LAPORAN RUBRIK PENILAIAN
MATA KULIAH FISIKA MATEMATIKA I

PROGRAM STUDI S1 FISIKA

TIM DOSEN PENGAMPU

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ASSESSMENT RUBRIC REPORT

MATHEMATICS PHYSICS COURSE I

S1 Physics Study Program

TEACHING LECTURER TEAM

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MULAWARMAN UNIVERSITY
YEAR 2022

Introduction

Praise and gratitude to the presence of Allah Almighty who has bestowed His grace and guidance so that the author can complete the Rubric Report for the Mathematical Physics I Course which was presented in the Odd Semester 2021/2022 Physics Study Program, Department of Physics, Faculty of Mathematics and Natural Sciences, Mulawarman University

The Mathematics Physics I Course Assessment Rubric Report contains course information related to Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK) and forms of assessment to measure the achievement of CPL and CPMK.

The author's gratitude goes to the Coordinator of the Physics Study Program and the Quality Assurance Unit of the Physics Study Program who have provided direction in the preparation of the assessment rubric report for this course

We are aware that this Report is still far from perfect, therefore we are always looking forward to constructive criticism and suggestions for improvements or improvements in the preparation in the coming year with even better learning device design in supporting the implementation of *the Outcome Based Education* (OBE)-based curriculum in the S1 Physics Study Program.

Samarinda, December 2021

Drafting Team

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CHAPTER 1
INTRODUCTION

1.1 Background

In the development of the world of education, assessment is a critical aspect to measure student understanding and achievement. To ensure an objective, transparent, and consistent assessment process, a structured and measurable tool, namely an assessment rubric, is needed. The assessment rubric provides clear guidance on the assessment criteria, ensuring fairness and consistency in assigning grades.

In this course, the creation of assessment rubrics is an essential need. By involving students in the assessment process, this rubric not only serves as an evaluation tool, but also as a guideline for students to understand expectations and focus on the aspects being assessed. It is hoped that this rubric will increase transparency in the learning process, provide constructive feedback, and support the achievement of course learning objectives.

In addition, the creation of assessment rubrics is also in line with the spirit of improving the quality of learning in the Physics Study Program. By understanding that each course has unique characteristics, this assessment rubric is expected to be tailored to specific learning needs and objectives. Therefore, this background is an important foundation for formulating an assessment rubric that supports the achievement of the learning objectives of the course optimally.

Several benefits can be obtained by having a Course Assessment Rubric report, including: 1) Improving Learning Quality: By providing clear guidelines, assessment rubrics can be an instrument that supports improving the quality of learning by emphasizing on aspects that are considered important, 2) Providing Evaluation Guidelines: Rubrics provide structured guidelines for evaluation, ensuring that each element assessed can be systematically analyzed accordingly with the assessment standards that have been set, 3) Strengthening Student Engagement: By understanding the assessment criteria, students can be more actively involved in the learning process and assess themselves in line with the expectations that have been set

and 4) Providing a Foundation for Continuous Improvement: Through the feedback obtained from the use of rubrics, courses can continue to be improved continuously according to the needs and responses of students. By obtaining these benefits, the creation of assessment rubrics is expected to be an effective instrument in supporting the achievement of course learning objectives in the Physics Study Program.

1.2 Assessment Objectives

The purpose of making this Course Assessment Rubric Report includes:

1) Improving Assessment Transparency: The main purpose of the assessment rubric is to provide clear guidance on assessment criteria to students. Thus, the assessment process becomes more transparent and can be well understood by all parties involved.
2) Providing Constructive Feedback: The assessment rubric will be an instrument to provide more detailed and constructive feedback to students. This will help students understand strengths and areas that need improvement in their achievements.
3) Supporting Assessment Consistency: With the existence of rubrics, it is hoped that consistency will be created in providing grades among various teachers or teaching assistants in one course. This is important to maintain the objectivity and fairness of the assessment.
4) Encouraging Students' In-Depth Understanding: The assessment rubric aims to encourage students to understand the learning material in depth and focus on aspects that are considered critical in achieving the learning objectives of the course.

CHAPTER 2
ASSESSMENT RUBRIC

2.1 Components and Weights

The student learning load is expressed in the amount of semester credit units (SKS). One credit is equivalent to 170 (one hundred and seventy) minutes of study activities per week per semester. The definition of credits is basically still related to the unit of time. One credit course is carried out with lectures (lectures) which are defined as three types of activities, namely: face-to-face activities for 50 minutes/week/semester, structured learning activities for 60 minutes/week/semester, and independent learning activities for 60 minutes, all in units per week, per semester.

The estimated amount of credits of a course or a planned learning experience is carried out by simultaneously analyzing the following variables: (a) the level of ability/competence to be achieved, (b) the level of breadth and depth of the study material to be studied, (c) the learning strategy to be applied, (d) the position (location of the semester) of a learning activity carried out, and (e) a comparison of the overall study load in one semester, The definition of credits, the unit of time needed by students to achieve certain learning outcomes through a form of learning and certain study materials. One credit seminar or other similar form of learning, namely: face-to-face activities for 100 minutes/week/semester and independent learning for 70 minutes/week/semester. Practicum, field practice, research, community service or other forms of learning are equivalent to 1 credit, which is 170 minutes/week/semester.

Referring to the Rector Regulation of Mulawarman University Number 06 of 2018 concerning the Implementation of Education and Teaching, Research and Community Service that in determining the achievement for a student towards the mastery of the material of a course is determined based on the results of quizzes, exams, practicums, and/or other tasks that include the cognitive, affective, and psychomotor domains. The determination of the achievement of a course is expressed by:

a. A number of factors;

b. Letter value;

c. Weight value

The quality of the courses referred to has a score range of 0 (zero) to 100 (one hundred). The determination of the course letter value is as follows:

a. The letter A value has a quality score of 80 ≤ AM ≤ 100

b. The letter B value has a quality score of 70 ≤ AM < 80

c. The letter C value has a quality score of 60 ≤ AM < 70

d. The letter D value has a quality score of 40 ≤ AM < 60

e. The letter E has a quality score of 0 ≤ AM < 40

The weight of the course is determined based on the quality score with the classification as shown in Table 2.1

Table 2.1 Course Weights Based on Quality Scores

Quality Score (AM)	Value Weight (NB)	Letter Value (NH)
$0 \leq AM < 40$	0,0	E
$40 \leq AM < 50$	1,0	D
$50 \leq AM < 60$	1,5	
$60 \leq AM < 65$	2,0	C
$65 \leq AM < 70$	2,5	
$70 \leq AM < 75$	3,0	B
$75 \leq AM < 80$	3,5	
$80 \leq AM < 100$	4,0	A

2.2 Assessment Scheme

Every course programmed by students in one semester must be graded. The grading of courses can refer to one of the schemes as shown in Table 2.2

Table 2.2 Reference Percentage of Quality Score (Assessment Scheme)

Schema	Cognitive		Psychomotorics		Affective
	Mid-Semester Quiz/Exam	Exams/End of Semester Projects	Internship	Assignment	
I	20	40	20	10	10
II	30	40			10
III	45	45			10
IV	40	50			10
V	30	40		20	10
YOU		40	50		10
VII		50	10	30	10

Based on the rules of the scheme, the **Mathematics Physics I Course** with a weight of 3 credits is assessed by choosing scheme III, namely 45% of Mid-Semester Exam (UTS) scores, 45% of Final Semester Exam (UAS) scores and 10% Affective. The scheme is contained in the RPS and submitted at the first meeting through a lecture contract. RPS Physics Mathematics I Course can be easily accessed through the Physics Study Program website by every student on the https://fisika.fmipa.unmul.ac.id/mata-kuliah/ page

CHAPTER 3
IMPLEMENTATION AND CHALLENGES

3.1 Evaluation Process

The evaluation process for grading Mathematical Physics I courses is carefully designed to ensure a holistic measurement of students' understanding and skills. This evaluation is carried out through an assessment scheme that includes Mid-Semester Exams (UTS), assignments, Final Semester Exams (UAS), and affective assessments.

1. Mid-Semester Exam (UTS) (45%)

   Mid-Semester Exams are used as a major consideration in academic assessment. UTS assesses students' understanding of the material that has been taught so far in the semester. The designed questions cover key concepts and their application in physics problem solving.

2. Final Semester Exam (UAS) (45%)

   The Final Semester Exam is a decisive exam that covers all material taught during the semester. The highest weight is given to assess the student's overall understanding. UAS questions are designed to test students' in-depth understanding and ability to synthesize various concepts.

3. Affective Assessment (10%)

   Affective aspects, which include attitudes, ethics, and moral values, are assessed through active participation, attendance, and engagement in class discussions. This assessment provides an overview of students' maturity and involvement in learning.

Through this assessment scheme, it is hoped that students will not only have a strong theoretical understanding but also be able to apply these concepts in a real-world context. In addition, the emphasis on affective assessment aims to form good character and positive work ethics in students. This holistic evaluation process is expected to create a learning environment that supports the overall development of students in the Mathematical Physics I course.

3.2 Obstacles and Solutions

The evaluation of grades in the Mathematical Physics I course involves various challenges that need to be overcome to ensure the fairness, accuracy,

and validity of the assessment process. Some of the obstacles that may arise in this evaluation include:

1. Subjectivity in Assessment:

The main obstacle is the potential for subjectivity in assessment, especially in terms of assigning grades to interpretive questions. This can result in variations in assessments between teaching lecturers.

Solution:

- ✓ Implement clear and standardized assessment rubrics.
- ✓ Involve more than one teacher in the assessment to minimize subjectivity.
- ✓ Organize evaluator meetings to normalize assessment standards.

2. Difficulty in Assessing the Affective Aspect:

Assessments of affective aspects such as student participation, ethics, and attitudes are often difficult to measure objectively.

Solution:

- ✓ Develop concrete assessment criteria for affective aspects.
- ✓ Involve students in the self-evaluation process related to their affective aspects.
- ✓ Create a clear attendance and participation policy.

4. Excessive Evaluation Load:

If there are too many assignments or exams, it can lead to an excessive evaluation load on students.

Solution:

- ✓ Balancing the type and weight of the task to avoid disproportionate loads.
- ✓ Using technology to simplify the evaluation process, such as online exams.

5. Time Management:

The limited time to carefully assess student work can be an obstacle.

Solution:

- ✓ Provide a realistic deadline for completing the assessment.
- ✓ Implement a formative assessment system to provide feedback throughout the semester.

Through the implementation of these solutions, it is hoped that the evaluation of the grading of the Mathematical Physics I course can be a more objective, fair, and can maximize student learning.

CHAPTER 4
RESULT ANALYSIS

4.1 Valuation Trends

The final score of students who program the Mathematical Physics I Odd Semester Course for the 2021/2022 Academic Year can be accessed by each student through the SIA (Academic Information System) account of Mulawarman University on the https://sia.unmul.ac.id page . The provision of this score was input by the Lecturer Team for the Mathematics Physics I Course.

The trend of grades that have been obtained by students of the S1 Physics Study Program for the Mathematical Physics I Course can be shown in Figure 4.1 based on the assessment of the Teaching Lecturer Team by referring to the assessment of scheme III based on the List of Participants and Final Grades (DPNA) (Appendix 1).

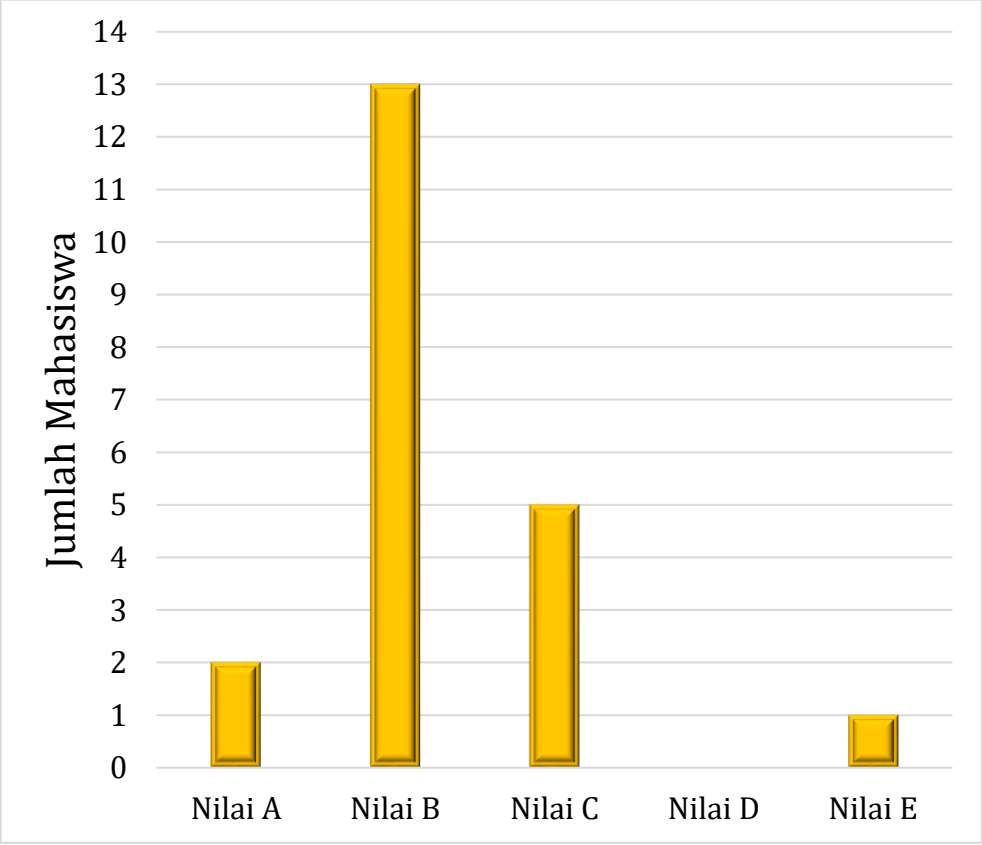


Figure 4.1 Trend in the Mathematics Physics I Odd Semester 2021/2022 Score Trends for Students of the S1 Physics Study Program.

Based on Figure 4.1, it appears that as many as 2 students obtained an A grade, 13 students obtained a B grade, 5 students obtained a C grade and no students received a D grade.

4.2 Learning Outcomes

The Graduate Learning Outcomes (CPL) charged in the Mathematical Physics I Course contained in the Curriculum of the S1 Physics Study Program are as follows:

1. Master the principles and applications of mathematical physics, computational physics and instrumentation (**PP2**).
2. Able to produce mathematical models or physical models that are in accordance with the hypothesis or impact forecast of the phenomenon that is the subject of discussion (**KK2**).

In the evaluation of the learning outcomes of the Mathematical Physics I Course with a total of 21 students, there is a distribution of the following scores:

- ✓ Grade A (Graduated): 2 students (9.52%)
- ✓ B grade (Pass): 13 students (52.38%)
- ✓ C Grade (Pass): 5 students (23.80%)
- ✓ E Grade (Not Passing): 1 student (4.76%)

The percentage of learning achievement can be calculated based on the number of students who achieve a certain score divided by the total number of students who take the course, then multiplied by 100 to get the percentage. In this context:

Percentage of Achievement of A Grade: $(2/21)\times100\approx9.52\%$

Percentage of B Grade Achievement: $(11/21)\times100\approx52.38\%$

Percentage of C Grade Achievement: $(5/21)\times100\approx23.80\%$

Percentage of Not Passing (E Grade): $(1/21)\times100\approx4.76\%$

These results reflect the extent to which students can achieve the level of understanding and mastery of the material taught in the Mathematical Physics I Course. This evaluation can be the basis for curriculum development,

improvement of teaching methods, or improvements in the delivery of material so that learning outcomes can be more optimal in the future.

CHAPTER 5
CONCLUSION

From the assessment rubric report of the Mathematics Physics Course I with a weight of 3 credits, it can be concluded that the assessment is carried out holistically by paying attention to various aspects, including mid-semester exams (UTS), final semester exams (UAS), and affective assessments. The use of structured assessment rubrics is a positive step to increase objectivity and consistency in assessing student performance.

There are several problems that need attention and follow-up, including subjectivity in assessment, difficulty in assessing affective aspects, and challenges in assessing students' practical skills. The solution to overcome subjectivity involves the use of clear and standard assessment rubrics, while for the affective aspect, there needs to be concrete assessment criteria and involve students in self-evaluation.

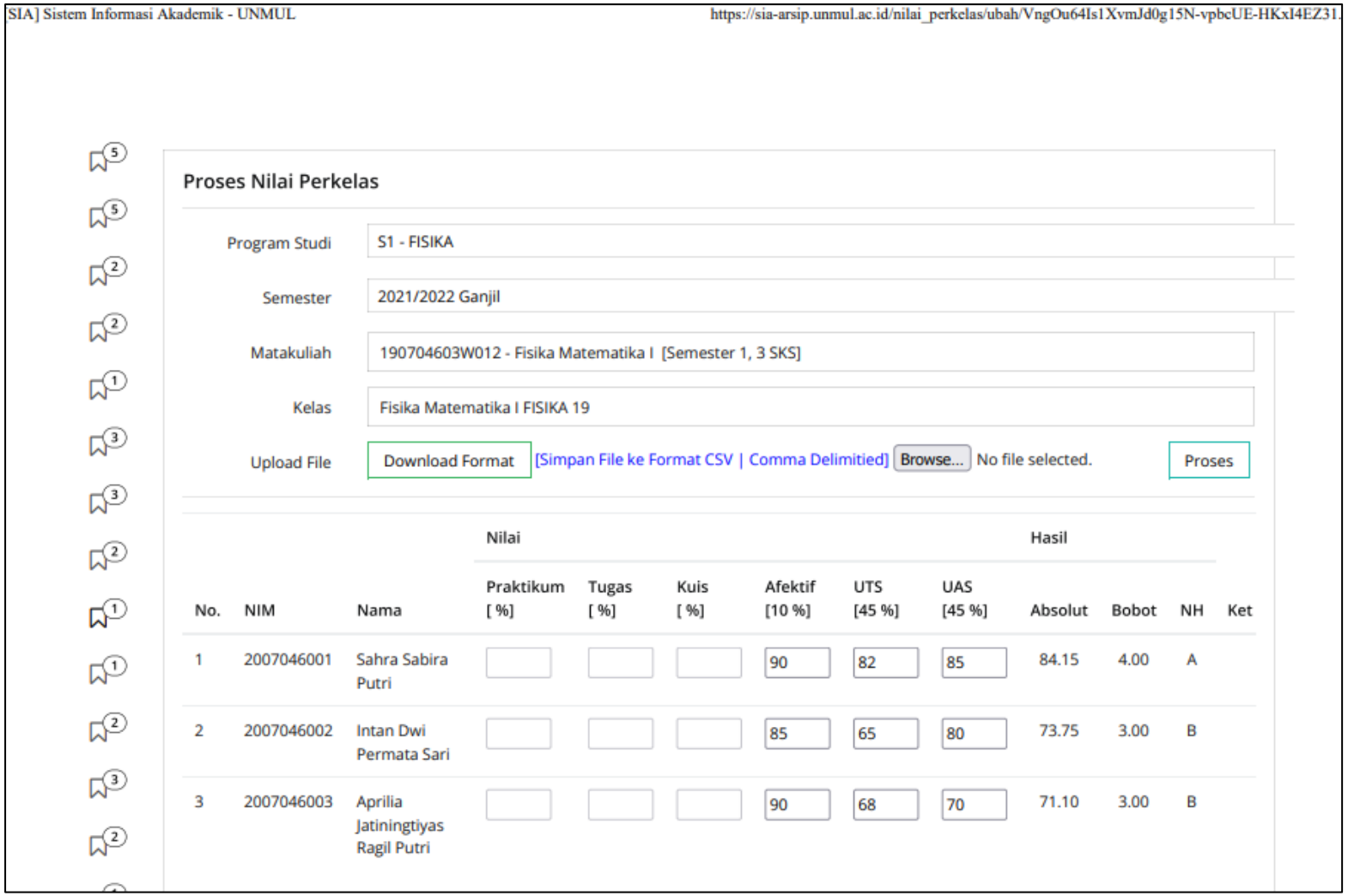
Obstacles in assessing practical skills can be overcome by implementing an assessment system that takes into account the practicum process and results and involves practicum tutors in the assessment. Continuous monitoring and evaluation of the implementation of the assessment rubric needs to be carried out to ensure its effectiveness.

The follow-up plan involves implementing these solutions and strengthening the overall evaluation system. The involvement of more than one lecturer in the assessment process can help reduce subjectivity. In addition, there is a need for coaching and training for lecturers related to the implementation of the assessment rubric.

Thus, the implementation of a careful and measurable assessment rubric is a positive step in improving the learning quality of the Mathematical Physics I course, ensuring fairness in assessment, and supporting the achievement of learning objectives.

ATTACHMENT

LIST OF PARTICIPANTS AND FINAL GRADES (DPNA) OF MATHEMATICS PHYSICS I COURSE



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Proses Nilai Perkelas

Program Studi: S1 - FISIKA

Semester: 2021/2022 Ganjil

Matakuliah: 190704603W012 - Fisika Matematika I [Semester 1, 3 SKS]

Kelas: Fisika Matematika I FISIKA 19

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			Nilai						Hasil			
No.	NIM	Nama	Praktikum [%]	Tugas [%]	Kuis [%]	Afektif [10 %]	UTS [45 %]	UAS [45 %]	Absolut	Bobot	NH	Ket
1	2007046001	Sahra Sabira Putri				90	82	85	84.15	4.00	A	
2	2007046002	Intan Dwi Permata Sari				85	65	80	73.75	3.00	B	
3	2007046003	Aprilia Jatiningtiyas Ragil Putri				90	68	70	71.10	3.00	B	

No.	NIM	Nama	Nilai						Hasil			
			Praktikum [%]	Tugas [%]	Kuis [%]	Afektif [10 %]	UTS [45 %]	UAS [45 %]	Absolut	Bobot	NH	Ket
4	2007046004	Wahyu Andriyani				90	72	70	72.90	3.00	B	
5	2007046006	Glent Samudra Pratama				85	68	65	68.35	2.50	C	
6	2007046007	Firda Imroatus' Saumi. A.				85	60	65	64.75	2.00	C	
7	2007046009	SUBBAHAS KUNCORO JATI				85	68	75	72.85	3.00	B	
8	2007046011	Meilinda				90	86	85	85.95	4.00	A	
9	2007046012	ANDRIAN NATALI RESHALESTIRA				90	70	68	71.10	3.00	B	
10	2007046013	APRILLIA DIYAH AYU ASTUTI				85	68	70	70.60	3.00	B	
11	2007046015	RAHEL ANTHON				85	68	70	70.60	3.00	B	

No.	NIM	Nama	Nilai						Hasil			
			Praktikum [%]	Tugas [%]	Kuis [%]	Afektif [10 %]	UTS [45 %]	UAS [45 %]	Absolut	Bobot	NH	Ket
12	2007046016	Divia Rahmawati Putri				85	68	70	70.60	3.00	B	
13	2007046017	Wahyu				85	68	70	70.60	3.00	B	
14	2007046018	RETNO DEBY AYU WIDIA NINGTIAS				85	68	75	72.85	3.00	B	
15	2007046019	Novi Sesarwati Rahmadani				45	67		34.65	0.00	E	
16	2007046020	Bobby Sahlani				85	67	68	69.25	2.50	C	
17	2007046021	JUNITA HEMELIA				85	67	65	67.90	2.50	C	
18	2007046022	Haznah Sekararum Pamuncaki				90	75	73	75.60	3.50	B	
19	2007046023	AUDELIA HEREN				90	72	70	72.90	3.00	B	
20	2007046024	LISA HARYANI				85	68	65	68.35	2.50	C	

			Nilai						Hasil			
No.	NIM	Nama	Praktikum [%]	Tugas [%]	Kuis [%]	Afektif [10 %]	UTS [45 %]	UAS [45 %]	Absolut	Bobot	NH	Ket
21	2007046025	YOGA OKTOBIYAN				100	69	65	70.30	3.00	B	

Kalkulasi [Simpangan Baku]