

| 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% | |

| | 1 | - | | 1 | | |
|---|---|--|--|---|--|----|
| 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% |

| - | | | | | | |
|---|---------------------------------------|---|--|--|--|----|
| 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 | | |

| | the standard second | 4 | a :: : | | 1 | 00/ |
|---|---|-------------------------------|---------------------------------|--|---|-----|
| 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 | | | | |
| | | | | | | |
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| 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 | | | | |
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| | | | | | | |

| 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 | | |
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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% |
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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.