



**Universitas Negeri Surabaya
Vocational Faculty,
D4 Electrical Engineering Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																
Basics of Mechanical Technology	2030502034		T=2 P=0 ECTS=3.18	4	January 2, 2023																																
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																
	Dr. Joko, M.Pd. MT.			Mahendra Widyardono, S.T., M.T.																																
Learning model	Case Studies																																				
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																				
	Program Objectives (PO)																																				
	PLO-PO Matrix																																				
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 100px; height: 30px;">P.O</td> </tr> </table>					P.O																														
P.O																																					
Short Course Description	Identifying types of mechanical or hand work equipment and hand power tools, parts, how to use them, functions and how to care for them to be used in solving problems in making electrical cable connection and soldering products, making electrical panel boxes and supporting components in accordance with applicable regulations , healthy and safe as well as honest and responsible																																				
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td rowspan="2" style="width: 50px;">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.O	Week																																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																					
References	Main :																																				
	<ol style="list-style-type: none"> 1. Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. Teknologi mekanik dalam praktikum. Bandung, Widina Bhakti Persada 2. Erol F. Sumolang, 2017. Modul kerja bangku, pipa dan plat. Politenik Negeri Manado Jurusan Teknik Mesin 3. Nia A., Syaad M., S. Wibawanto. Pekerjaan dasar elektromekanik kabel listrik. Malang, Universitas Negeri Malang 4. Tim, 2013. Pekerjaan dasar elektromekanik. Jakarta, Direktorat Jenderal Peningkatan Mutu Pendidik dan Tenaga Kependidikan Kemdikbud 5. Agung S., 2013. Teknologi mekanik. Jakarta, Direktorat Jenderal Peningkatan Mutu Pendidik dan Tenaga Kependidikan Kemdikbud 																																				
	Supporters:																																				
	<ol style="list-style-type: none"> 1. Peraturan menteri ketenagakerjaan nomor 12 tahun 2015 tentang keselamatan dan kesehatan kerja listrik di tempat kerja 2. Joko, 2023. Handout menerapkan K3 sesuai manual standar operasional prosedur di bidang pekerjaan elektomekanik. Rumpun Teknik Elektro Fakultas Teknik Unesa 3. Joko, 2023 Peralatan elektromekanik elektronika. Rumpun Teknik Elektro FT Unesa 4. Paul Mueller,2020. LMS 11-3 Hand Soldering, Electrical 5. Soldering, 2016. University of Technology Sydney 6. PUIL Tahun 2011 																																				
Supporting lecturer	Prof. Dr. Joko, M.Pd., M.T.																																				
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)																														
		Indicator	Criteria & Form	Offline (offline)	Online (online)																																
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																														

1	Able to analyze and identify K3 according to the standard operational procedure manual in the field of electromechanical work in the field of electrical engineering	1.Explain the concept of K3, determine K3 equipment in the field of electromechanical work, and identify K3 equipment and PPE based on their function 2.Participative	Criteria: 1.Accuracy in explaining K3 concepts, determining K3 equipment in the field of electromechanical work, and identifying K3 equipment based on its function, max score. 50% 2.Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Lecturer's short presentation and discussion; group assignment to explore sources of information and discussions to analyze K3 concepts, identify personal protective equipment, identify work accidents in electromechanical work, and draw conclusions; and reflect. Conclusions uploaded on Google Drive 2 X 50		Material: Electrical occupational safety and health in the workplace Reference: <i>Minister of Manpower Regulation number 12 of 2015 concerning electrical occupational safety and health in the workplace</i> Material: Applying K3 according to the manual for standard operating procedures in the field of electromechanical work. Reference: <i>Joko, 2023. Handout for implementing K3 according to the manual for standard operating procedures in the field of electromechanical work. Electrical Engineering Cluster, Faculty of Engineering, Unesa</i>	4%
2	Able to analyze and identify K3 according to the standard operational procedure manual in the field of electromechanical work in the field of electrical engineering	1.Explain the concept of K3, determine K3 equipment in the field of electromechanical work, and identify K3 equipment and PPE based on their function 2.Participative	Criteria: 1.Accuracy in explaining K3 concepts, determining K3 equipment in the field of electromechanical work, and identifying K3 equipment based on its function, max score. 50% 2.Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Lecturer's short presentation and discussion; group assignment to explore sources of information and discussions to analyze K3 concepts, identify personal protective equipment, identify work accidents in electromechanical work, and draw conclusions; and reflect. Conclusions uploaded on Google Drive 2 X 50		Material: Electrical occupational safety and health in the workplace Reference: <i>Minister of Manpower Regulation number 12 of 2015 concerning electrical occupational safety and health in the workplace</i> Material: Applying K3 according to the manual for standard operating procedures in the field of electromechanical work. Reference: <i>Joko, 2023. Handout for implementing K3 according to the manual for standard operating procedures in the field of electromechanical work. Electrical Engineering Cluster, Faculty of Engineering, Unesa</i>	4%

3	Able to analyze and identify types of hand tools and hand power tools, functions, parts, use and how to care for basic mechanical work in the field of electrical engineering	<p>1. Determine the types of hand tools and hand power tools, functions, parts, how to use and how to care for basic mechanical work soldering and making various types of electrical cable connections</p> <p>2. Participation</p>	<p>Criteria:</p> <p>1. Accuracy in determining types of hand tools and hand power tools, functions, parts, use and how to care for basic mechanical work soldering and making types of electrical cable connections, max score 50%</p> <p>2. Participative, min score 50%</p> <p>Form of Assessment : Portfolio Assessment</p>	<p>Short presentations and discussions, group assignments to explore sources of information and discussions to analyze and identify types, functions, parts, how to use and how to care for hand equipment and hand power tools for basic mechanical work soldering and making types of electrical cable connections, concluding; and reflection. The final results are uploaded to Google Drive 2 X 50</p>		<p>Material: Practical equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practical work.</i> Bandung, Widina Bhakti Persada</p> <hr/> <p>Material: Electronic electromechanical equipment Reference: Joko, 2023 <i>Electronic electromechanical equipment.</i> Unesa FT Electrical Engineering Group</p> <hr/> <p>Material: Making various types of electrical cable connections. Reference: Nia A., Syaad M., S. Wibawanto. <i>Basic electromechanical work of electrical cables.</i> Malang, State University of Malang</p> <hr/> <p>Material: Soldering Reader: Paul Mueller, 2020. <i>LMS 11-3 Hand Soldering, Electrical</i></p> <hr/> <p>Material: Soldering and soldering Reference: Soldering, 2016. <i>University of Technology Sydney</i></p> <hr/> <p>Material: Connection contact measurements Reference: PUJL 2011</p>	4%
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4	Able to analyze and identify types of hand tools and hand power tools, functions, parts, use and how to care for basic mechanical work in the field of electrical engineering	<p>1.Determine the types of hand tools and hand power tools, functions, parts, how to use and how to care for basic mechanical work soldering and making various types of electrical cable connections</p> <p>2.Participation</p>	<p>Criteria:</p> <p>1.Accuracy in determining types of hand tools and hand power tools, functions, parts, use and how to care for basic mechanical work soldering and making types of electrical cable connections, max score 50%</p> <p>2.Participative, min score 50%</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	Short presentations and discussions, group assignments to explore sources of information and discussions to analyze and identify types, functions, parts, how to use and how to care for hand equipment and hand power tools for basic mechanical work soldering and making types of electrical cable connections, concluding; and reflection. The final results are uploaded to Google Drive 2 X 50		<p>Material: Practical equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practical work.</i> Bandung, Widina Bhakti Persada</p> <hr/> <p>Material: Electronic electromechanical equipment Reference: Joko, 2023 <i>Electronic electromechanical equipment.</i> Unesa FT Electrical Engineering Group</p> <hr/> <p>Material: Making various types of electrical cable connections. Reference: Nia A., Syaad M., S. Wibawanto. <i>Basic electromechanical work of electrical cables.</i> Malang, State University of Malang</p> <hr/> <p>Material: Soldering Reader: Paul Mueller, 2020. <i>LMS 11-3 Hand Soldering, Electrical</i></p> <hr/> <p>Material: Soldering and soldering Reference: Soldering, 2016. <i>University of Technology Sydney</i></p> <hr/> <p>Material: Connection contact measurements Reference: PUJL 2011</p>	4%
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5	Able to interpret frame drawings, determine tools for marking workpieces, and procedures for marking metal workpieces	1. Interpret wireframe drawings, determine tools for marking workpieces, and procedures for marking metal workpieces 2. Participation	Criteria: 1. Accuracy of interpreting wireframes, interpreting wireframes, determining tools for marking workpieces, and procedures for marking metal workpieces, max score 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information and discussion to interpret frame drawings, determine tools for marking workpieces, and procedures for marking metal workpieces, conclude; and reflection. Conclusion uploaded to Google Drive 2 X 50		Material: Practical equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practical work.</i> Bandung, Widina Bhakti Persada Material: Bench work tools Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules.</i> Manado State Polytenik, Department of Mechanical Engineering Material: Preparing for metal work Reference: Team, 2013. <i>Basic electromechanical work.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture	4%
6	Able to interpret frame drawings, determine tools for marking workpieces, and procedures for marking metal workpieces	1. Interpret wireframe drawings, determine tools for marking workpieces, and procedures for marking metal workpieces 2. Participation	Criteria: 1. Accuracy of interpreting wireframes, interpreting wireframes, determining tools for marking workpieces, and procedures for marking metal workpieces, max score 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information and discussion to interpret frame drawings, determine tools for marking workpieces, and procedures for marking metal workpieces, conclude; and reflection. Conclusion uploaded to Google Drive 2 X 50		Material: Practical equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practical work.</i> Bandung, Widina Bhakti Persada Material: Bench work tools Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules.</i> Manado State Polytenik, Department of Mechanical Engineering Material: Preparing for metal work Reference: Team, 2013. <i>Basic electromechanical work.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture	4%

7	Able to identify the types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, trimming, smoothing, plates and folding metal plates	<ol style="list-style-type: none"> 1. Identify the types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, planing, smoothing, plating and folding metal plates 2. Participative 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Accuracy in identifying types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, plastering, smoothing, plate and folding metal plates, max score 50% 2. Participative, min score 50% <p>Form of Assessment : Participatory Activities</p>	<p>Short presentations and discussions; group assignment to explore sources of information and conduct group discussions identifying types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, trimming, smoothing, plate and folding metal plates, and conclude; and reflection. The conclusion of the discussion is uploaded to Google Drive 2 X 50</p>		<p>Material: Working on metal plates Reference: Team, 2013. <i>Basic electromechanical work. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i></p> <hr/> <p>Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum. Bandung, Widina Bhakti Persada</i></p> <hr/> <p>Material: Plate work equipment Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules. Manado State Polytenik, Department of Mechanical Engineering</i></p>	3%
8	UTS Material for meetings 1 to 7	<ol style="list-style-type: none"> 1. Create PowerPoint, make presentations, conduct discussions/question and answer, perform, and revise PPT 2. 3. Participation 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Accuracy of the substance of the content and appearance of the PPT, accuracy of the presentation, active discussion/question and answer, appearance and results of the PPT revision, maximum score 50% 2. Participative, min score 50% <p>Form of Assessment : Participatory Activities, Tests</p>	<p>UTS is carried out offline with a classic group presentation using PowerPoint prepared from the 1st-7th meeting. Determination of the material each group presents will be drawn. The revised PPT is based on input, complete with questions and answers during the discussion and complete with presentation documents and answers to supervisors' questions, uploaded to Google Drive 9 X 50</p>			20%

9	Able to identify types of equipment, functions, parts, how to use and how to care for cutting, drilling, trimming, smoothing, plates and folding metal plates	1. Identify the types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, planing, smoothing, plating and folding metal plates 2. Participative	Criteria: 1. Accuracy of types of hand tools, functions, parts, how to use and how to care for cutting, drilling, planing, smoothing, plate and folding metal plates, max score 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information and conduct group discussions to identify types of hand tools, functions, parts, how to use them and how to care for them for cutting, drilling, trimming, smoothing, plating and folding metal plates, and conclude; and reflect. The conclusion of the discussion is uploaded to Google Drive 2 X 50		Material: Working on metal plates Reference: Team, 2013. <i>Basic electromechanical work. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i> Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum. Bandung, Widina Bhakti Persada</i> Material: Plate work equipment Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules. Manado State Polytenik, Department of Mechanical Engineering</i>	3%
10	Able to identify types of equipment, functions, parts, how to use and how to care for cutting, drilling, trimming, smoothing, plates and folding metal plates	1. Identify the types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, planing, smoothing, plating and folding metal plates 2. Participative	Criteria: 1. Accuracy of types of hand tools, functions, parts, how to use and how to care for cutting, drilling, planing, smoothing, plate and folding metal plates, max score 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information and conduct group discussions to identify types of hand tools, functions, parts, how to use them and how to care for them for cutting, drilling, trimming, smoothing, plating and folding metal plates, and conclude; and reflect. The conclusion of the discussion is uploaded to Google Drive 2 X 50		Material: Working on metal plates Reference: Team, 2013. <i>Basic electromechanical work. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i> Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum. Bandung, Widina Bhakti Persada</i> Material: Plate work equipment Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules. Manado State Polytenik, Department of Mechanical Engineering</i>	3%

11	Able to identify types of equipment, functions, parts, how to use and how to care for cutting, drilling, trimming, smoothing, plates and folding metal plates	1. Identify the types of hand tools, functions, parts, how to use and how to care for them for cutting, drilling, planing, smoothing, plating and folding metal plates 2. Participative	Criteria: 1. Accuracy of types of hand tools, functions, parts, how to use and how to care for cutting, drilling, planing, smoothing, plate and folding metal plates, max score 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information and conduct group discussions to identify types of hand tools, functions, parts, how to use them and how to care for them for cutting, drilling, trimming, smoothing, plating and folding metal plates, and conclude; and reflect. The conclusion of the discussion is uploaded to Google Drive 2 X 50	Material: Working on metal plates Reference: Team, 2013. <i>Basic electromechanical work. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i> Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum. Bandung, Widina Bhakti Persada</i> Material: Plate work equipment Reference: Erol F. Sumolang, 2017. <i>Bench, pipe and plate work modules. Manado State Polytenik, Department of Mechanical Engineering</i>	3%
12	Able to identify types of hand tools and hand power tools to be used to install metal plate box panel frames, analyze installation methods and installation techniques	1. Identify the types of hand tools and hand power tools for installing metal plate box panel frames, analyzing installation methods and installation techniques 2. Participative	Criteria: 1. Accuracy of results identifying types of hand tools and hand power tools to be used to install metal plate box panel frames, explaining how to install and installation techniques, mak score. 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information, group discussions to identify types of hand tools and hand power tools to be used to install metal plate frame panel boxes, analyze installation methods and installation techniques, conclude; and reflect. The final results of the discussion are uploaded to Google individually on 2 X 50 drives	Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum. Bandung, Widina Bhakti Persada</i> Material: Assembling a metal plate frame Reference: Team, 2013. <i>Basic electromechanical work. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i> Material: Plate work and hand power tools Reference: Agung S., 2013. <i>Mechanical technology. Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture</i>	4%

13	Able to identify types of hand tools and hand power tools to be used to install metal plate box panel frames, analyze installation methods and installation techniques	1. Identify the types of hand tools and hand power tools for installing metal plate box panel frames, analyzing installation methods and installation techniques 2. Participative	Criteria: 1. Accuracy of results identifying types of hand tools and hand power tools to be used to install metal plate box panel frames, explaining how to install and installation techniques, mak score. 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information, group discussions to identify types of hand tools and hand power tools to be used to install metal plate frame panel boxes, analyze installation methods and installation techniques, conclude; and reflect. The final results of the discussion are uploaded to Google individually on 2 X 50 drives		Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum.</i> Bandung, Widina Bhakti Persada Material: Assembling a metal plate frame Reference: Team, 2013. <i>Basic electromechanical work.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture Material: Plate work and hand power tools Reference: Agung S., 2013. <i>Mechanical technology.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture	3%
14	Able to identify types of hand tools and hand power tools to be used to install metal plate box panel frames, analyze installation methods and installation techniques	1. Identify the types of hand tools and hand power tools for installing metal plate box panel frames, analyzing installation methods and installation techniques 2. Participative	Criteria: 1. Accuracy of results identifying types of hand tools and hand power tools to be used to install metal plate box panel frames, explaining how to install and installation techniques, mak score. 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignment to explore sources of information, group discussions to identify types of hand tools and hand power tools to be used to install metal plate frame panel boxes, analyze installation methods and installation techniques, conclude; and reflect. The final results of the discussion are uploaded to Google individually on 2 X 50 drives		Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum.</i> Bandung, Widina Bhakti Persada Material: Assembling a metal plate frame Reference: Team, 2013. <i>Basic electromechanical work.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture Material: Plate work and hand power tools Reference: Agung S., 2013. <i>Mechanical technology.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture	4%

15	Able to identify the types of equipment, functions, how to use them, how to maintain them to be used to install control components, electrical components, electronic components on panel boxes, how to install them and installation techniques	1. Identify the types of hand tools and hand power tools, functions, parts, how to use them and how to maintain them for installing control components, electrical components, electronic components on panel boxes, how to install them and installation techniques 2. Participative	Criteria: 1. Accuracy of results identifying types of hand tools and hand power tools, functions, parts, how to use, and how to maintain them for installing control components, electrical components, electronic components on panel boxes, how to install and installation techniques, max score. 50% 2. Participative, min score 50% Form of Assessment : Participatory Activities, Portfolio Assessment	Short presentations and discussions; group assignments to explore sources of information, group discussions on types of equipment, functions, how to use them, how to maintain them for installing control components, electrical components, electronic components on panel boxes, how to install them and installation techniques, concluding; and reflect. The results of the discussion are uploaded to Google individually 2 X 50	Material: Mechanical technology equipment Reference: Rizqi Ilmal Y., Juniawan P. Siahaan, 2023. <i>Mechanical technology in practicum.</i> Bandung, Widina Bhakti Persada Material: Assembling a metal plate frame Reference: Team, 2013. <i>Basic electromechanical work.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture Material: Plate work and hand power tools Reference: Agung S., 2013. <i>Mechanical technology.</i> Jakarta, Directorate General for Improving the Quality of Educators and Education Personnel, Ministry of Education and Culture Material: Assembly of electronic components on plates Reference: Joko, 2023 <i>Electronic electromechanical equipment.</i> Unesa FT Electrical Engineering Group	4%
16	UAS: presentation of summary results using PPT whose material starts from the 9th-15th meetings in groups	1. PowerPoint, make presentations, hold discussions and question and answer questions, answer questions, and revise the PPT by adding the results of the question and answer complete with photo documents, and answers to the supervisor's questions. 2. Participative	Criteria: PowerPoint accuracy in substance and beauty, max score 20%; presentation quality, max score. 5%, quality of discussion and questions and answers, max score. 5%; accuracy of answers to lecturer questions, max score 15; Accuracy and honesty with no result of revision, max score 5%. Answering questions, and revising the PPT by adding the results of the questions and answers complete with photo documents, and answers to questions from the lecturer in the development of the technology and a complete report Form of Assessment : Participatory Activities, Tests	Evaluation 3 X 50		30%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	50%
2.	Portfolio Assessment	26%
3.	Test	25%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.