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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Electric Power System Simulation	8320102165		T=2	P=0	ECTS=3.18	6	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Nur Kholis, S.T., M.T.

Learning model	**Project Based Learning**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Short Course Description	This course discusses the basic principles of power system simulation in the basics of electric power systems, 1 and 3 phase alternating current circuits, complex power, complex power flow, balanced 3-phase power, per-unit systems, power flow analysis using MATLAB program
References	**Main :**

1. Anderson, P.M., 1973, &ldquoAnalysis of Faulted Power Systems, IEEE Press
2. Gonen, Turan, 1998, &ldquo Modern Power System Analysis &ldquo, John Wiley & Sons
3. Gross, C.A., 1983, &ldquo Power System Analysis&rdquo, 2nd Editon, John Wiley & Sons
4. Saadat, Hadi, 1999, &ldquoPower System Analysis&rdquo, Mc-Graw Hill
5. Stevenson, W.D., 1982, &ldquo Elements of Power System Analysis&rdquo, 2nd Edition, Mc-Graw Hill
6. Stevenson W.D.Jr., Grainger J.J., 1994, &ldquoPower System Analysis&rdquo, Mc-Graw Hill

	Supporters:
Supporting lecturer	Dr. Tri Rijanto, M.Pd., M.T. Ibrohim, S.T., 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 understand the basic meaning of system simulation	1. Explain the basics of simulation models 2. Explain the simulation system	**Criteria:** 1. The assessment criteria are carried out by looking at aspects: 2. Participation: carried out by observing student activities (weight 2) UTS: carried out with assessments during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3. Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentation, discussion and reflection 2 X 50			0%
2	Able to understand system modeling	Explain the basics of simulation models	**Criteria:** 1. The assessment criteria are carried out by looking at aspects: 2. Participation: carried out by observing student activities (weight 2) UTS: carried out with assessments during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3. Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentations, discussions and assignments 2 X 50			0%

3	Able to understand system simulation software	1. Explain the basics of simulation software 2. Explain the classification of simulation software	**Criteria:** 1. The assessment criteria are carried out by looking at aspects: 2. Participation: carried out by observing student activities (weight 2) UTS: carried out with assessments during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3. Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentations, discussions and assignments 2 X 50			0%
4	Able to understand the meaning of statistical probability	Explain the basics of statistical probability	**Criteria:** 1. The assessment criteria are carried out by looking at aspects: 2. Participation: carried out by observing student activities (weight 2) UTS: carried out with assessments during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3. Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentations, discussions and assignments 2 X 50			0%

5	Able to understand statistical probability, time series system simulation	1. Explain the applications of probability and statistics 2. Explaining time series	**Criteria:** 1. The assessment criteria are carried out by looking at aspects: 2. Participation: carried out by observing student activities (weight 2) UTS: carried out with assessments during the middle of the semester (weight 2) UAS: carried out every semester to measure all indicators (weight 3) Assignments: carried out on each indicator (weight 3) Value Student End: 3. Participation Score (2) x Assignment Score (3) x UTS Score (2) x UAS Score (3) divided by 10.	Presentations, discussions and assignments 2 X 50			0%
6	UTS			2 X 50			0%
7							0%
8							0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Project Based Learning

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.

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.