

Universitas Negeri Surabaya Faculty of Engineering , Electrical Engineering Education Undergraduate Study Program

Document Code

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Courses		CODE		Course Family					Credit Weight		S	SEMESTER		Compilation Date	n				
Electrical	Workshop	8320102	017						T=2	P=0	ECTS=3.2	18	4	J	July 17, 202	24			
AUTHOR	IZATION	SP Deve	SP Developer				Cour	Course Cluster Coordinator						Study Program Coordinator		n			
																Dr. Nur Kh	nolis	i, S.T., M.T.	
Learning model																			
Program Learning		gram that is ch	arged to the cou	ırse															
Outcome (PLO)	PLO-14	Able to become engineering skil	a practitioner who lls program (SSC4	can appl	y his know	ledge an	d skills to) develo	p produc	cts in a co	omprel	nensi	ive elec	trical engir	neerir	ng and elec	ctror	nics	
()	Program Object	Program Objectives (PO)																	
	PLO-PO Matrix																		
		P.0	PLO-14																
	PO Matrix at th	e end of each l	earning stage (S	Sub-PO)															П
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	Supporters:																		
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2	Students have the ability to create a culture of occupational health and safety (K3)	1. Describe the types of work equipment and their functions 2. Describe the types of first aid for work accidents 3. Carry out first aid measures for work accidents 4. Carrying out work in an electrical workshop using work equipment 5. Use work equipment by complying with tool SOPs 6. Use materials 7. Operate work safety equipment (fire extinguishers) 8. Keep the work environment clean 9. Clean the work environment 10. Avoid spills of flammable materials 11. Avoid spills of slippery materials 12. Clean up remaining materials and return and/or store materials in their place 13. Obey prohibitory signs in electrical	Criteria: 1.The cognitive domain consists of 2 assessment items with a maximum score of 15 for each item, so that the maximum score. 30 2.The psychomotor domain consists of 10 assessment items with a maximum score for each item. 5, so the max score. 50 3.The affective domain consists of 10 assessment items with a maximum score for each item. 2, so the max score. 20 4.Total max score is 100	Direct learning Presentation, Discussion, Demonstration, assignment Reflection, Demonstration of K3 implementation by students 6 X 50		0%
3	Students have the ability to optimize the use of equipment, tools and materials in electrical workshops	workshops 1. Select tools (type, specifications, units and quantity) according to needs 2. Select materials (type, specifications, units and quantities) according to needs 3. Select equipment spare parts (type, specifications, units and quantity) according to needs 4. Use tools according to needs 4. Use tools according to tool needs and SOP 5. Use materials according to material requirements and SOP 6. Maintain equipment and return it to its place 7. Return the remaining materials to their place 8. Make written and oral reports	1.The psychomotor domain consists of 8 assessment items with a maximum score for each item. 10, so the max score is 80 2.The affective domain consists of 10 assessment items with a maximum score for each item. 2, so the max score. 20 3.Total max score is 100	Hands-on learningPresentationDiscussionDemonstrationReflection 6 x 50		0%

4	Students have management skills to design the manufacture of finished goods for electrical and electronics lab needs (Power Supply)	1.Planning a single phase transformer 2.Make a design drawing for making a single phase transformer 3.Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9. 54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%6
5	Students have management skills to design the manufacture of finished goods for electrical and electroical baneeds (Power Supply)	Planning a single phase transformer Make a design drawing for making a single phase transformer Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9.54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 x 50		0%
6	Students have management skills to design the manufacture of finished goods for electrical and electronics lab needs (Power Supply)	1.Planning a single phase transformer 2.Make a design drawing for making a single phase transformer 3.Determine the need for tools and materials	Criteria: 1.The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9.54 2.The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3.The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4.Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%

7	Students have	1. Planning a single phase transformer 2. Make a design drawing for making a single phase transformer 3. Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9. 54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%
8	Students have management skills to carry out work making single phase transformer coils	1. Planning to manufacture a single phase transformer coker 2. Make drawings of designs for making transformer coils 3. Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9. 54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%
9	Students have management skills to carry out work making single phase transformer coils	1.Planning to manufacture a single phase transformer coker 2.Make drawings of designs for making transformer coils 3.Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9. 54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%

10	Students have management skills to carry out work making single phase transformer coils	1.Planning to manufacture a single phase transformer coker 2.Make drawings of designs for making transformer coils 3.Determine the need for tools and materials	Criteria: 1. The cognitive domain consists of 6 assessment items with a maximum score of 9 for each item, so the maximum score is 9.54 2. The psychomotor domain consists of 4 assessment items with a maximum score for each item. 8, so the max score. 32 3. The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%
11	Students have management skills to carry out installation work, make connections, test the results of winding connections, carry out performance testing of single phase transformer products produced, and report in writing and orally	1.Planning the winding installation on the cocker 2.Make design drawings for installing the windings on the coker, connecting the windings to the connector, and testing 3.Determine the need for tools and materials 4.Installing the windings on the transformer coil 5.Connecting and soldering the ends of the windings on the connectors 6.Test the results of the winding connections on the connector 7.Carry out performance testing of the products produced 8.Evaluate and improve the products produced 9.Report work results in writing and orally	Criteria: 1.The cognitive domain consists of 7 assessment items with a maximum score of 8 for each item, so that the maximum score. 56 2.The psychomotor domain consists of 10 assessment items with a maximum score for each item. 3, so the max score. 30 3.The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 30 4.Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%

12	Students have	1.Planning the	Criteria:	Project-based		0%
	management skills to carry out	winding	 The cognitive 	learningPresentationDiscussionReflectionAssignment		
	installation work,	installation on	domain consists	6 X 50		
	make connections,	the cocker	of 7 assessment			
	test the results of winding	Make design drawings for	items with a maximum score			
	connections, carry	installing the	of 8 for each			
	out performance testing of single	windings on	item, so that the			
	phase transformer	the coker,	maximum score.			
	products produced, and report in	connecting	56			
	writing and orally	the windings	2.The			
		to the connector,	psychomotor domain consists			
		and testing	of 10			
		3.Determine	assessment			
		the need for	items with a			
		tools and	maximum score			
		materials	for each item. 3,, so the max			
		Installing the windings on	score. 30			
		the	3.The affective			
		transformer	domain consists			
		coil	of 10			
		5.Connecting	assessment			
		and soldering the ends of	items with a maximum score			
		the windings	for each item.			
		on the	1.4, so the max			
		connectors	score. 14			
		6.Test the	4.Total max score			
		results of the winding	is 100			
		connections				
		on the				
		connector				
		7.Carry out				
		performance				
		testing of the products				
		produced				
		8.Evaluate and				
		improve the				
		products				
		produced				
		9.Report work results in				
		writing and				
		orally				
13	Students have	1.Planning the	Criteria:	Project-based		0%
13	management skills to carry out	winding	1.The cognitive	learningPresentationDiscussionReflectionAssignment		0%
13	management skills to carry out installation work,	winding installation on	1.The cognitive domain consists			0%
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13	management skills to carry out installation work, make connections, test the results of winding connections, carry out performance testing of single	winding installation on the cocker 2.Make design drawings for installing the windings on	1.The cognitive domain consists of 7 assessment items with a maximum score of 8 for each item, so that the	learningPresentationDiscussionReflectionAssignment		0%
13	management skills to carry out installation work, make connections, test the results of winding connections, carry out performance testing of single phase transformer	winding installation on the cocker 2.Make design drawings for installing the windings on the coker,	1.The cognitive domain consists of 7 assessment items with a maximum score of 8 for each item, so that the maximum score.	learningPresentationDiscussionReflectionAssignment		0%
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14	Students have management skills to carry out installation work, make connections, test the results of winding connections, carry out performance testing of single phase transformer products produced, and report in writing and orally	1.Planning the winding installation on the cocker 2.Make design drawings for installing the windings on the coker, connecting the windings to the connector, and testing 3.Determine the need for tools and materials 4.Installing the windings on the the transformer coil 5.Connecting and soldering the ends of the windings on the connectors 6.Test the results of the winding connections on the connector 7.Carry out performance testing of the products produced 8.Evaluate and improve the products produced 9.Report work results in writing and orally	Criteria: 1.The cognitive domain consists of 7 assessment items with a maximum score of 8 for each item, so that the maximum score. 56 2.The psychomotor domain consists of 10 assessment items with a maximum score for each item. 3, so the max score. 30 3.The affective domain consists of 10 assessment items with a maximum score for each item. 1.4, so the max score. 34 4.Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 X 50		0%
15	Students have management skills to carry out installation work, make connections, test the results of winding connections, carry out performance testing of single phase transformer products produced, and report in writing and orally	1. Planning the winding installation on the cocker 2. Make design drawings for installing the windings on the coker, connecting the windings to the connector, and testing 3. Determine the need for tools and materials 4. Installing the windings on the transformer coil 5. Connecting and soldering the ends of the windings on the connectors 6. Test the results of the winding connections on the connector 7. Carry out performance testing of the products produced 8. Evaluate and improve the produced 9. Report work results in writing and	Criteria: 1. The cognitive domain consists of 7 assessment items with a maximum score of 8 for each item, so that the maximum score. 56 2. The psychomotor domain consists of 10 assessment items with a maximum score for each item. 3, so the max score. 30 3. The affective domain consists of 10 assessment items with a maximum score for each item. 14, so the max score. 14 4. Total max score is 100	Project-based learningPresentationDiscussionReflectionAssignment 6 x 50		0%
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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.

 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 2. 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.
- 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. 4.
- Indicators for assessing abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
- 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.
- 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. 8.
- 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, report based Learning, and other equivalent methods.

 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.