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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Engineering Physics II	2120102021		T=2	P=0	ECTS=3.18	2	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Ir. Priyo Heru Adiwibowo, S.T., M.T.

Learning model	**Case Studies**
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	Students are able to communicate an understanding of the concepts of electric fields, electric potential, direct electric current, magnetic fields, resistance capacitors, induced emf, alternating current
References	**Main :**

1. Diah Wulandari. Fisika Teknik II. 2014.
2. Frederick j. Bueche. Schaum & rsquos Outline of theory and problems of College Physics. edisi Kesepuluh. Erlangga. 2006.
3. Halliday, Resnick, Jearl Walker.Principles Of Physics. Ninth Edition. John Wiley & Son. 2011.
4. Sears Zemansky. Fisika untuk Universitas 2. Binacipta. 1986.

Supporters:	
Supporting lecturer	Diah Wulandari, S.T., M.T. Bellina Yunitasari, S.Si., M.Si.

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	Students are able to communicate their understanding of Coulomb‘s law	1. Students Can: Explain electric charge 2. Explain the structure of the atom 3. Explain electroscope and electrometer 4. Explain conductors and insulators 5. Explain the loading of an object by induction 6. Explain Coulomb‘s law	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
2	Students are able to communicate their understanding of the concepts of electric force, electric field and Gauss‘s law in a charge distribution	1. Students can: Formulate Coulomb‘s law 2. Explains the electric field by the distribution of electric charge 3. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
3	Students are able to communicate their understanding of the concepts of electric force, electric field and Gauss‘s law in a charge distribution	1. Students can: Formulate Gauss‘s law 2. Applying Coulomb‘s and Gauss‘s laws to find the electric field for continuous charge distribution	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
4	Students are able to communicate their understanding of the concepts of electric potential and electrical potential energy and their relationships	1. Students can: Formulate electric potential and its relationship to electric fields 2. Finding the electric potential by the distribution of electric charge by point and continuous charge distribution 3. Formulate electric potential energy and its relationship to electric force/field and electric potential 4. Find the potential energy difference between two points in an electric field	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%

5	Students are able to formulate the working principles of capacitors and apply them	1. Students can: Formulate how parallel plate capacitors work 2. Analyzing capacitor circuits 3. Explain the effect of dielectric on the capacitance of parallel plate capacitors 4. Determines the energy stored in a charged capacitor	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
6	Students are able to communicate their understanding of current, resistance and electromotive force	1. Students can: Analyze electric current and current density 2. Determine the resistance of a conductor 3. Explain electromotive force 4. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
7	Students are able to communicate their understanding of direct current circuits and their devices	1. Students can: Calculate the size of resistors in series and parallel 2. Analyzing Kirchoff‘s laws 3. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
8	-	UTS	**Criteria:** Full marks are obtained if you do all the questions correctly	- 2 X 50			0%
9	Students are able to communicate their understanding of magnetic induction and magnetic force	1. Students can: Formulate magnetic induction around a wire carrying an electric current (Biot Savart‘s law) 2. Formulate Ampere‘s law 3. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
10	Students are able to communicate their understanding of magnetic induction and magnetic force	1. Students can: Explain the Lorentz Force 2. Explain the rotation period of an electric charge.	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
11	Assignment Presentation	-	**Criteria:** Completeness of reports on the results of electrical and magnetic system analysis	- 2 X 50			0%
12	Assignment Presentation	-	**Criteria:** Completeness of reports on the results of electrical and magnetic system analysis	- 2 X 50			0%

13	Students are able to communicate their understanding of induced electromotive forces	1. Students can: Formulate Faraday's concept of electromagnetic induction 2. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
14	Students are able to communicate their understanding of alternating current, its interrelationships, and its applications	1. Students can: Formulate alternating current and voltage and their parameters 2. Solve simple AC circuit problems consisting of R, L, and C using phasor diagrams	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
15	Students are able to communicate their understanding of alternating current, its interrelationships, and its applications	1. Students can: Explain resonance events in RLC circuits 2. Explaining the Transformer Concept 3. Convey ideas/questions	**Criteria:** Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
16	Final exams			2 X 50			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.
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.