minimum 50 Credits*

Short Description	The Research Methodology and Scientific Communication course is a compulsory subject for the S1 Physics study program at Gadjah Mada University. This course is required for students who have taken the course with 50 credits. This course prepares students before taking their final project, in which they must understand research methodology, scientific steps, and ethics.	
Program Learning Outcomes (PLO) Imposed on the Course	***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 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 understand and apply standard research procedures.
	CO2	Students can produce valid data and communicate their research results in oral and written forms, free from scientific and ethical issues.

		Learning Materials	Learning Methods	Time Allocation
The Correlation of CO to Learning Materials and Methods, and Time Allocation	***CO 1 , CO 2***	Introduction		***3X50 minutes***
	CO 1 , CO 2	Collective work in Science : (1). Science Character: Generality (2). How to Learn Science (3). How to Develop Science		***3X50 minutes***
	CO 1 , CO 2	Introduction to Scientific Research Concepts: The Role of Students in Research		***3X50 minutes***
	CO 1 , CO 2	Topic research and literature search: Log Book, Techniques for reading and selecting literature.		***3X50 minutes***
	CO 1 , CO 2	Introduction of the stages of scientific research: (1). Background interests and fields mastered, (2). Advisory Lecturer according to the topic of work planning, (3).		***3X50 minutes***

		Literature Search, (4). Information Gathering, (5). Scientific Formulation.		
	CO 1 , CO 2	Preparing Research Proposals: Introduction, Background, Problems, Objectives, Benefits, Research Methods.		***3X50 minutes***
	CO 1 , CO 2	Introduction to scientific research concepts: Observation, Problem Definition, Hypothesis Generation, Testing, Theory Results, Confirmation.		***3X50 minutes***
	Midterm exam/Project Task Results/Case Analysis Results			
	CO 1 , CO 2	Level of quality and trust in scientific articles: Identifying the place of publication		***3X50 minutes***
	CO 1 , CO 2	Scientific Writing: Saves reader's memory, Keeps reader's attention, saves speaker's time.		***3X50 minutes***
	CO 1 , CO 2	Scientific Writing: Save the reader's memory, Keep the reader's attention, and save the speaker's time.		***3X50 minutes***
	CO 1 , CO 2	Scientific Writing: Keeping readers motivated, Bridging gaps with readers, Creating storylines, Creating reading momentum, saving reader energy		***3X50 minutes***
	CO 1 , CO 2	Structure of scientific articles: Introduction, Methods, Results and Discussion, Conclusions, References / Bibliography.		***3X50 minutes***
	CO 1 , CO 2	Ethics in writing: Plagiarism, Avoiding Fabrication and Falsification, Manipulation, Procedures for referring and paraphrasing		***3X50 minutes***
	CO 1 , CO 2	Ethics in writing: Plagiarism, Avoiding Fabrication and Falsification, Manipulation, Procedures for referring and paraphrasing		***3X50 minutes***
	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**			

<table>
<tr><td>Student Learning Experience</td><td colspan="5">Listen, ask questions, and discuss</td></tr>
<tr><td>Access to Learning Media/ LMS and Offline and Online Percentage</td><td colspan="5">Offline (LCD, PPT Slide, Whiteboard, Laptop) and Online (Zoom Meeting, Google Meet, Google Classroom)</td></tr>
<tr><td rowspan="9">Assessment Methods and Synchronization with CO</td><td>Assessment Methods</td><td>Assessment Percentage</td><td>Criteria/ Indicators</td><td>CO1</td><td>CO2</td></tr>
<tr><td>Participatory Activity*</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Project Results/ Case Study Results/ PBL Results*</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Cognitive</td></tr>
<tr><td>Assignment</td><td>20</td><td></td><td>√</td><td>√</td></tr>
<tr><td>Midterm Exam</td><td>40</td><td></td><td>√</td><td>√</td></tr>
<tr><td>Final Exam</td><td>40</td><td></td><td>√</td><td>√</td></tr>
<tr><td>Total</td><td>100</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">*) 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%.</td></tr>
<tr><td>References</td><td colspan="5">Main References;
1. Jean-Luc Lebrun, 2007, Scientific Writing, World Scientific Publishing..
2. Blackwell J & Martin, J., 2011, A scientific approach to scientific writing, Springer.</td></tr>
<tr><td>Lecturers (Team Teaching)</td><td colspan="5">1. Dr. Fahrudin Nugroho
2. Prof. Dr. Eng. Kuwat Triyana, M.Si.</td></tr>
<tr><td rowspan="2">Authorization</td><td>Date of Drafting</td><td colspan="2">Lecturer Coordinator</td><td>Head of Curriculum Committee</td><td>Head of Study Program</td></tr>
<tr><td></td><td colspan="2">Dr. Fahrudin Nugroho</td><td></td><td>Dr. Eng. Ahmad Kusumaatmaja, S.Si., M.Sc.</td></tr>
</table>