Lecture Portfolio

	SRIWIJAYA UNIVERSITY		
	FACULTY OF AGRICULTURE		
	DEPARTMENT OF SOIL SCIENCE		
	SOIL SCIENCE STUDY PROGRAM		
Subject : **Soil, Water and Plant Analysis**	**Code: PTN 2 3215**	**Semester : 3**	**Credits : 3 (2-1)**
Lecturer	**Dr. Ir. Marsi, M.Sc. (MS)** **Dr. Ir. Agus Hermawan, MT (AH)**		

Introduction

This course includes Introduction, Laboratory: function, organization and safety, Laboratory equipment: function of the tool, Chemical principles: reagents, standard solutions, concentration, Principles of sampling soil, water and plants, Analysis of soil, water and plants : Analysis of total elements and plant ashing, BO and N, P, S, pH, SAR, DHL, H-dd, Al-dd, Al saturation, CEC, K, Na, Ca, Mg, Data interpretation and recommendations. Learning Analysis of soil, water and plants less use of lecture and discussion methods, and case studies, but more independent and group work on practical activities in the laboratory . Students are evaluated by quizzes, exams, assignments and practicums. The objective of this course are to provide knowledge and understanding and ability to students about the principles, methods, and procedures for analyzing soil, water, and plants, carrying out independent and group analyzes, interpreting the data from the analysis and calculating fertilization recommendation for plant cultivation.

Intended Learning Outcome - **ILO**

Intended Learning Outcomes (I LO) charged for this course are :

ILO-1 (P-3)   Mastering knowledge about the quality and use of soil and land in a sustainable manner

ILO-2 (KU-5)   Able to make appropriate decisions in the context of solving problems in their area of expertise, based on the results of analysis of information and data

ILO-3 (KU - 7)   Able to be responsible for achieving group work results and supervising and evaluating the completion of work assigned to workers under their responsibility

ILO-4 (KU - 9)   Able to document, store, secure, and retrieve data to ensure validity and prevent plagiarism

ILO-5 (K K - 2)   Able to identify various soil and land problems in agricultural cultivation and apply the principles of Soil Science in various conditions

ILO-6 (K K - 3)   Able to classify soil, evaluate land suitability class and choose alternative sustainable uses, so as to maintain the ecological functions of the soil based on field observations, laboratory and landscape analysis and cartographic mapping

ILO-7 (K K - 4)   Able to carry out land surveys and mapping to evaluate land capability and suitability as a basis for sustainable land use planning

*Course Learning Outcome - **CLO***

After completing this course, a student is expected to:

CLO - 1   Understand the basic principles of soil, water and plant analysis
CLO - 2   Skilled in making reagent solutions and taking representative soil, water and plant samples
CLO - 3   Able to perform sample analysis in the laboratory and calculate the analysis results correctly
CLO - 4   Able to analyze and interpret data from analysis results

Each Course Learning Outcomes (**CLO**) provide support for the Study Program's (**ILO**) Learning Outcomes with a certain percentage, the details of which can be seen in the relationship matrix between the **CLO** course of Soil, Water and Plant Analysis and the **ILO**, which is presented in Table 1.

Table 1. Relationship Matrix between CLO and ILO course of Soil, Water and Plant Analysis

CLO	Description	Learning Outcomes Program (PLO)						
		ILO-1	ILO-2	ILO-3	ILO-4	ILO-5	ILO-6	ILO-7
CLO-1	Understand the basic principles of soil, water and plant analysis	0.5			0.5			
CLO-2	Skilled in making reagent solutions and taking representative soil, water and plant samples	0.167	0.167	0.167	0.167	0.167		0.167
CLO-3	Able to perform sample analysis in the laboratory and calculate the analysis results correctly	0.143	0.143	0.143	0.143	0.143	0.143	0.143
CLO-4	Able to analyze and interpret data from analysis results	0.143	0.143	0.143	0.143	0.143	0.143	0.143

Learning strategies

This course presents theoretical and practical material with the following learning strategies :
- Provide access to pre-lecture materials (in pdf/ppt files and in E-learning).
- lecturer presents the material in detail and asks for input from students during the material presentation session regarding whether or not an explanation is needed. repeated again . _
- lecturer re-explained the parts that the students felt less understood at the next meeting.
- In lectures, time is also provided for discussion to get students used to commenting or expressing opinions about the lecture material .
- Practicum in the laboratory is carried out after 3 or 4 lecture meetings. The practicum is intended to increase students' understanding and skills in analyzing several characteristics of soil, water and plants in the laboratory. The practicum material begins with sample preparation, reagent preparation, and direct analysis in the laboratory. Then proceed with calculating the results of the analysis and making recommendations in accordance with the results of the analysis obtained.
- Lecturers give assignments in accordance with lecture material and practicum by referring to relevant articles/journals, and are done independently.

Lecture Management

Soil, Water and Plant Analysis Lecture has a weight of 3 credits , with 1 credit of lectures and 2 credits of practicum. Lecture meetings are scheduled once a week (1 time 50 minutes) for 14 weeks and practicum once a week (4 times 70 minutes) for 10 weeks. Midterm exam (UTS) is held on week 8, while final exam (UAS) is on week 16.

Lectures and Practicum :

- At each meeting the lecturer presents the material with lecture and discussion methods.
- Questions from students are made at the time of the lecturer's explanation or during discussions and students are free to ask questions and discuss.
- Each meeting has specific learning outcomes according to the material presented. To measure its achievement, quizzes and assignments have been designed. The results of these quizzes and assignments are used as evaluation material, to repeat the parts that are deemed necessary at the next meeting.
- Practical activities are carried out in the laboratory, every week. In practicum activities there will be a quiz before the practicum begins, the implementation of the practicum in accordance with the practicum material, writing practicum reports, and the final practicum exam.
- As designed in the Semester Learning Plans, for this course several assessments are given with the material and weight of each assessment on the final score as presented in Table 2. All forms of assessment carried out must be done independently by students or in groups.

Course Content

No.	Course materials	Duration (face-to-face) (minutes)	CLO 1	2	3	4
1	Introduction, Principles of Analysis in the Lecture Contract Laboratory	50	v			
2	Laboratory: function, organization and security, Laboratory equipment: tool function	50	v			
3	Chemical principles: reagent, standard solution, concentration	50		v		
4	Principles of taking soil, water and plant samples and preparing samples for analysis in the laboratory	50		v		
5	Analysis of Soil, Water and Plants: Analysis of Total Elements and Plant Ash	50			v	
6	Soil, Water and Plant Analysis: Organic Matter and N	50			v	
7	Soil, Water and Plant Analysis: Phosphorus	50			v	
8	Evaluation (1 - 7)	1 00	v	v	v	
9	Soil, Water and Plant Analysis: S	50			v	
10	Soil, Water and Plant Analysis: pH and CEC	50			v	
11	Soil, Water and Plant Analysis: SAR, DHL	50			v	
12	Soil, Water and Plant Analysis: H-dd, Al-dd, and Al Saturation	50			v	
13	Soil, Water and Plant Analysis: K, Na, Ca, and Mg	50			v	
14	Data Interpretation	50				v
15	Recommendation	50				v
16	Evaluation (8 -15)	1 00	v	v	v	v

Laboratory Practicum

No.	Topics	Duration	CLO				Activities in Laboratory
			1	2	3	4	
1	Sample preparation	170	v	v	v		Pre-test, explanation from assistant, practice according to the practical manual, writing the results in worksheet, approval by assistant.
2	Preparation of standard solutions and concentrations	170	v	v	v	v	
3	Analysis of Organic Matter and Nitrogen	170		v	v	v	
4	Nitrogen Analysis	170		v	v	v	
5	Phosphorus and S . Analysis	170		v	v	v	
6	pH and CEC analysis	170		v	v	v	
7	H-dd, Al-dd and Al Saturation Analysis	170		v	v	v	
8	K and Na analysis	170		v	v	v	
9	Analysis of Ca and Mg	170		v	v	v	
10	Recommendation	170		v	v	v	
	Distribution of weight in the lab practicum score: Pre-Test (20%), practicum report (20%), participation (10%), final practicum exam (50%). Percentage of score weight of laboratory practice to final score is 50 %.						

The suitability between lecture material and practicum designed in the curriculum with the practice can be seen in **Appendix 1** .

Lecturer

This course is a mandatory course for students of the Bachelor of Soil Science Study Program, Faculty of Agriculture, Sriwijaya University, who are entering their 5th semester, and there are some who for one reason or another were unable to take this elective course last year.

Attendance Percentage

Lecturer attendance is 100% while student attendance is 98 % on average

Evaluation System

- Evaluate some material through quizzes and or assignments that are used to measure understanding from 3 or 4 meetings .
- Evaluation of material up to the middle of the semester through the midterm exam (UTS), which held on the 8th week / 8th meeting .
- Evaluation of material after the middle of the semester to the end of the semester is carried out through the final semester exam (UAS), which is held on the 16th week / 16th meeting.
- Lecture evaluation results in the form of assignments/quizzes have a proportion of 20% which will be combined with UTS or UAS scores with a portion of 80%.
- Practicum in the laboratory is carried out on the 4th week after the lecture, which consists of 10 practicum materials which are carried out for 10 practicums. Evaluation of practicum material consists of attendance, attendance, mastery of practicum material which is reflected in quiz scores , reports and practicum exams.
- The proportion of practicum scores includes: 10% attendance, 10% quizzes, 40% practicum exams and 40% practicum reports
- In the final grade, the proportion of Practicum scores is 5 0%, UTS 2 5%, and UAS 2 5%
- The material evaluated for each assessment and its weight can be seen in Table 2.

Table 2. Assessments and materials to be measured, as well as the weighting of each assessment on the final grades and Course Learning Outcomes (**CLO**) Soil, Water and Plant Analysis Lecture

Assessment	material al	Weight to Final Score	Course Learning Outcome – CLO			
			CLO 1	CLO 2	CLO 3	CLO 4
Practice	1. Sample preparation 2. Preparation of standard solutions and concentrations 3. Analysis of Organic Matter and Nitrogen 4. Nitrogen Analysis 5. Phosphorus and S . Analysis 6. Analysis of pH and CEC 7. Analysis of H-dd, Al-dd and Al . Saturation 8. K and Na . analysis 9. Analysis of Ca and Mg 10. Preparation of Recommendations	0.5 0 _	0.2 5	0.2 5	0.2 5	0.2 5
Evaluation I	Material 1 -7 (UAS, Assignments, Quiz)	0, 2 5	0.50 _	0.50 _		
Evaluation II	Material 9 -15 (UAS, Assignments, Quiz)	0, 2 5			0.50	0.50 _

Learning outcomes

learning achievement of each student who takes this course is reflected in the scores in each assessment. The value of each assessment with their respective weights is then processed to obtain the final score . The final value is in the form of numbers, then converted to letters in accordance with the conversion rules that apply at the Faculty of Agriculture, Sriwijaya University. The letter grades obtained are then inputted into the Academic Information System and printed on the Transcript student.

In addition to being processed into final scores, the scores in each assessment, taking into account the percentage of CLO's contribution to each ILO (Table 1) and the weight of each assessment to the CLO (Table 2), are then processed using excel, so that the score for each CLO and ILO from each students can be identified.

The description of the value of each CLO can be seen in Table 3, which presents the average achievement index of students in each CLO, and the percentage of students with achievement scores above 85.9. In accordance with the achievement categories presented in Table 4, the following conclusions can be drawn:
- All CLOs on average achieved excellent scores , with an average student score of 87.90.
- All CLOs are in the high percentage category (HIGH), more than 80% of students have an achievement value above 71.

Table 3. Description of Achievement Values and Categories for Each CLO course of Soil, Water and Plant Analysis

	CLO1	CLO2	CLO3	CLO4

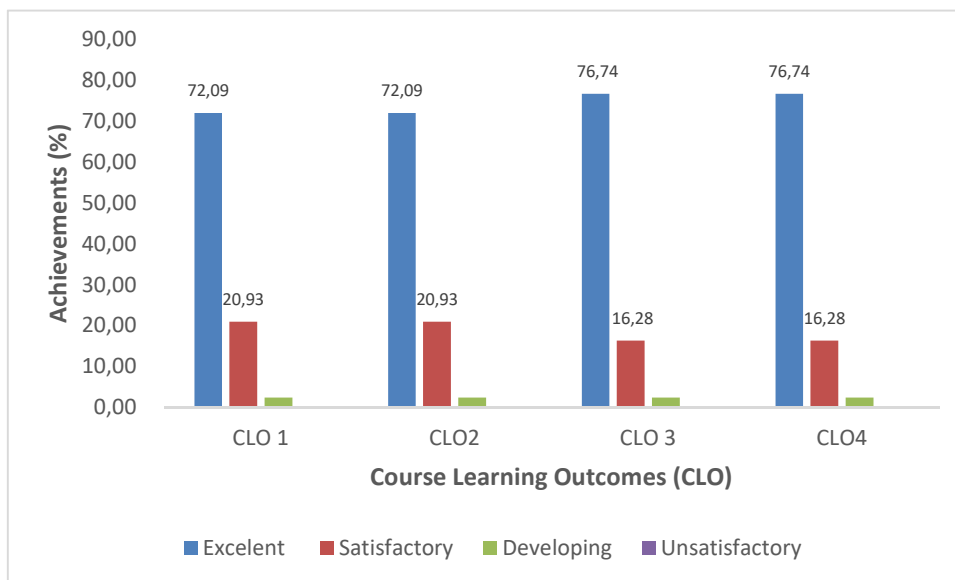| Average student final grade	8 7 ,9 0	8 7 ,9 0	8 7 ,9 0	8 7 ,9 0
Category c fuck	Excellent	Excellent	Excellent	Excellent
Number of students with CLO>71	4 0	4 0	4 0	40
Percentage of students with CLO>71	9 3.02	9 3.02	9 3.02	9 3.02
Category Percentage _	HIGH	HIGH	HIGH	HIGH

Figure 1. Graphics achievement category in each CLO in Soil, Water and Plant Analysis Course

Table 4. Category of CLO/ILO scores, and Category of Percentage of Students who achieved
      CLO/ILO > 71

CLO/ILO Value Category		Percentage category of students with CLO/ILO >71	
Score _ 86	EXCELLENT	□ 80	HIGH
71 Score < 85.99	SATISFACTORY	60 - < 79	MEDIUM
56 Score < 70.99	DEVELOPING	50 - < 59	LOW
Score <55.99	UNSATISFACTORY	< 50	VERY LOW

In addition to the value for course learning achievement (CLO), it can also be analyzed the value of each ILO supported by this course. A description of the ILO's achievements from the Soil, Water and Plant Analysis Course is presented in Table 5, and Figure 2. presents the percentage of students with an achievement score above 85.9 .

Several things can be concluded from the support of this Soil, Water and Plant Analysis Course on the Learning Outcomes of the Study Program (ILO):
  - All ILO's are in the category of Excellent achievement where 87.9 percent of students taking this course have an achievement score above 71 for all ILO.
  - All I LOs are in the high percentage category (HIGH), where students who are have an achievement value above 71 by 93.02 percent

Table 5. Description of Achievement Values and Categories for Each ILO supported by Soil, Water and Plant Analysis Course

	ILO1	ILO2	ILO3	ILO4	ILO 5	ILO 6	ILO 7

Weighted average	8 7 , 9	8 8.0 _	8 8.0 _	8 7 , 9	8 8.0 _	8 7 , 9	8 8.0 _
Achievement Category	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
The number of students with ILO>71	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Percentage	93.02	93.02	93.02	93.02	93.02	93.02	93.02
Category	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
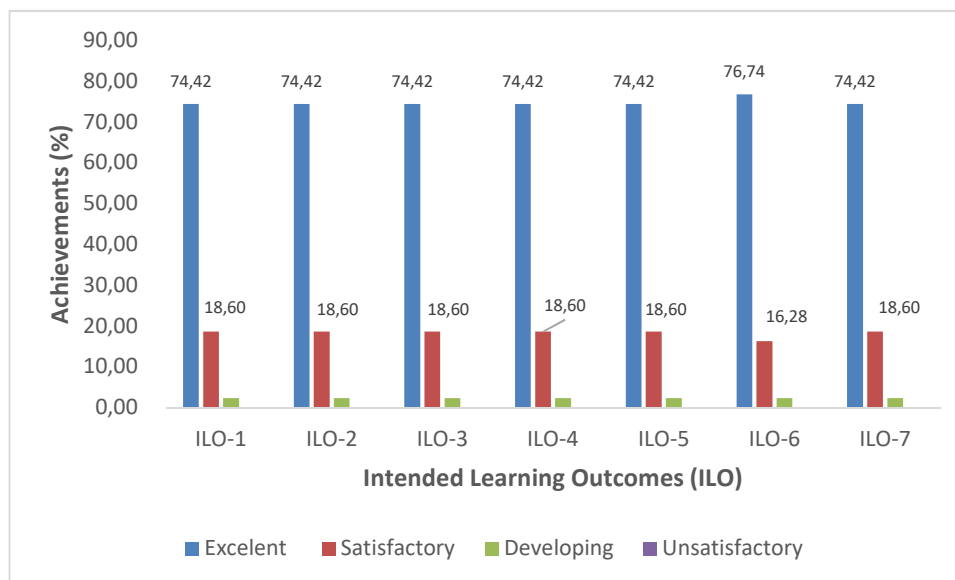
Figure 2. Graph of achievement indices in each ILO supported by Soil, Water and Plant Analysis Course

Constraint

- Students' ability/understanding of course material is still not evenly distributed among all students
- The time used for practicum is still insufficient to improve students' skills in the laboratory. The number of courses that carry out practicum in the same laboratory is also sometimes a barrier.
- The reluctance of students to ask questions, discuss, and provide suggestions for lecturers and fellow students is felt to be lacking. It seems that students are not optimal for this.

Value Distribution

The final score is obtained from the weighting of all assessment components as presented in column three in Table 2 and the conversion standard of assessment is presented in Table 6. While descriptive statistics of the final score are presented in Table 7

Table 6. Benchmarks for Scoring

No.	Range of Score	Grade	Description
1	86.00 - 100.00	A	Excellent
2	71.00 – 85.99	B	good

3	56.00 – 70.99	C	Fair
4	40.00 – 55.99	D	Bad
5	<40.00	E	Worst

Table 7 . Final Grade Descriptive Statistics

Mean	87,89
Median	89,58
Standard Deviation	6,04
Min	60,25
Max	94,27
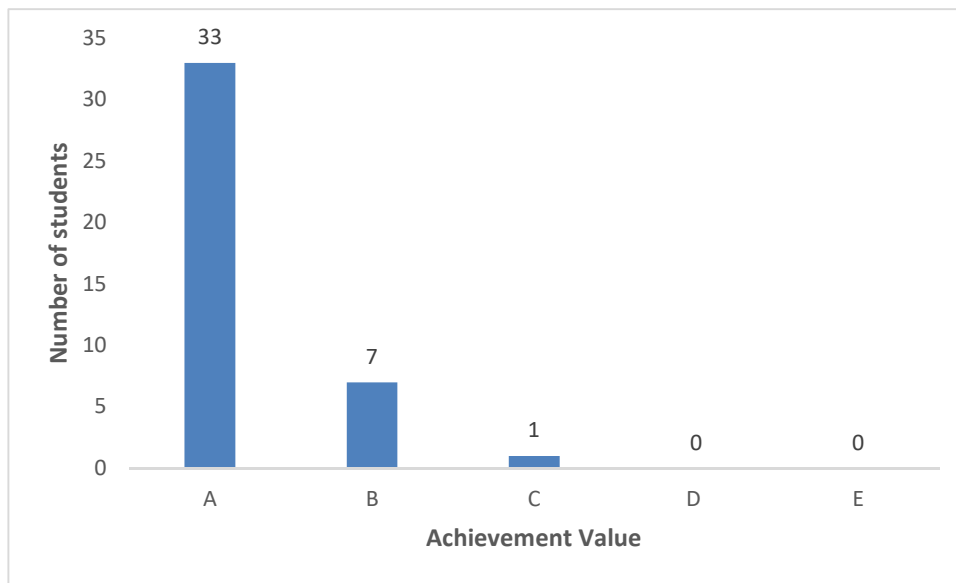
Figure 3. Distribution of the final score of the letter M for the Study of Soil , Water and Plant Analysis

After being converted into letter grades according to the assessment conversion standard (Table 6) , the distribution of letter grades can be seen in Figure 3. The figure shows that most students have grades A. There is one student who gets a C grade, because he often does not attend lectures and practicums and does not take quizzes.

Conclusion

With all the obstacles and basic abilities of students, the final score obtained still reflects that the strategies and learning methods can be well received by most students.

Repair Recommendations

- The need to encourage students to be more and more daring in express opinion
- Habituation of students to discuss and work in teams

Appendix 1

Week	CLO	Final Skills expected at each stage of learning (Sub-CLO)	Subject	Learning method and time	Description of independent tasks and time	Indicator	Weight (%)
(1)		(2)	(3)	(5)	(6)	(7)	(8)
1	1. Understand the basic principles of ATAT (P3) (10%)	1.1. Understand the scope of ATAT and the technical implementation of lectures	Introduction , Principles of Analysis in Lecture Contract Laboratories	Face-to-face lecture (1 x 50")	Searching and summarizing readings on Analysis in the Laboratory . (2x60 ").	Accuracy in explaining the scope and principles of analysis in the Laboratory	
2		1.2. Understand the function, organization , security, and equipment and functions of tools in m laboratories	Laboratory: function, organization and security, Laboratory equipment: tool function	Face-to-face lecture (1 x 50") Practicum on safety, and equipment and tool functions in the laboratory (3x60 ")	Looking for related references and compiling a practicum report. (2x60 ").	Accuracy in explaining the functions, organization , security, and equipment and functions of tools in laboratories related to good laboratory practices	
3	2. Skilled in making reagent solutions and taking representative soil, water and plant samples (KK2; KK4)	2.1. Understand the principles of chemistry, reagents, standard solutions and concentrations	Chemical principles: reactants, standard solutions, concentration	Face-to-face lecture (1 x 50") Practicum on chemical principles, reagents, standard solutions and concentrations (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining chemical principles, reagents, standard solutions and concentrations as one of the main components in analytical practice in the laboratory	
4		2.2. Understand the principles of taking soil, water and plant samples and preparing samples for analysis in the laboratory	Principles of soil, water and plant sampling and preparation of samples for analysis in the laboratory	Face-to-face lecture (1 x 50") Group discussion (2x60")	Finding and summarizing readings on the principles of soil, water and plant sampling (2 x60 ")	Accuracy in explaining chemical principles, reagents, standard solutions and concentrations as one of the main components in analytical practice in the laboratory	
5	3. Perform sample analysis in the laboratory and calculate the analysis results correctly (KU7; KU9; KK2)	3.1. Understanding theoretically and skilled in preparing materials and performing total elemental analysis and plant ashing	Soil, Water and Plant Analysis: Elemental Analysis Total and Plant Ash	Face-to-face lecture (1 x 50") Practicum: perform total element analysis and plant ashing (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures for total elemental analysis and plant ashing and practicing them in the laboratory	

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6		3.2. Understand theoretically and skilled in preparing materials and analyzing soil organic matter and soil and plant nitrogen	Soil, Water and Plant Analysis: Organic Matter and N	Face-to-face lecture (1 x 50") Practicum: analyzing soil organic matter and soil and plant nitrogen (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures for analyzing soil organic matter and nitrogen and practice it in the laboratory	
7		3.. Understanding theoretically and skilled in preparing materials and analyzing soil and plant Phosphorus	Soil, Water and Plant Analysis: Water: Phosphorus	Face-to-face lecture (1 x 50") Practical: perform Phosphorus analysis (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures of phosphorus analysis and practicing them in the laboratory	
8	**Mid-Semester Exam (100")**						
9	4. Perform sample analysis in the laboratory and calculate the analysis results correctly (KU7; KU9; KK2)	4.1. Understand theoretically and skilled in preparing materials and performing Sulfur analysis	Soil, Water and Plant Analysis: S	Face-to-face lecture (1 x 50") Practical: perform Sulfur analysis (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures of sulfur analysis and practicing them in the laboratory	
10		4.2. Understand theoretically and skilled in preparing materials and performing pH and CEC analysis	Soil, Water and Plant Analysis: pH and CEC	Face-to-face lecture (1 x 50") Practicum: analyzing pH and CEC (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures of pH and CEC analysis and practicing them in the laboratory	
11		4.3. Understand theoretically and skilled in preparing materials and performing SAR and DHL analysis	Soil, Water and Plant Analysis: SAR, DHL	Face-to-face lecture (1 x 50") Practical: perform SAR and DHL analysis (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures of SAR and DHL analysis and practicing them in the laboratory	
12		4.4. Understand theoretically and skilled in preparing materials and conducting analysis of H-dd, Al-dd, and Al boredom	Soil, Water and Plant Analysis: H-dd, Al-dd, dan Al boredom	Face-to-face lecture (1 x 50") Practicum: doing H-dd, Al-dd, and analysis Al Saturation (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures of H-dd, Al-dd, and Al saturation analysis and practicing them in the laboratory	

		4.5. Understand theoretically and skilled in preparing materials and analyzing K, Na, Ca, and Mg	Soil, Water and Plant Analysis: K, Na, Ca, and Mg	Face-to-face lecture (1 x 50") Practicum: analyzing K, Na, Ca, and Mg (3x60")	Looking for related references and compiling a practicum report (2 x60")	Accuracy in explaining the principles, methods and procedures for analyzing K, Na, Ca, and Mg, and practicing them in the laboratory	
14		5.1. Understanding in theory and skilled in interpreting data from laboratory analysis	Data Interpretation	Face-to-face lecture (1 x 50") Group discussion (2x60")	Looking for related references and compiling reports on interpretation of laboratory analysis data (2 x60")	Accuracy in explaining data interpretation and being able to interpret data from laboratory analysis correctly	
15	5. Analyze and interpret the analysis results data (KU5; KU7; KU9; KK2; KK3; KK4)	5.2. Understanding in theory and skilled in making recommendations based on the results of laboratory analysis	Recommendation	Face-to-face lecture (1 x 50") Group discussion (2x60")	Looking for related references and compiling recommendation reports based on laboratory analysis results (2 x60")	Accuracy in explaining the preparation of recommendations and being able to make recommendations based on data from laboratory analysis correctly	
16	SEMESTER FINAL EXAM (100")						
		Total percentage for the lecture (Assignment (5%), Quiz (5%), Ev-1 (30%) and Ev-2 (30%))					50
		Percentage for Lab practice um					5 0
		Grand Total					100

Appendix 2. List of Value Details

STUDY PROGRAM :	**SOIL SCIENCE**
ACADEMIC YEARS :	**2021/2022 (Odd SEMESTER)**
COURSE NAMES :	**SOIL, WATER AND PLANT ANALYSIS (3 Credit Points)**
ROOM :	**RK C1103**
LECTURES :	**IR. H. MARSI, M.SC., PH.D. / DR. IR. AGUS HERMAWAN, MT**
SCHEDULE :	**TUESDAY (09:20 - 11:00 WIB)**

NO.	NIM	NAME	PRACTICUM (30%)	EV-1 (35%)	EV-2 (35%)	SCORE	LETTERS VALUE	PRACTICUM	EV-1	EV-2	Overall Achievement of CLO per student
1	05101181924001	AHMAD NUREWAN	95.1	85.0	92.7	92.0	A	achieved	achieved	achieved	achieved
2	05101181924003	DANDI FRANANDO	87.3	99.0	86.7	90.1	A	achieved	achieved	achieved	achieved
3	05101181924010	CHERLY MELLANIA PRATAMA	93.0	89.0	91.2	91.6	A	achieved	achieved	achieved	achieved
4	05101181924011	PUTRI AYU CANDENI	90.3	97.0	92.1	92.4	A	achieved	achieved	achieved	achieved
5	05101181924012	YUNI TRI ASTUTI	91.0	89.0	93.6	91.2	A	achieved	achieved	achieved	achieved
6	05101181924014	INDAH LARASATI	89.0	75.0	92.1	86.3	A	achieved	not achieved	achieved	achieved
7	05101181924018	NABILA RAHMADANI S	85.0	99.0	86.5	88.9	A	not achieved	achieved	achieved	achieved
8	05101181924092	M. LUTFAN SUGIHARTO	86.7	97.0	89.6	90.0	A	achieved	achieved	achieved	achieved
9	05101281722018	HENDRA WIJAYA	60.0	58.0	63.0	60.3	C	not achieved	not achieved	not achieved	not achieved
10	05101281924019	BONY DWI SAPUTRA	89.7	83.0	90.6	88.2	A	achieved	achieved	achieved	achieved
11	05101281924020	ANUGRAH TRINI	87.7	93.0	90.0	89.6	A	achieved	achieved	achieved	achieved
12	05101281924022	NAFIYA LATIFA	90.7	81.0	93.0	88.8	A	achieved	achieved	achieved	achieved
13	05101281924023	NADYA FITRANTI PUTRI	87.7	99.0	90.1	91.1	A	achieved	achieved	achieved	achieved
14	05101281924024	MAULANA FARHAN	86.0	77.0	89.4	84.6	B	achieved	not achieved	achieved	not achieved
15	05101281924025	CLARISSA PRADYANI WILANDIKA	92.0	100.0	91.5	93.9	A	achieved	achieved	achieved	achieved
16	05101281924027	ALDI JUNANDA	84.3	81.0	87.3	84.2	B	not achieved	achieved	achieved	not achieved
17	05101281924028	BAGUS KRISNA SETYABUDI	87.0	91.0	93.8	89.7	A	achieved	achieved	achieved	achieved
18	05101281924030	SRI WAHYU NINGSIH	87.3	93.0	88.6	89.1	A	achieved	achieved	achieved	achieved
19	05101281924032	RAHMI WIJAYA	88.0	99.0	95.6	92.7	A	achieved	achieved	achieved	achieved
20	05101281924035	OKTA WIDYA NABILLAH	92.3	99.0	93.4	94.3	A	achieved	achieved	achieved	achieved

21	05101281924038	ANTON WAHYUDI	87.0	100.0	88.6	90.7	A		achieved	achieved	achieved	achieved
22	05101281924042	MUHAMMAD IKRAR SANG SAKA	84.3	87.0	83.7	84.8	B		not achieved	achieved	not achieved	not achieved
23	05101281924043	VIRA HERLIANA	89.0	100.0	91.5	92.4	A		achieved	achieved	achieved	achieved
24	05101281924044	CITRA NIRANDA TABRIKAN	88.0	89.0	95.0	90.0	A		achieved	achieved	achieved	achieved
25	05101281924093	RACHMAD DWI PURNAMA	88.7	83.0	63.7	81.0	B		achieved	achieved	not achieved	not achieved
26	05101281924094	ARIF RAHMAN	90.0	93.0	90.8	91.0	A		achieved	achieved	achieved	achieved
27	05101281924095	PRAKTIS E. SIAGIAN	93.2	85.0	81.0	88.1	A		achieved	achieved	not achieved	achieved
28	05101281924099	INA PEBRIANI	90.0	91.0	89.1	90.0	A		achieved	achieved	achieved	achieved
29	05101381924049	GHAZI ISTHAZAMESA	86.0	91.0	92.1	88.8	A		achieved	achieved	achieved	achieved
30	05101381924052	SARAH FADILA	89.0	93.0	94.2	91.3	A		achieved	achieved	achieved	achieved
31	05101381924056	ARIZONA	87.7	89.0	87.0	87.8	A		achieved	achieved	achieved	achieved
32	05101381924058	ARSYANI ZAFIKA	90.3	89.0	91.5	90.3	A		achieved	achieved	achieved	achieved
33	05101381924060	RIZKY TUNGGAL PRATAMA	85.0	95.0	88.7	88.4	A		not achieved	achieved	achieved	achieved
34	05101381924061	MUHAMAD MANSUR	86.0	61.0	92.4	81.4	B		achieved	not achieved	achieved	not achieved
35	05101381924062	FERO TRIATMAJA	92.3	85.0	91.5	90.3	A		achieved	achieved	achieved	achieved
36	05101381924063	ELVINA INDAH CAHYANI	89.3	85.0	93.0	89.2	A		achieved	achieved	achieved	achieved
37	05101381924072	MAWARDI ABI SAHIL	92.0	93.0	89.6	91.7	A		achieved	achieved	achieved	achieved
38	05101381924074	MUHAMMAD FARREL RAYHAN RIZA	84.3	75.0	80.4	81.0	B		not achieved	not achieved	not achieved	not achieved
39	05101381924077	NOVRYANTI ELIZABETH BUTAR BUTAR	84.3	95.0	88.4	88.0	A		not achieved	achieved	achieved	achieved
40	05101381924080	NURAINI SARMA	89.7	87.0	78.9	86.3	A		achieved	achieved	not achieved	achieved
41	05101381924084	MUHAMMAD FANI AKBAR	84.7	58.0	61.6	72.2	B		not achieved	not achieved	not achieved	not achieved

AVERAGE	87.83	88.00	87.89	87.89	33	**Achieved**	33	35	34	33
Achievements of CLO per class	achieved	achieved	achieved	achieved	7	**Not Achieved**	8	6	7	8
					1	**% Achieved**	80.49	85.37	82.93	80.49
					0	**% not achieved**	19.51	14.63	17.07	19.51

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ACHIEVEMENTS IN EVERY CLO IN COURSES SOIL, WATER AND PLANT ANALYSIS

NO.	NIM	NAME	PRACTICUM (30%)	EV-1 (35%)	EV-2 (35%)	CLO 1		CLO 2		CLO 3		CLO 4		Achievement of CLO	
1	05101181924001	AHMAD NUREWAN	95.1	85.0	92.7	90.1	Excellent	90.1	Excellent	93.9	Excellent	93.9	Excellent	92.0	Excellent
2	05101181924003	DANDI FRANANDO	87.3	99.0	86.7	93.2	Excellent	93.2	Excellent	87.0	Excellent	87.0	Excellent	90.1	Excellent
3	05101181924010	CHERLY MELLANIA PRATAMA	93.0	89.0	91.2	91.0	Excellent	91.0	Excellent	92.1	Excellent	92.1	Excellent	91.6	Excellent
4	05101181924011	PUTRI AYU CANDENI	90.3	97.0	92.1	93.7	Excellent	93.7	Excellent	91.2	Excellent	91.2	Excellent	92.4	Excellent
5	05101181924012	YUNI TRI ASTUTI	91.0	89.0	93.6	90.0	Excellent	90.0	Excellent	92.3	Excellent	92.3	Excellent	91.2	Excellent
6	05101181924014	INDAH LARASATI	89.0	75.0	92.1	82.0	Satisfactory	82.0	Satisfactory	90.6	Excellent	90.6	Excellent	86.3	Excellent
7	05101181924018	NABILA RAHMADANI S	85.0	99.0	86.5	92.0	Excellent	92.0	Excellent	85.8	Satisfactory	85.8	Satisfactory	88.9	Excellent
8	05101181924092	M. LUTFAN SUGIHARTO	86.7	97.0	89.6	91.8	Excellent	91.8	Excellent	88.1	Excellent	88.1	Excellent	90.0	Excellent
9	05101281722018	HENDRA WIJAYA	60.0	58.0	63.0	59.0	developing	59.0	developing	61.5	developing	61.5	developing	60.3	developing
10	05101281924019	BONY DWI SAPUTRA	89.7	83.0	90.6	86.3	Excellent	86.3	Excellent	90.1	Excellent	90.1	Excellent	88.2	Excellent
11	05101281924020	ANUGRAH TRINI	87.7	93.0	90.0	90.3	Excellent	90.3	Excellent	88.8	Excellent	88.8	Excellent	89.6	Excellent
12	05101281924022	NAFIYA LATIFA	90.7	81.0	93.0	85.8	Satisfactory	85.8	Satisfactory	91.8	Excellent	91.8	Excellent	88.8	Excellent
13	05101281924023	NADYA FITRANTI PUTRI	87.7	99.0	90.1	93.3	Excellent	93.3	Excellent	88.9	Excellent	88.9	Excellent	91.1	Excellent
14	05101281924024	MAULANA FARHAN	86.0	77.0	89.4	81.5	Satisfactory	81.5	Satisfactory	87.7	Excellent	87.7	Excellent	84.6	Satisfactory
15	05101281924025	CLARISSA PRADYANI WILANDIKA	92.0	100.0	91.5	96.0	Excellent	96.0	Excellent	91.8	Excellent	91.8	Excellent	93.9	Excellent
16	05101281924027	ALDI JUNANDA	84.3	81.0	87.3	82.7	Satisfactory	82.7	Satisfactory	85.8	Satisfactory	85.8	Satisfactory	84.2	Satisfactory
17	05101281924028	BAGUS KRISNA SETYABUDI	87.0	91.0	93.8	89.0	Excellent	89.0	Excellent	90.4	Excellent	90.4	Excellent	89.7	Excellent
18	05101281924030	SRI WAHYU NINGSIH	87.3	93.0	88.6	90.2	Excellent	90.2	Excellent	88.0	Excellent	88.0	Excellent	89.1	Excellent
19	05101281924032	RAHMI WIJAYA	88.0	99.0	95.6	93.5	Excellent	93.5	Excellent	91.8	Excellent	91.8	Excellent	92.7	Excellent
20	05101281924035	OKTA WIDYA NABILLAH	92.3	99.0	93.4	95.7	Excellent	95.7	Excellent	92.9	Excellent	92.9	Excellent	94.3	Excellent
21	05101281924038	ANTON WAHYUDI	87.0	100.0	88.6	93.5	Excellent	93.5	Excellent	87.8	Excellent	87.8	Excellent	90.7	Excellent
22	05101281924042	MUHAMMAD IKRAR SANG SAKA	84.3	87.0	83.7	85.7	Satisfactory	85.7	Satisfactory	84.0	Satisfactory	84.0	Satisfactory	84.8	Satisfactory
23	05101281924043	VIRA HERLIANA	89.0	100.0	91.5	94.5	Excellent	94.5	Excellent	90.3	Excellent	90.3	Excellent	92.4	Excellent
24	05101281924044	CITRA NIRANDA TABRIKAN	88.0	89.0	95.0	88.5	Excellent	88.5	Excellent	91.5	Excellent	91.5	Excellent	90.0	Excellent
25	05101281924093	RACHMAD DWI PURNAMA	88.7	83.0	63.7	85.8	Satisfactory	85.8	Satisfactory	76.2	Satisfactory	76.2	Satisfactory	81.0	Satisfactory
26	05101281924094	ARIF RAHMAN	90.0	93.0	90.8	91.5	Excellent	91.5	Excellent	90.4	Excellent	90.4	Excellent	91.0	Excellent

No	ID	Name														
27	05101281924095	PRAKTIS E. SIAGIAN	93.2	85.0	81.0	89.1	Excellent	89.1	Excellent	87.1	Excellent	87.1	Excellent	88.1	Excellent
28	05101281924099	INA PEBRIANI	90.0	91.0	89.1	90.5	Excellent	90.5	Excellent	89.6	Excellent	89.6	Excellent	90.0	Excellent
29	05101381924049	GHAZI ISTHAZAMESA	86.0	91.0	92.1	88.5	Excellent	88.5	Excellent	89.1	Excellent	89.1	Excellent	88.8	Excellent
30	05101381924052	SARAH FADILA	89.0	93.0	94.2	91.0	Excellent	91.0	Excellent	91.6	Excellent	91.6	Excellent	91.3	Excellent
31	05101381924056	ARIZONA	87.7	89.0	87.0	88.3	Excellent	88.3	Excellent	87.3	Excellent	87.3	Excellent	87.8	Excellent
32	05101381924058	ARSYANI ZAFIKA	90.3	89.0	91.5	89.7	Excellent	89.7	Excellent	90.9	Excellent	90.9	Excellent	90.3	Excellent
33	05101381924060	RIZKY TUNGGAL PRATAMA	85.0	95.0	88.7	90.0	Excellent	90.0	Excellent	86.9	Excellent	86.9	Excellent	88.4	Excellent
34	05101381924061	MUHAMAD MANSUR	86.0	61.0	92.4	73.5	Satisfactory	73.5	Satisfactory	89.2	Excellent	89.2	Excellent	81.4	Satisfactory
35	05101381924062	FERO TRIATMAJA	92.3	85.0	91.5	88.7	Excellent	88.7	Excellent	91.9	Excellent	91.9	Excellent	90.3	Excellent
36	05101381924063	ELVINA INDAH CAHYANI	89.3	85.0	93.0	87.2	Excellent	87.2	Excellent	91.2	Excellent	91.2	Excellent	89.2	Excellent
37	05101381924072	MAWARDI ABI SAHIL	92.0	93.0	89.6	92.5	Excellent	92.5	Excellent	90.8	Excellent	90.8	Excellent	91.7	Excellent
38	05101381924074	MUHAMMAD FARREL RAYHAN RIZA	84.3	75.0	80.4	79.7	Satisfactory	79.7	Satisfactory	82.4	Satisfactory	82.4	Satisfactory	81.0	Satisfactory
39	05101381924077	NOVRYANTI ELIZABETH BUTAR BUTAR	84.3	95.0	88.4	89.7	Excellent	89.7	Excellent	86.4	Excellent	86.4	Excellent	88.0	Excellent
40	05101381924080	NURAINI SARMA	89.7	87.0	78.9	88.3	Excellent	88.3	Excellent	84.3	Satisfactory	84.3	Satisfactory	86.3	Excellent
41	05101381924084	MUHAMMAD FANI AKBAR	84.7	58.0	61.6	71.3	Satisfactory	71.3	Satisfactory	73.1	Satisfactory	73.1	Satisfactory	72.2	Satisfactory
					Average	87.91		87.9		87.9		87.9		87.9	
						Excellent		Excellent		Excellent		Excellent		Excellent	
							%		%		%		%		%
					Excellent	31	72.1	31	72.1	33	76.7	33	76.7	33	76.7
					Satisfactory	9	20.9	9	20.9	7	16.3	7	16.3	7	16.3
					developing	1	2.3	1	2.3	1	2.3	1	2.3	1	2.3
					Unsatisfactory	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

ACHIEVEMENTS FOR EACH ILO SUPPORTED BY SOIL, WATER AND PLANT ANALYSIS COURSE

NO	NIM	NAME	ILO1 (P3)		ILO2 (KU5)		ILO3 (KU7)		ILO4 (KU9)		ILO5 (KK2)		ILO6 (KK3)		ILO7 (KK4)		Average CLO to PLO	Achievement CLO to PLO
1	05101181924001	AHMAD NUREWAN	91.2	Excellent	92.6	Excellent	92.6	Excellent	91.2	Excellent	92.6	Excellent	93.9	Excellent	92.6	Excellent	92.4	Excellent
2	05101181924003	DANDI FRANANDO	91.3	Excellent	89.4	Excellent	89.4	Excellent	91.3	Excellent	89.4	Excellent	87.0	Excellent	89.4	Excellent	89.6	Excellent
3	05101181924010	CHERLY MELLANIA PRATAMA	91.3	Excellent	91.8	Excellent	91.8	Excellent	91.3	Excellent	91.8	Excellent	92.1	Excellent	91.8	Excellent	91.7	Excellent
4	05101181924011	PUTRI AYU CANDENI	92.9	Excellent	92.2	Excellent	92.2	Excellent	92.9	Excellent	92.2	Excellent	91.2	Excellent	92.2	Excellent	92.3	Excellent
5	05101181924012	YUNI TRI ASTUTI	90.7	Excellent	91.5	Excellent	91.5	Excellent	90.7	Excellent	91.5	Excellent	92.3	Excellent	91.5	Excellent	91.4	Excellent
6	05101181924014	INDAH LARASATI	84.6	Satisfactory	87.5	Excellent	87.5	Excellent	84.6	Satisfactory	87.5	Excellent	90.6	Excellent	87.5	Excellent	87.1	Excellent
7	05101181924018	NABILA RAHMADANI S	90.1	Excellent	88.1	Excellent	88.1	Excellent	90.1	Excellent	88.1	Excellent	85.8	Satisfactory	88.1	Excellent	88.4	Excellent
8	05101181924092	M. LUTFAN SUGIHARTO	90.7	Excellent	89.6	Excellent	89.6	Excellent	90.7	Excellent	89.6	Excellent	88.1	Excellent	89.6	Excellent	89.7	Excellent
9	05101281722018	HENDRA WIJAYA	59.8	developing	60.6	developing	60.6	developing	59.8	developing	60.6	developing	61.5	developing	60.6	developing	60.5	developing
10	05101281924019	BONY DWI SAPUTRA	87.5	Excellent	88.8	Excellent	88.8	Excellent	87.5	Excellent	88.8	Excellent	90.1	Excellent	88.8	Excellent	88.6	Excellent
11	05101281924020	ANUGRAH TRINI	89.9	Excellent	89.5	Excellent	89.5	Excellent	89.9	Excellent	89.5	Excellent	88.8	Excellent	89.5	Excellent	89.5	Excellent
12	05101281924022	NAFIYA LATIFA	87.6	Excellent	89.7	Excellent	89.7	Excellent	87.6	Excellent	89.7	Excellent	91.8	Excellent	89.7	Excellent	89.4	Excellent
13	05101281924023	NADYA FITRANTI PUTRI	92.0	Excellent	90.6	Excellent	90.6	Excellent	92.0	Excellent	90.6	Excellent	88.9	Excellent	90.6	Excellent	90.8	Excellent
14	05101281924024	MAULANA FARHAN	83.4	Satisfactory	85.5	Satisfactory	85.5	Satisfactory	83.4	Satisfactory	85.5	Satisfactory	87.7	Excellent	85.5	Satisfactory	85.2	Satisfactory
15	05101281924025	CLARISSA PRADYANI WILANDIKA	94.7	Excellent	93.4	Excellent	93.4	Excellent	94.7	Excellent	93.4	Excellent	91.8	Excellent	93.4	Excellent	93.5	Excellent
16	05101281924027	ALDI JUNANDA	83.6	Satisfactory	84.7	Satisfactory	84.7	Satisfactory	83.6	Satisfactory	84.7	Satisfactory	85.8	Satisfactory	84.7	Satisfactory	84.6	Satisfactory
17	05101281924028	BAGUS KRISNA SETYABUDI	89.4	Excellent	90.0	Excellent	90.0	Excellent	89.4	Excellent	90.0	Excellent	90.4	Excellent	90.0	Excellent	89.9	Excellent
18	05101281924030	SRI WAHYU NINGSIH	89.5	Excellent	88.9	Excellent	88.9	Excellent	89.5	Excellent	88.9	Excellent	88.0	Excellent	88.9	Excellent	88.9	Excellent
19	05101281924032	RAHMI WIJAYA	93.0	Excellent	92.5	Excellent	92.5	Excellent	93.0	Excellent	92.5	Excellent	91.8	Excellent	92.5	Excellent	92.6	Excellent
20	05101281924035	OKTA WIDYA NABILLAH	94.8	Excellent	94.0	Excellent	94.0	Excellent	94.8	Excellent	94.0	Excellent	92.9	Excellent	94.0	Excellent	94.1	Excellent
21	05101281924038	ANTON WAHYUDI	91.8	Excellent	90.0	Excellent	90.0	Excellent	91.8	Excellent	90.0	Excellent	87.8	Excellent	90.0	Excellent	90.2	Excellent
22	05101281924042	MUHAMMAD IKRAR SANG SAKA	85.2	Satisfactory	84.7	Satisfactory	84.7	Satisfactory	85.2	Satisfactory	84.7	Satisfactory	84.0	Satisfactory	84.7	Satisfactory	84.7	Satisfactory
23	05101281924043	VIRA HERLIANA	93.2	Excellent	91.9	Excellent	91.9	Excellent	93.2	Excellent	91.9	Excellent	90.3	Excellent	91.9	Excellent	92.0	Excellent
24	05101281924044	CITRA NIRANDA TABRIKAN	89.4	Excellent	90.5	Excellent	90.5	Excellent	89.4	Excellent	90.5	Excellent	91.5	Excellent	90.5	Excellent	90.3	Excellent
25	05101281924093	RACHMAD DWI PURNAMA	82.9	Satisfactory	79.8	Satisfactory	79.8	Satisfactory	82.9	Satisfactory	79.8	Satisfactory	76.2	Satisfactory	79.8	Satisfactory	80.2	Satisfactory
26	05101281924094	ARIF RAHMAN	91.2	Excellent	90.9	Excellent	90.9	Excellent	91.2	Excellent	90.9	Excellent	90.4	Excellent	90.9	Excellent	90.9	Excellent
27	05101281924095	PRAKTIS E. SIAGIAN	88.5	Excellent	87.9	Excellent	87.9	Excellent	88.5	Excellent	87.9	Excellent	87.1	Excellent	87.9	Excellent	88.0	Excellent

No	ID	Name	Score	Cat	Score	Cat	Score	Cat	Score	Cat	Score	Cat	Score	Cat	Score	Cat	Score	Cat
28	05101281924099	INA PEBRIANI	90.2	Excellent	90.0	Excellent	90.0	Excellent	90.2	Excellent	90.0	Excellent	89.6	Excellent	90.0	Excellent	90.0	Excellent
29	05101381924049	GHAZI ISTHAZAMESA	88.7	Excellent	88.9	Excellent	88.9	Excellent	88.7	Excellent	88.9	Excellent	89.1	Excellent	88.9	Excellent	88.9	Excellent
30	05101381924052	SARAH FADILA	91.2	Excellent	91.5	Excellent	91.5	Excellent	91.2	Excellent	91.5	Excellent	91.6	Excellent	91.5	Excellent	91.4	Excellent
31	05101381924056	ARIZONA	88.0	Excellent	87.8	Excellent	87.8	Excellent	88.0	Excellent	87.8	Excellent	87.3	Excellent	87.8	Excellent	87.8	Excellent
32	05101381924058	ARSYANI ZAFIKA	90.0	Excellent	90.5	Excellent	90.5	Excellent	90.0	Excellent	90.5	Excellent	90.9	Excellent	90.5	Excellent	90.5	Excellent
33	05101381924060	RIZKY TUNGGAL PRATAMA	89.1	Excellent	88.1	Excellent	88.1	Excellent	89.1	Excellent	88.1	Excellent	86.9	Excellent	88.1	Excellent	88.2	Excellent
34	05101381924061	MUHAMAD MANSUR	78.2	Satisfactory	83.5	Satisfactory	83.5	Satisfactory	78.2	Satisfactory	83.5	Satisfactory	89.2	Excellent	83.5	Satisfactory	82.8	Satisfactory
35	05101381924062	FERO TRIATMAJA	89.6	Excellent	90.8	Excellent	90.8	Excellent	89.6	Excellent	90.8	Excellent	91.9	Excellent	90.8	Excellent	90.6	Excellent
36	05101381924063	ELVINA INDAH CAHYANI	88.4	Excellent	89.8	Excellent	89.8	Excellent	88.4	Excellent	89.8	Excellent	91.2	Excellent	89.8	Excellent	89.6	Excellent
37	05101381924072	MAWARDI ABI SAHIL	92.0	Excellent	91.5	Excellent	91.5	Excellent	92.0	Excellent	91.5	Excellent	90.8	Excellent	91.5	Excellent	91.6	Excellent
38	05101381924074	MUHAMMAD FARREL RAYHAN RIZA	80.5	Satisfactory	81.5	Satisfactory	81.5	Satisfactory	80.5	Satisfactory	81.5	Satisfactory	82.4	Satisfactory	81.5	Satisfactory	81.3	Satisfactory
39	05101381924077	NOVRYANTI ELIZABETH BUTAR BUTAR	88.7	Excellent	87.7	Excellent	87.7	Excellent	88.7	Excellent	87.7	Excellent	86.4	Excellent	87.7	Excellent	87.8	Excellent
40	05101381924080	NURAINI SARMA	87.1	Excellent	85.9	Satisfactory	85.9	Satisfactory	87.1	Excellent	85.9	Satisfactory	84.3	Satisfactory	85.9	Satisfactory	86.0	Excellent
41	05101381924084	MUHAMMAD FANI AKBAR	71.9	Satisfactory	72.5	Satisfactory	72.5	Satisfactory	71.9	Satisfactory	72.5	Satisfactory	73.1	Satisfactory	72.5	Satisfactory	72.4	Satisfactory
		Average	87.9		88.0		88.0		87.9		88.0		87.9		88.0		87.9	
			Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent	%
				%		%		%		%		%		%		%		
		Excellent	**32**	74.4	**32**	74.4	**32**	74.4	**32**	74.4	**32**	74.4	**33**	76.7	**32**	74.4	**33**	76.7
		Satisfactory	**8**	18.6	**8**	18.6	**8**	18.6	**8**	18.6	**8**	18.6	**7**	16.3	**8**	18.6	**7**	16.3
		developing	**1**	2.3	**1**	2.3	**1**	2.3	**1**	2.3	**1**	2.3	**1**	2.3	**1**	2.3	**1**	2.3
		Unsatisfactory	**0**	0.0	**0**	0.0	**0**	0.0	**0**	0.0	**0**	0.0	**0**	0.0	**0**	0.0	**0**	0.0