PROGRAM PLAN AND SEMESTER LEARNING ACTIVITIES (RPKPS) SCHOOL YEAR 2021/2022

Physical
Geophysics
Basic Physics Practicum II
MFG 1014/ 1 SKS

Mentoring Team:
Basic Physics lab teaching

GADJAH MADA UNIVERSITY
FACULTY OF MATHEMATICS
AND NATURAL SCIENCES
2021

	Gadjah Mada University Faculty of Mathematics and Natural Sciences Department of Physics / S1 Geophysics Study Program Academic Year 2021/2022	**Document Code:** .....

SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)

Course Code	Course Name	Weight (credit)		Semester	Course Status	Prerequisite Courses
MFF 1014	*Basic Physics Practicum II*	*T: -*	*P:1*		*Mandatory*	-

Course Brief Description	Basic Physics Practicum II is a compulsory course of 1 credit in the 2021 Curriculum of the S1 Physics Study Program FMIPA UGM. The general purpose of organizing this MK is to provide mastery of knowledge related to material physics. In the 2021 curriculum of the MK Physics Study Program, it is associated with competencies in aspects of Knowledge (CPL 2), aspects of general skills (CPL 3), aspects of specific skills (CPL 4) and aspects of long life learning / self-development (CPL 5) The learning objectives of this Basic Physics Practicum course can be seen from the desired learning outcomes, namely that: 1. Students are able to explain the concepts underlying mechanical phenomena in physics and connect with basic concepts 2. Students are able to explain the concepts of heat and thermodynamic phenomena and connect with the basic concepts obtained. 3. Students are able to submit the results of their experiments in the form of written reports 4. Students can work either individually or in groups in carrying out experiments Learning is carried out based on a face-to-face schedule in the laboratory for 8 weeks, with each week meetings held for 180 minutes. The stage carried out is to do the theory of error before the start of practicum. Then practicum activities and the next is used for response or final assessment of practicum. Evaluation for students for course assessment is carried out summatively and formatively. Summatively manifested in written form, both in the form of pretests, practicum reports and responses carried out in a series of practicums. The formative evaluation is manifested in the form of practicum in groups and independent activities to write practicum reports. The monitoring process is carried out by looking at student activities during the practicum process, such as: attendance in practicum, proficiency in mastering the tools, as well as understanding of the material being presented and student performance in doing independent assignments in the form of practicum reports given.
Achievement of Graduate Learning (CPL) The Banks of the Constitutional Court	***CPL2***	**Mastery of knowledge** : Graduates are able to apply basic science (mathematics, physics, chemistry, biology, geology), and geophysics in general and their relationship with other sciences such as geology, geodesy, geochemistry, geography, computing and information
	CPL3	**Operational and comprehensive skills**: Graduates are able to apply all geophysical methods (seismic, gravitational, magnetic, electrical, electromagnetic, and thermic methods) for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation
	CPL4	**Application and analysis skills:** Graduates are able to carry out and manage a geophysical survey which includes steps

<table>
<tr><td></td><td></td><td>scientific in the acquisition, processing and interpretation of data for natural resource exploration both for energy (e.g. oil and gas, coal, for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation</td></tr>
<tr><td></td><td>CPL5</td><td>Synthesis and Evaluation Skills : Graduates are able to interpret geophysical data in the form of solving advanced and reverse problems (inverse problems) in an integrated manner that have ambiguous characters, carry out interpretation by making models and / or solving simple forward and reverse problems and are skilled in the use of computers both for the purposes of solving geophysical problems and for communication and internet access</td></tr>
<tr><td rowspan="4">Achievement of Course Learning (CPMK)</td><td colspan="2">After completing the learning of this course, students are expected to be able to:</td></tr>
<tr><td>CPMK-1</td><td>Students are able to explain concepts based on optical phenomena and connect with basic concepts [CPL 2, CPL 4, CPL 5]</td></tr>
<tr><td>CPMK-2</td><td>Students are able to explain the concepts of electrical phenomena and connect with the basic concepts obtained. [CPL 2 CPL 4 CPL 5]</td></tr>
<tr><td>CPMK-3</td><td>Students are able to submit the results of their experiments in the form of written reports [CPL 3]</td></tr>
<tr><td></td><td>CPMK-4</td><td>Students can work either individually or in groups in carrying out experiments [CPL 3]</td></tr>
<tr><td>CPL Mapping with CPMK</td><td colspan="2">
<table>
<tr><th></th><th>CPMK 1</th><th>CPMK 2</th><th>CPMK 3</th><th>CPMK 4</th></tr>
<tr><td>CPL-2</td><td>√</td><td>√</td><td></td><td></td></tr>
<tr><td>CPL-3</td><td></td><td></td><td>√</td><td>√</td></tr>
<tr><td>CPL-4</td><td>√</td><td>√</td><td></td><td></td></tr>
<tr><td>CPL-5</td><td>√</td><td>√</td><td></td><td></td></tr>
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<tr><td rowspan="2">CPMK link with Material and Form of Learning, as well as Time Allocation</td><td></td><td>Learning Materials</td><td>Forms of Learning n</td><td>Time Allocation</td></tr>
<tr><td>CPMK1
CPMK2
CPMK3
CPMK4
CPMK 5</td><td>Newton Ring Electric
power measurement
Photometry
Earth Magnetic Field
Refractive Index
Measurement
Oscilloscope
Stefan's Law Ohm's</td><td>CBL</td><td>180 minutes each time practicum meeting</td></tr>
<tr><td colspan="4">UAS/ Project Task Results/ Case Analysis</td></tr>
<tr><td>Learning Method</td><td colspan="2">CBL</td></tr>
</table>

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<tr><td>Student Learning Experience</td><td colspan="8">Learn to study and study practicum in the field of optics and literature consisting of newton rings, electrical power measurement, photometry, refractive index measurement, earth magnetic field, oscilloscope, stefan's law, ohm's law</td></tr>
<tr><td>Access Media Learning ran/ LMS and Percentage Offline &; Online</td><td colspan="8">LCD, Whiteboard, Laptop, Zoom Meeting.</td></tr>
<tr><td rowspan="9">Assessment Method and Alignment with CPMK</td><td>Assessment Techniques</td><td>Assessment Percentage</td><td>Criteria/ Indicators</td><td>CP MK-1</td><td>CP MK-2</td><td>CPMK-3</td><td>CPM K-4</td><td>CPMK-5</td></tr>
<tr><td>Participatory Activities*)</td><td>20</td><td></td><td></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><td></td><td></td><td></td></tr>
<tr><td colspan="8">Cognitive</td></tr>
<tr><td>Assignment</td><td>40</td><td></td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>Quiz</td><td>10</td><td></td><td>√</td><td>√</td><td>√</td><td></td><td></td></tr>
<tr><td>UTS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>UAS</td><td>30</td><td></td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>Total</td><td>100</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="8">*) can also be obtained from UTS or UAS which is the result of participatory activities or project / case study results. In accordance with IKU 7, the percentage of participatory activities and project results/case studies/PBL results is at least 50%.</td></tr>
<tr><td>Reference List</td><td colspan="8">1. Basic Physics Practicum Handbook II</td></tr>
<tr><td>Name of Lecturer (Team Teaching)</td><td colspan="8">Basic Physics Laboratory Team</td></tr>
<tr><td rowspan="2">Authorization</td><td>Drafting Date</td><td colspan="4">Course Coordinator</td><td>Coordinator of Expertise (if any)</td><td colspan="2">Head of Study Progra</td></tr>
<tr><td>2022</td><td colspan="4"></td><td></td><td colspan="2"> 
Dr.. Sudarmaji,M Si</td></tr>
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