



**TEACHING INSTRUCTIONAL DESIGN (BRP)
COURSE
LABORATORY WORK OF BASIC PHYSICS 2**

by

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PREFACE

The Teaching Instructional Design (BRP) for the Laboratory Work Basic Physics 2 course was prepared to be used as a reference for learning the Laboratory Work Basic Physics 2 course at Faculty Mathematics and Natural Science (FMIPA UI) Undergraduate Physics Study Program which was attended by 3rd semester physics students on the condition that the student had taken the Laboratory Work Basic Physics 1. In this course, students will analyze basic physics concepts and operate measurement instruments in the laboratory. It is hoped that this BRP can become a reference in a good learning process for lecturers as teachers and students as course participants so that the material is conveyed properly and perfectly.

Depok, 13 November 2016

Dr. Djoko Triyono.

I. General Information

1. Name of Program / Study Level : Physics / Undergraduate
2. Course Name : Laboratory Work of Basic Physics 2
3. Course Code : SCFI601122
4. Semester : 3
5. Credit : 1 Credit
6. Teaching Method(s) : Practicum, data processing, report writing, independent assignments, presentations, and written examinations.
7. Prerequisite course(s) : Laboratory Work of Basic Physics 1
8. Requisite for course(s) : -
9. Integration Between Other Courses : -
10. Lecturer : Dr. Djoko Triyono
11. Course Description : After completing the Laboratory Work of Basic Physics, physics students in semester 2 are able to analyze (C4) Basic physics concepts as well as operate (P3) measuring instruments in everyday life with precisely to solve (A5) existing problems in accordance with the applicable laws of physics. The language of instruction used in this course is Bahasa Indonesia

II. Course Learning Outcome (CLO) and Sub-CLOs

A. CLO

Students are able to analyze (C4) basic physics concepts as well as operate (P3) instruments to take exact measurements to solve (A5) problems in daily life. (ELO(s) 1, 2, 5, 6, 8)

B. Sub-CLOs

1. Able to analyze (C4) and demonstrate (P2) electric and magnetic concepts to solve (A5) problems in daily life.
2. Able to analyze (C4) and demonstrate (P2) AC and RL circuits to solve (A5) problems in daily life.
3. Able to analyze (C4) and demonstrate (P2) optical physics concepts to solve (A5) problems in daily life.
4. Able to use (C3) and operate (P3) physics measurement instruments to solve (A5) problems in daily life.
1. Able to investigate (C3) and report (P2) basic physical phenomena as well as making (A2) practicum report according to applicable rules.

III. Teaching Plan

Week	Sub-CLO	Study Materials	Teaching Method	Time Required	Learning Experiences (*O-E-F)	Sub-CLO Weight on Course (%)	Sub-CLO Achievement Indicator	References
1	Introduction							
2	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
3	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
4	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
5	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
6	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005

7	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
8	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
9	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
10	1-5	<ul style="list-style-type: none"> One module of all materials according to the division of the group 	Practicum and report preparation	200 minutes	20% O, 60% E, 20% F	10	Able to report simulation results in the form of practicum reports in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
11	REMEDIAL							
12	REMEDIAL							
13	1-3	<ul style="list-style-type: none"> The practicum module that has been done 	Presentation of practicum reports that have been done	200 minutes	20% O, 60% E, 20% F	5	Able to explain practicum results in the form of presentations in accordance with existing rules .	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
14	1-3	<ul style="list-style-type: none"> The practicum module that has been done 	Presentation of practicum reports that have been done	200 minutes	20% O, 60% E, 20% F	5	Able to explain practicum results in the form of presentations in accordance with existing rules	Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005
10	Final Exam							

*) O : Orientasi
E : Exercise
F : Feedback

References :

1. Basic Physics Practicum Guidebook, UPP IPD, 3rd edition, 2010.
2. Giancoli, DC., Physics: Principle with Applications, 6th ed., Prentice Hall, 2005

IV. Assignment Design

Week	Assignment Name	Sub-CLOs	Assignment	Scope	Working Procedure	Deadline	Outcome
2-10	Practicum Report	SUB-CLOs 1-5	Membuat laporan praktikum	<ul style="list-style-type: none"> • Elektrolisa • Hukum Kirchoff dan Jembatan Wheatstone • Medan Magnet Bumi dan Pengereman Magnetik • Koefisien Suhu • Rangkaian Seri RLC • Hambatan Dalam dan Material Ohmik • Transformator • Rangkaian Kapasitor Arus DC dan Dioda • Polarimeter • Optika Geometri pada Lensa • Fotometri dan Cincin Newton • Indeks Bias Prisma dan Spektrometer • Difraksi pada Kisi • Gelombang Berdiri 	Independent Assignment at home.	1 week	Practicum reports collected
2-10	Pre-test	SUB-CLOs 1-5	Work on problems	<ul style="list-style-type: none"> • Elektrolisa • Hukum Kirchoff dan Jembatan Wheatstone • Medan Magnet Bumi dan Pengereman Magnetik • Koefisien Suhu • Rangkaian Seri RLC 	Doing problems before practicum	30 minutes	Jawaban soal yang dikumpulkan

				<ul style="list-style-type: none"> • Hambatan Dalam dan Material Ohmik • Transformator • Rangkaian Kapasitor Arus DC dan Dioda • Polarimeter • Optika Geometri pada Lensa • Fotometri dan Cincin Newton • Indeks Bias Prisma dan Spektrometer • Difraksi pada Kisi • Gelombang Berdiri 			
13-14	Presentasi	SUB-CLOs 1-3	Mempresentasikan hasil praktikum sesuai dengan modul yang telah dikerjakan	<ul style="list-style-type: none"> • Elektrolisa • Hukum Kirchoff dan Jembatan Wheatstone • Medan Magnet Bumi dan Pengereman Magnetik • Koefisien Suhu • Rangkaian Seri RLC • Hambatan Dalam dan Material Ohmik • Transformator • Rangkaian Kapasitor Arus DC dan Dioda • Polarimeter • Optika Geometri pada Lensa • Fotometri dan Cincin Newton 	<p>1. Make a presentation on the results of the practicum</p> <p>2. Presentation of practicum results</p>	1 week	Presentasi yang dikumpulkan

				<ul style="list-style-type: none"> • Indeks Bias Prisma dan Spektrometer • Difraksi pada Kisi • Gelombang Berdiri 			
15	UAS	SUB-CLOs 1-3	Mengerjakan soal	<ul style="list-style-type: none"> • Semua materi Praktikum Fisika Dasar 2 	Do the final exam	100 minutes	Jawaban soal yang dikumpulkan

V. Assessment Criteria (Learning Outcome Evaluation)

Evaluation Type	Sub-CLOs	Assessment Type	Frequency	Evaluation Weight (%)
Practicum	1-5	1. Practicum Report 2. Pre-test Problem	1 per week	70
Presentation	1-3	Presentation	1	20
Final Exam	1-3	Final exam problem	1	10
Total				100

VI. Rubric(s)

A. Criteria of Practicum Report Grades

Score	Answer Quality
>90	If the student can complete more than 90% problem correctly
70-89	If the student can complete more than 70% - 89% problem correctly
60-69	If the student can complete more than 60% - 69% problem correctly
55-59	If the student can complete more than 55% - 59% problem correctly
50-54	If the student can complete more than 50% - 54% problem correctly

B. Kriteria Nilai Presentasi

Criteria	A (90)	B (75)	C (60)	D (50)
Organization (The whole sequence, flow, and movement)	Information is presented in an effective order. The excellent structure of paragraphs and transitions improves readability and comprehension. The executive summary or abstract is presented first, allowing the reader to easily follow the rest of the report.	Information is logically ordered by paragraphs and transitions. Within a section, the order in which ideas are presented may be confusing at times	Information is scattered and needs further development.	There is no clear sequence of paragraphs, so there is no progressive flow of ideas. The details and examples are disorganized, difficult to understand.
Quality of information	Supporting details are specific to the topic and provide the necessary information.	Some details don't support the topic of the report.	Details are a bit vague.	Unable to find certain details.

Introduction	The introductory paragraph is clearly stated, has a sharp focus, is different and increases the impact of the report	The introductory paragraph is clearly stated with focus.	The introductory paragraph is unclear.	The introductory paragraph is unclear.
Summary	Summarize paragraphs summarize and draw clear, effective conclusions and increase the impact of the report.	Summarize the following paragraphs and summarize the discussion report and draw conclusions.	Closing paragraphs are only remotely related to the topic of the report.	Closing paragraphs are not clear.
Use of language: choice words, grammar, and sentence structure	Sentences are complete and grammatical, and they flow together easily. The word is chosen for its proper meaning.	For the most part, sentences are complete and grammatical, and they flow together easily. Every mistake is minor and doesn't distract the reader. Repetition of the same words and phrases is avoided	Minor mistakes in sentence structure and grammar are frequent enough that they detract from the reader and distract from meaning. There are unnecessary repetitions of the same words and phrases	Major mistakes in sentence structure and grammar are frequent enough that they distract the reader and interfere with meaning. There are unnecessary repetitions of the same words and phrases.
Use of pictures: numbers, graphs & pictures	All numbers, graphics and images used are accurate, consistent with text, and of good quality.	For the most part, the numbers, graphics, and images used are accurate, consistent with the text, and of good	Few of the numbers, graphics, and images used are accurate, consistent with text, and of good quality. They are	Numbers, graphics, and images are of poor quality, have lots of inaccuracies & mislabelling or

	Appropriate and consistent labeling.	quality. Some labels are imprecise and consistent.	not properly labeled.	none at all.
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C. Pre-test dan Final Exam (UAS)

- 1) Able to express ideas in solving problems (25%)
- 2) Be able to determine the right basic concepts in solving problems (35%)
- 3) Able to formulate the final solution of problems correcting language errors (30%)
- 4) Able to use the appropriate important units and figures (10%)