



**Universitas Negeri Surabaya
Faculty of Engineering
Civil Engineering Undergraduate Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																
Engineering Mathematics	2220102043		T=2	P=0	ECTS=3.18	3	July 18, 2024																																
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																	
			Yogie Risdianto, 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																																					
Short Course Description	PO Matrix at the end of each learning stage (Sub-PO)																																						
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="padding: 5px;">P.O</td> <td colspan="16" style="text-align: center; padding: 5px;">Week</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">9</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">11</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">13</td> <td style="padding: 5px;">14</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">16</td> </tr> </table>						P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																							
References	<p>Main :</p> <ol style="list-style-type: none"> 1. Louis Leithold. 1991. Kalkulus dan Ilmu Ukur Analitik, Edisi 5 . Jakarta 2. Purcell dan Verberg. 1992. Kalkulus dan Geometri Analitis. Jakarta: Erlangga 3. Stroud, K.A. 1986. Matematika Untuk Teknik. Penerbit: Erlangga, Jakarta. 4. Baisuni, M.H. 1986. Kalkulus . Jakarta: Universitas Indonesia <p>Supporters:</p>																																						
Supporting lecturer	Ninik Wahyu Hidajati, S.Si., M.Si. Dr. Dian Savitri, S.Si., M.Si. Yuliani Puji Astuti, 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	Able to answer and solve various ordinary differential equations / GDP	Analyzing Ordinary Differential Equations and calculating first degree PD, PD with separable variables, Homogeneous PD	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 4 X 50			0%
3	Able to solve various ordinary differential equations / GDP	1.Calculates PD in the form $(ax-by-c)dx + (px-qr)dy = 0$ 2.PD has the form $yf(x)dx + xg(y)dy = 0$ 3.Exact PD, 4.First level linear PD, second level linear PD	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 4 X 50			0%
5	Able to understand the application of GDP in everyday life	Analyzing the application of differential equations (Growth Problem and Cooling Problem)	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 6 X 50			0%
8	Midterm exam		Criteria: Full marks are obtained if you do all the questions correctly	2 X 50			0%
9	Able to understand the definition of a matrix and its applications	1.Explains the definition of a matrix, several types of matrices 2.Calculating mathematical operations on matrices	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 2 X 50			0%
10	Able to understand the definition of a matrix and its applications	Explain and calculate the determinant of a square matrix and the inverse (reverse) of a matrix	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 2 X 50			0%
11	Able to understand the definition of a matrix and its applications	Analyze and calculate Solutions to Systems of Linear Equations (SPL) and answer applications of SPL in the field of civil engineering	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 4 X 50			0%
13	Able to understand the definition of the Laplace Transformation and its applications	Calculating the Laplace Transform	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 2 X 50			0%
14	Able to understand the definition of the Laplace Transformation and its applications	Calculating the Inverse Transformation $Laplacef(t)$	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 2 X 50			0%
15	Able to understand the definition of the Laplace Transformation and its applications	Application of the Laplace Transformation to Differential Equations	Criteria: Full marks are obtained if you do all the questions correctly	Problem-based learning and discussion 2 X 50			0%
16							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.