	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Physics Education Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Electromagnetics	8420302049		T=2	P=0	ECTS=3.18	7	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Mita Anggaryani, M.Pd., Ph.D.

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	Boundary condition problems: electrostatic problems; microscopic theory of dielectric materials: molecular electric fields, polar molecules, permanent electric polarization; dispersive medium: linearity and casuality, frequency response and dispersion relationships; electromagnetic radiation: radiation by dipole oscillations, radiation by group motion of charges; electrodynamics: Lineart-Wiechart potential; presentation of scientific papers.
References	**Main :**
	1. David J Griffiths. 1999. Introduction to Electrodynamics. second edition. Prentice Hall International. 2. Reitz, J.R. et al. 1993. Foundation of Electromagnetic Theory. fourth edition. Addison Wesley.
	Supporters:
Supporting lecturer	

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	Understand the concept of boundary conditions and apply the concept to Laplace‘s equation problems in coordinate systems and shading methods	1. Explain the concept of boundary conditions 2. Presents electrostatic calculations with Laplace and Poisson‘s equations 3. Applying the concept of Poisson‘s Laplace equation in spherical and cylindrical coordinate systems using the shadow method.	**Criteria:** Complete resume of discussions held.	Discussion and presentation 2 X 50			0%
2	Understand the concept of boundary conditions and apply the concept to Laplace‘s equation problems in coordinate systems and shading methods	1. Explain the concept of boundary conditions 2. Presents electrostatic calculations with Laplace and Poisson‘s equations 3. Applying the concept of Poisson‘s Laplace equation in spherical and cylindrical coordinate systems using the shadow method.	**Criteria:** Complete resume of discussions held.	Discussion and presentation 2 X 50			0%
3							0%
4							0%
5							0%
6							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.