

UNES		, Electri	ical Engir	Un I neerir	iversita Faculty ng Edu	as Neg / of Ei catior	geri Su nginee n Unde	uraba ering ergra	aya Iduat	e Stu	dy Pr	ogran	ı			Docume Code	nt
			:	SEM	ESTE	R LE/	ARNIN	NG F	PLA	N							
Courses		CODE		Course	Family							Credit W	eight	SEM	ESTER	Compilati Date	on
Electric I	notor control	8320103089										T=3 P=0	ECTS=4.	77	6	July 18, 20	024
AUTHOR	IZATION	SP Developer	r					Cours	se Clust	er Coord	linator		1		y Progra	am	
															dinator Nur Kho	is, S.T., M.	т.
Learning model	Case Studies	•															
Program		gram that is charged	d to the cours	se													
Learning Outcom		tives (PO)															
(PLO)	PLO-PO Matrix																
		P.O															
	PO Matrix at th	O Matrix at the end of each learning stage (Sub-PO)															
		P.0							Neek								
		1	2 3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Short Course Descript	direction of rotati	e to explain and demon on, starting current an LC equipment in accore	d starting and	braking c	couplina: at	ble to plan	a solutior	n appro	ach to a	monstrate an electric	e concep c motor	ts of electr control pro	ic motor the blem; and a	ory, spee able to o	d regula perate e	tion, revers ectromagne	ing etic
Referen	ces Main :																
	 Joko, dkl Walter, N 	<. 2016. Modul Praktik <. 2016. Exsperiment S I. 1975. Electric Motor (990. Dasar Teknik Tena et PLC	heet Praktik Pe Control. New Ye	engendali ork: An N	Motor Listr lostrand Re	ik. JTE, F inhold Co	mpany.										
Support lecturer	Prof. Dr. Joko, M Aditya Chandra H	.Pd., M.T. Iermawan, S.ST., M.T.															
Week-	Fendi Achmad, S Final abilities of each learning		uation					Lea Stude	elp Lea rning m ent Assi	ethods, gnments	s,				trning terials	Assessme	ent
	stage (Sub-PO)	Indicator	Criteria &	Form			Offline		stimate	u umej		Online	e (online)	Refe	rences	Weight (70)
(1)	(2)	(3)	(4)					(5)	,			0.1111	(6)		(7)	(8)	
1	Students are able to understand the various types of controllers	 Describe the various types of electric motor control systems Students can describe the components of manual, semi- automatic and automatic electric motor controllers Students can identify manual, semi-automatic and automatic control components) Students can determine (type, specifications, units and quantity) of electric motor components based on the results of 	Criteria: 1. The cogr domain c of 5 item: the max : for each 10, so the max.50 2. The psychom domain c of 7 item: the maxii score for item is 5, total is m 3. The affeet domain c of 10 item the maxii score for three leaa 4. The max score for three leaa outcome:	consists s and score item is e total notor consists s and mum r each s o the tax.35 ctive consists ms and mum r each s o the tax.25 ctive consists s and s o the tax.25 ctive consists s and s o the tax.25 ctive consists s and s o the tax.35 ctive consists s and s o the tax.35 ctive s o the tax.25 ctive s o the tax.25 ctive s o the tax.35 ctive s o tax.35 ctive s o tax.			el Presenta			n Questio	ns and					0%	

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2	Students are able to understand the various types of controllers	 Describe the various types of electric motor control systems Students can describe the components of manual, semi- automatic and automatic and automatic electric motor controllers Students can identify manual, semi-automatic and automatic control Students can determine (type, specifications, units and quantity) of electric motor control components based on the results of observations 	Criteria: 1. The cognitive domain consists of 5 items and the max score for each item is 10, so the total max. 50 2. The psychomotor domain consists of 7 items and the maximum score for each item is 5, so the total is max.35 3. The affective domain consists of 10 items and the maximum score for each item is 2, so the total is max. 20 4. The maximum score for the three learning outcomes domains is 100	Direct learning model Presentation Discussion Questions and answers Practice Assignment Reflection 3 X 50		0%
3	Understand manual DC motor control	 Formulate project objectives, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, motor control power to regulate the starting coupling, starting current, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, speedifications, units and quantity) for DC motor controllers. Assembling DC motor control tools and materials. Carrying out preparatory work, carrying out inspections and repairing DC controller circuits. Operate DC motor controllers, evaluate and improve their performance Create project results reports and present the results 	Criteria: 1. The cognitive domain consists of 6 items, max score. 10 items per item, and a total of max. 60 2. The psychomotor domain consists of 6 items, the maximum score for each item is 5, and the total max. 30 3. The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 4. Max score total. all three domains of learning outcomes 100	Project-based learningPresentationDiscussionAssignmentPracticalReflection 3 X 50		0%

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4	Understand manual DC motor control	 Formulate project objectives, problems, problems, problems obligation Create a drawing design for the control circuit and DC motor control power to regulate the starting coupling, starting current, regulate the direction of rotation, regulate the rotation speed Determine tool requirements (name, specifications, units and quantity) for DC motor controllers. Assembling DC motor control tools and materials. Carrying out preparatory work, carrying out inspections and repairing DC controller circuits. Operate DC motor controllers, evaluate and improve their performance Create project results reports and present the results 	Criteria: 1. The cognitive domain consists of 6 items, max score. 10 items per item, and a total of max. 60 2. The psychomotor domain consists of 6 items, the maximum score for each item is 5, and the total max. 30 3. The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 4. Max score total. all three domains of learning outcomes 100	Project-based learningPresentationDiscussionAssignmentPracticalReflection 3 × 50		0%
5	Understand manual DC motor control	 Formulate project objectives, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, problems, starting coupling, starting current, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the rotation speed 3.Determine tool requirements (name, specifications, units and quantity) for DC motor controllers. A.Assembling DC motor control tools and materials. Carrying out preparatory work, carrying DC controllers, evaluate and improve their performance Create project results reports and present the results 	Criteria: 1. The cognitive domain consists of 6 items, max score. 10 items per item, and a total of max. 60 2. The psychomotor domain consists of 6 items, the maximum score for each item is 5, and the total max. 30 3. The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 4. Max score total. all three domains of learning outcomes 100	Project-based learningPresentationDiscussionAssignmentPracticalReflection 3 × 50		0%

6	Understand manual DC motor control	 Formulate project objectives, problems, problems, problems, problems, objectives, problems, suite dirawing design for the control circuit and DC motor control power to regulate the starting current, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, specifications, units and quantity) for DC motor controllers. Assembling DC motor control tools and materials. Carrying out preparatory work, carrying out inspections and repairing DC controller circuits. Operate DC motor controllers, evaluate and 	Criteria: 1. The cognitive domain consists of 6 items, max score. 10 items per item, and a total of max. 60 2. The psychomotor domain consists of 6 items, the maximum score for each item is 5, and the total max. 30 3. The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 4. Max score total. all three domains of learning outcomes 100	Project-based learningPresentationDiscussionAssignmentPracticalReflection 3 × 50		0%
7	Understand manual	improve their performance 7.Create project results reports and present the results 1.Formulate	Criteria:	Project-based		0%
	control of single phase induction motors	project objectives, problems, problems, problems, problems, protem	 The cognitive domain consists of 6 items, max score. each item 5, and a total of max. 30 The psychomotor domain consists of 6 items, the maximum score for each item is 10, and the total max. 60 The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 Max score total. all three domains of learning outcomes 100 	learningPresentationDiscussionAssignmentPracticalReflection 3 × 50		

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8	Understand manual control of 3 phase	1.Formulate	Criteria:	Project-based learningPresentationDiscussionAssignmentPracticalReflection		0%
	induction motors	project	1.The cognitive	3 X 50		
		objectives,	domain consists	3 × 50		
		problems,	of 6 items, max			
		problem solving	score. 10 items			
		2.Create a	per item, and a			
		drawing design	total of max. 60			
		for the control	2.The			
		circuit and	psychomotor			
		power controller	domain consists			
		for a 3-phase	of 6 items, the			
		induction motor	maximum score			
		to regulate the	for each item is			
		starting current,	5, and the total			
		regulate the	max. 30			
		direction of	3.The affective			
		rotation,	domain consists			
		regulate the	of 10 items, the			
		rotation speed	max score for			
		3.Determine	each item is 1,			
		equipment	and the max			
		requirements	score. 10 4.Max score total.			
		(name,				
		specifications,	all three domains			
		units and	of learning			
		quantity) for	outcomes 100			
		controlling a 3				
		phase induction				
		motor				
		4.Assembling				
		tools and materials to				
		control a 3				
		phase induction motor				
		5.Carrying out				
		preparatory work,				
		inspecting and repairing 3				
		phase induction				
		motor controller				
		circuits				
		6.Operate a 3				
		phase induction				
		motor				
		controller,				
		evaluate and				
		improve its				
		performance				
1		7.Create project				
		results reports				
		and present the				
		results				
		Teaulta				

9	Understand the	1.Formulate	Criteria:	Project-based		0%
	electromagnetic	project	 The cognitive 	learningPresentationDiscussionAssignmentPracticalReflection		
	control of ă 3 phase DOL system	objectives,	domain consists	3 X 50		
	induction motor	problems,	of 6 items, max			
		problem solving	score. 10 items			
		2.Create a design drawing	per item, and a total of max. 60			
		for the control	2.The			
		circuit and	psychomotor			
		electromagnetic	domain consists			
		control power of	of 6 items, the			
		the DOL	maximum score			
		system for a 3	for each item is			
		phase induction motor to	5, and the total max. 30			
		regulate the	3.The affective			
		starting current,	domain consists			
		regulate the	of 10 items, the			
		direction of	max score for			
		rotation,	each item is 1,			
		regulate the	and the max			
		rotation speed 3.Determine the	score. 10 4.Max score total.			
		equipment	all three domains			
		requirements	of learning			
		(name,	outcomes 100			
		specifications,				
		units and				
		quantity) for				
		electromagnetic				
		control of the DOL system for				
		a 3 phase				
		induction motor				
		to regulate the				
		starting current,				
		regulate the				
		direction of				
		rotation, regulate the				
		rotation speed				
		4.Assembling				
		tools and				
		materials for				
		electromagnetic				
		control of the 3 phase DOL				
		induction motor				
		system to				
		regulate the				
		starting current,				
		regulate the				
		direction of				
		rotation, regulate the				
		rotation speed				
		5.Carrying out				
		preparatory				
		work, carrying				
		out inspections				
		and repairing the				
		electromagnetic				
		control circuit				
		for the DOL 3				
		phase induction				
		motor system to regulate the				
		starting current,				
		regulate the				
		direction of				
		rotation,				
		regulate the				
		rotation speed 6.Operate the				
		electromagnetic				
		controller of the				
		DOL system for				
		a 3 phase				
		induction motor				
		to regulate the				
		starting current, regulate the				
		direction of				
		rotation,				
		regulate the				
		rotation speed,				
		evaluate and				
		improve its				
		performance 7.Create project				
		results reports				
		and present the				
		results				
L				1		

10	Understand the	1.Formulate	Criteria:	Project-based		0%
	electromagnetic	project	1.The cognitive	learningPresentationDiscussionAssignmentPracticalReflection		
	control of a 3 phase DOL system induction motor	objectives,	domain consists	3 X 50		
	induction motor	problems,	of 6 items, max			
		problem solving	score. 10 items			
1		2.Create a	per item, and a total of max. 60			
		design drawing for the control	2.The			
		circuit and	psychomotor			
		electromagnetic	domain consists			
		control power of	of 6 items, the			
		the DOL	maximum score			
		system for a 3	for each item is			
		phase induction	5, and the total max. 30			
		motor to regulate the	3.The affective			
		starting current,	domain consists			
		regulate the	of 10 items, the			
		direction of	max score for			
		rotation,	each item is 1,			
		regulate the	and the max			
		rotation speed 3.Determine the	score. 10 4.Max score total.			
		equipment	all three domains			
		requirements	of learning			
1		(name,	outcomes 100			
1		specifications,				
1		units and				
1		quantity) for				
1		electromagnetic control of the				
		DOL system for				
1		a 3 phase				
		induction motor				
1		to regulate the				
		starting current,				
		regulate the direction of				
		rotation,				
		regulate the				
		rotation speed				
		4.Assembling				
		tools and				
		materials for				
		electromagnetic control of the 3				
		phase DOL				
		induction motor				
1		system to				
		regulate the				
		starting current,				
		regulate the direction of				
		rotation,				
		regulate the				
		rotation speed				
		Carrying out				
		preparatory				
		work, carrying				
		out inspections and repairing				
		the				
1		electromagnetic				
1		control circuit				
1		for the DOL 3				
		phase induction motor system to				
		regulate the				
1		starting current,				
1		regulate the				
1		direction of				
1		rotation, regulate the				
1		regulate the rotation speed				
1		6.0perate the				
1		electromagnetic				
1		controller of the				
1		DOL system for				
1		a 3 phase				
1		induction motor to regulate the				
1		to regulate the starting current,				
1		regulate the				
1		direction of				
		rotation,				
1		regulate the				
1		rotation speed,				
1		evaluate and				
1		improve its performance				
		7.Create project				
1		results reports				
		and present the				
		results				
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11	Understanding	1.Formulate	Criteria:	Project-based		0%
	automatic 3 phase		1.The cognitive	learningPresentationDiscussionAssignmentPracticalReflection		
	electromagnetic	project		3 X 50		
	automatic 3 phase electromagnetic induction motor	objectives,	domain consists	3 × 30		
	controllers	problems,	of 6 items, max			
		problem solving	score. 10 items			
		2.Create a	per item, and a			
		drawing design	total of max. 60			
		for the control	2.The			
		circuit and	psychomotor			
			domain consists			
		automatic				
		electromagnetic	of 6 items, the			
		power control of	maximum score			
		a 3 phase	for each item is			
		induction motor	5, and the total			
		to regulate the	max. 30			
		starting current	The affective			
		of the triangular	domain consists			
		star and	of 10 items, the			
			max score for			
		regulate the	each item is 1,			
		direction of				
		rotation	and the max			
		3.Determine	score. 10			
		equipment	4.Max score total.			
		requirements	all three domains			
		(name,	of learning			
		specifications,	outcomes 100			
		units and				
		quantity) for				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors				
		4.Assembling				
		tools and				
		materials for				
		automatic				
		electromagnetic				
		control of a 3				
		phase induction				
		motor				
		Carrying out				
		preparatory				
		work, carrying				
		out inspections				
		and repairing				
		automatic				
		electromagnetic				
		control circuits				
		for 3 phase				
		induction				
		motors				
		Operate				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors,				
		evaluate and				
		improve their				
		performance				
		Create project				
		results reports				
		and present the				
		results				
-						

12	Understanding automatic 3 phase electromagnetic induction motor	1.Formulate	Critoria			00/
			Criteria:	Project-based		0%
	automatic 3 phase	project	1.The cognitive	learningPresentationDiscussionAssignmentPracticalReflection		
	electromagnetic	objectives,	domain consists	3 X 50		
	induction motor		of 6 items, max			
	controllers	problems,				
		problem solving	score. 10 items			
		2.Create a	per item, and a			
		drawing design	total of max. 60			
		for the control	2.The			
		circuit and	psychomotor			
		automatic	domain consists			
		electromagnetic	of 6 items, the			
		power control of	maximum score			
		a 3 phase	for each item is			
		induction motor	5, and the total			
		to regulate the	max. 30			
		starting current	3.The affective			
		of the triangular	domain consists			
		star and	of 10 items, the			
		regulate the	max score for			
		direction of	each item is 1,			
			and the max			
		rotation				
		3.Determine	score. 10			
		equipment	Max score total.			
		requirements	all three domains			
		(name,	of learning			
		specifications,	outcomes 100			
		units and				
		quantity) for				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors				
		4.Assembling				
		tools and				
		materials for				
		automatic				
		electromagnetic				
		control of a 3				
		phase induction				
		motor				
		Carrying out				
		preparatory				
		work, carrying				
		out inspections				
		and repairing				
		automatic				
		electromagnetic				
		control circuits				
		for 3 phase				
		induction				
		motors 6 Operate				
		6.Operate				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors,				
		evaluate and				
		improve their				
		performance				
		7.Create project				
		results reports				
		and present the				
		results				
		1050115				

13	Understanding	1.Formulate	Criteria:	Project-based		0%
	automatic 3 phase	project	1.The cognitive	learningPresentationDiscussionAssignmentPracticalReflection		
	electromagnetic			3 X 50		
	Understanding automatic 3 phase electromagnetic induction motor	objectives,	domain consists	0.000		
	controllers	problems,	of 6 items, max			
		problem solving	score. 10 items			
		2.Create a	per item, and a			
		drawing design	total of max. 60			
		for the control	2.The			
		circuit and	psychomotor			
		automatic	domain consists			
			of 6 items, the			
		electromagnetic				
		power control of	maximum score			
		a 3 phase	for each item is			
		induction motor	5, and the total			
		to regulate the	max. 30			
		starting current	The affective			
		of the triangular	domain consists			
		star and	of 10 items, the			
		regulate the	max score for			
		direction of	each item is 1,			
		rotation	and the max			
		3.Determine	score. 10			
		equipment	Max score total.			
		requirements	all three domains			
		(name,	of learning			
		specifications,	outcomes 100			
		units and	000001100 100			
		quantity) for				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors				
		4.Assembling				
		tools and				
		materials for				
		automatic				
		electromagnetic				
		control of a 3				
		phase induction				
		motor				
		5.Carrying out				
		preparatory				
		work, carrying				
		out inspections				
		and repairing				
		automatic				
		electromagnetic				
		control circuits				
		for 3 phase				
		induction				
		motors				
		6.Operate				
		automatic				
		electromagnetic				
		controllers for 3				
		phase induction				
		motors,				
		evaluate and				
		improve their				
		performance				
		7.Create project				
		results reports				
		and present the				
		results				

14 Lucerstand spinuse inductor project optication project projec							
3 phase induction motions 2 phase inducton problems,	14	Understand	 Formulate 	Criteria:	Project-based		0%
micros protections		electronic control of 3 phase induction	project				
of terms, max problems, adving 2. Create a drawing dissign created and prover controller for a 3 phases induction motor to regulate the sore 10 items, the maximum score for act items dramin consists of terms, the maximum score for act items sore 10 items, the maximum score for act items, the maximum score for act items sore 10 items, the maximum score for act items, the maximum score for act items sore 10 items, the max score for each items 1, act items 0, sore 10 items, the max score for each items 1, domain consists of laterning corter la 3 phase induction motor dots and motor dots and motor controller sore 10 sore 10 for action la 3 phase induction motor dots and motor controller sore total and reparing electronically, evaluate and improve items TCreater proste and present items for action proste for action la 3 phase induction motor controller for actitems for action la 4 for actitems	1	motors	objectives,	domain consists	3 X 50		
score. 10 fems a drawing design a drawing design b for the control control a sphase induction motor to requilate the addression addression induction motor to requilate the addression addression explore addression addression addression explore addression add	1			of 6 items, max			
2.Create a drawing design for the control per (ten, and a total of max. 60 2.The paysbornders 2.The paysbornders drawing design for the control 2.The paysbornders drawing design power controller to regulate the direction of rotation, regulate the drawing design 3.The affective domain consists of 10 tens. the max 3.Determine equipment 3.The affective domain consists of 10 tens. the max 4.Max score total, regulate the control control outcomesity, and the max score 1.0 4.Max score total, quantity for materials to control a3 phase induction motor motor control a3 phase induction motor control outcomesity electronically 5.Carphine control outcomesiton motor mot			problem solving	score. 10 items			
in the controller 2. The induction motor domain consists induction motor induction motor <				per item, and a			
circuit and power controller for a 3-phase induction motor to regulate the starting current reductors to re- reductor of the total regulate the rotation, speed automatically. 3. Determine equipment equipment requirements (name: equipment equipment equipment requirements (name: equipment equipmen			drawing design	total of max. 60			
bowe controller for a 3-bhase induction motor to regulate the starting current, regulate the direction of creating them is starting current, regulate the direction of creating direction of creating direction of creating direction of creating direction of creating direction of creating direction of creating direction direction creating direction direction creating direction direction creating direction d				2.The			
induction motor induction motor			circuit and	psychomotor			
induction motor of 6 items, the maximum scree induction motor reach item is standing current regulate the direction of athenations scree regulate the athenations regulate the athenations regulate the athenations regulate the regulate the regulate the regulate the requirement regulate the requirement requirement requirement requirement requirement of latimet of the screek requirement requirement requirement reactimet			power controller	domain consists			
induction motor to regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of regulate the direction of to observe direction of directions direction of directions direction of directions direction of directions direction of directions direction of directions direction of directions direction of directions directions direction directions dire							
to regulate the starting current regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of rotation, regulate the direction of automatically 3.Determine equipment equipment specifications, specifications, specifications, units and quantity for electronically controlling a 3- phase induction materials to control a 3- phase induction meter electronically 5.Carrying out preparatory work, carrying out inspections and regaring electronical biolis and materials to control a 3- phase induction motor out inspections and regaring electronical biolis and materials to control a 3- phase induction motor out inspections and regaring electronical biolis and materials to control a 3- phase induction motor control cituits 6.Operate a 3- phase induction motor controler evaluate and improve its peformance 7.Create project results reports and present the							
stanting current. regulate the orbation of rotation, regulate the orbation consists orbation speed automatically. 3.Determine equipment requirements specifications units and quantily for outcomes 100 quantily for out inspections and reparing electronically, evaluate and improve its performance 7.Create project results reports and present the							
Image: specific term amax. 30 direction of rotation, regulate the rotation speed automatically 3.The affective domain consists of 01 Dires, the max score for each time is 1, and the max score for each time is 1, and time domains of learning outcomes 100 quantity for electronically controlling a 3- phase induction motor 4. Assembling tools and materials to control a 3 phase induction motor out or control electronically for controller electronically electronically for controller electronically							
direction of rotation, regulate the rotation speed automatcally. 3.The affective domain consists of 10 items, the max score for each item is 1, and the max score. 10 3.Determine equipment requirements, specifications generation quantity for electronically controlling a 3 protection down rotor and the max score. 10 4.Max score total. all three domains of learning outcomes 1.00 and the max score. 10 4.Max score total. all three domains of learning outcomes 1.00 4.Max score total. all three domains of learning controlling a 3 protection motor 4.Max score total. all three domains of learning outcomes 1.00 4.Max score total. all three domains of learning outcomes 1.00 5.Carrying out preparatory work, carrying out inspections and repaining electronically. 5.Carrying out preparatory work carrying out inspections and present the 6.Octis preformance 7. Create project results reports and present the							
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require the rotation speed of 10 items, the rotation speed automatically. each item is 1, 3. Determine and the max equipment 4.Max sore total. requirements 4.Max sore total. right all three domains specifications, outcomes 100 quantify for outcomes 100 graphase induction motor <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
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15	Understand the control of a 3 phase induction motor with a PLC	 Formulate project objectives, problems, problems solving Create a design for a control circuit (leader diagram) and control power for a 3-phase induction motor to regulate the starting current, regulate the direction of rotation, and regulate the 	Criteria: 1. The cognitive domain consists of 6 items, max score. 10 items per item, and a total of max. 60 2. The psychomotor domain consists of 6 items, the maximum score for each item is 5, and the total max. 30 3. The affective domain consists of 10 items, the max score for	Project-based learningPresentationDiscussionAssignmentPracticalReflection 3 X 50		0%
		units and quantity) for controlling a 3 phase induction motor with PLC 4.Assembling tools and materials to control a 3 phase induction motor with a PLC 5.Carrying out preparatory work, inspecting and repairing 3 phase induction motor controller circuits with PLC 6.Operate a 3 phase induction motor controller with a PLC, evaluate and improve its performance 7.Create project results reports and present the results	outcomes 100			
16						0%

Evaluation Percentage Recap: Case Study No Evaluation Percentage 0%

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. Indicators for assessing ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student 5. 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. 6.

- 7. Forms of assessment: test and non-test.
- Forms of learning: Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service 8. and/or other equivalent forms of learning.
 Learning Methods: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Collaborat
- 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.