	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
Engineering Mathematics II	8320103060		T=3	P=0	ECTS=4.77	2	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Nur Kholis, 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	This course discusses Complex Numbers, Systems of linear equations, matrices, and determinants, Vectors, Integrals, Differentiation, Laplace Transformation, Fourier Series, Z Transformation, and Inverse Z Transformation. In addition, it discusses the application of this topic to special phenomena for electrical engineering or information technology.
References	**Main :**
	1. 1. Mursita, Danang. 2011. *Matematika untuk Perguruan Tinggi . . Bandung: Rekayasa Sains.* 2. K.A. Stroud. 2015. Matematika untuk Teknik. Bandung: Erlangga 2. Attenborough Mary, Mathematics for Electrical Engineering and Computing, f Elsevier Linacre House, Jordan Hill, Oxford, 2003
	Supporters:
Supporting lecturer	Dr. Lilik Anifah, S.T., M.T. Yuli Sutoto Nugroho, S.Pd., M.Pd.

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 solve Complex Number problems	Students are able to solve the Complex Number problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
2	Students are able to solve Complex Number problems	Students are able to solve the Complex Number problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
3	Students are able to solve Systems of linear equations, matrices, and determinants problems	Students are able to solve the Systems of linear equations, matrices, and determinants problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
4	Students are able to solve Systems of linear equations, matrices, and determinants problems	Students are able to solve the Systems of linear equations, matrices, and determinants problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
5	Able to solve engineering problems regarding vectors	Students are able to solve the vector problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
6	Students are able to apply integral material in solving given integral problems	Students are able to solve the vector problems given		Direct Instruction and Problem Based Learning 3 X 50			0%
7	Students are able to solve the problems given by Gauss‘s Divergence Theorem and Stokes‘ Theorem	Students are able to solve the problems given by Gauss‘s Divergence Theorem and Stokes‘ Theorem		Direct Instruction and Problem Based Learning 3 X 50			0%
8	UTS			3 X 50			0%
9	Students are able to explain differentiation, and this knowledge allows them to understand phenomena specific to electrical engineering or information technology.	Students are able to explain differentiation well. Students are able to solve problems using differentiation well and with this knowledge they explain special phenomena in the field of electrical engineering or information technology.		Blended learning 3 X 50			0%

10	Students are able to explain differentiation, and this knowledge allows them to understand phenomena specific to electrical engineering or information technology.	Students are able to explain differentiation well. Students are able to solve problems using differentiation well and with this knowledge they explain special phenomena in the field of electrical engineering or information technology.		Blended learning 3 X 50			0%
11	Students are able to explain the Laplace Transformation well. Students are able to solve problems using the Laplace Transformation well. Students explain the application of the Laplace Transformation in the field of electrical engineering or information technology.	Solving problems using the Laplace Transformation Explains the application of the Laplace Transformation in the fields of Electrical Engineering and Information Technology		Direct learning and Blended learning 3 X 50			0%
12	Students are able to explain the Laplace Transformation well. Students are able to solve problems using the Laplace Transformation well. Students explain the application of the Laplace Transformation in the field of electrical engineering or information technology.	Solving problems using the Laplace Transformation Explains the application of the Laplace Transformation in the fields of Electrical Engineering and Information Technology		Direct learning and Blended learning 3 X 50			0%
13	Students are able to explain the Fourier Series, and this knowledge allows them to understand phenomena specific to electrical engineering or information technology.	Students are able to explain Fourier Series well. Students are able to solve problems using Fourier Series well and explain the application of Fourier Series in the field of electrical engineering or information technology.		Direct Instruction, PBL, and Blended Learning 3 X 50			0%
14	Students are able to explain the Z Transformation, and this knowledge allows them to understand phenomena specific to electrical engineering or information technology.	Students are able to explain the Z Transformation well. Students are able to solve problems using the Z Transformation well. Students are able to explain the application of the Z Transformation in the field of electrical engineering or information technology.		Direct Instruction, PBL, and Blended Learning 3 X 50			0%

15	Students are able to explain the Inverse Z Transformation and its application in electrical engineering or information technology.	Students are able to explain the Inverse Z Transformation well. Students are able to solve problems using the Z Inverse Transformation well		Direct Instruction, PBL, and Blended Learning 3 X 50			0%
16	UAS			3 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.