



**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																																
Calculus II	2120102030		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																																					
Short Course Description	Use of specific integrals to find area, volume, arc length, center of gravity, moment of inertia, double integrals, matrices, systems of linear equations and their applications.																																						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 10%; text-align: center;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 5%; text-align: center;">1</td> <td style="width: 5%; text-align: center;">2</td> <td style="width: 5%; text-align: center;">3</td> <td style="width: 5%; text-align: center;">4</td> <td style="width: 5%; text-align: center;">5</td> <td style="width: 5%; text-align: center;">6</td> <td style="width: 5%; text-align: center;">7</td> <td style="width: 5%; text-align: center;">8</td> <td style="width: 5%; text-align: center;">9</td> <td style="width: 5%; text-align: center;">10</td> <td style="width: 5%; text-align: center;">11</td> <td style="width: 5%; text-align: center;">12</td> <td style="width: 5%; text-align: center;">13</td> <td style="width: 5%; text-align: center;">14</td> <td style="width: 5%; text-align: center;">15</td> <td style="width: 5%; text-align: center;">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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Supporters:																																							
Supporting lecturer	Tri Hartutuk Ningsih, S.T., M.T. Ferly Isnomo Abdi, S.T., S.Pd., 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	Students are able to communicate their understanding of indefinite integrals	Students can: · Explain indefinite integrals · Explain the basis and properties of integrals · Explain integration techniques · Explain substitution integrals · Explain trigonometric substitution integrals · Explain partial integrals & integrals of rational split functions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
2	Students are able to communicate their understanding of definite integrals and their application to the area of land and volume of rotating objects, arc length	Students can: · Explain certain integrals · Explain its application to the area of land and volume of rotating objects, arc length · Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
3	Students are able to communicate their understanding of definite integrals and their application to the area of land and volume of rotating objects, arc length	Students can: · Explain certain integrals · Explain its application to the area of land and volume of rotating objects, arc length · Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
4	Students are able to communicate their understanding of the application of definite integrals, center of gravity, moment of inertia and pressure of liquids	Students can: · Formulate certain integrals in the form of applications of center of gravity, moment of inertia and liquid pressure	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
5	Students are able to communicate their understanding of the application of definite integrals, center of gravity, moment of inertia and pressure of liquids	Students can: · Formulate certain integrals in the form of applications of center of gravity, moment of inertia and liquid pressure	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
6	Students are able to communicate their understanding of the concept of double integrals and their applications	Students can: · Formulate double integrals and their applications	Criteria: According to the Rubric	Lectures, discussions and questions and answers 2 X 50			0%
7	Students are able to communicate their understanding of the concept of double integrals and their applications	Students can: · Formulate double integrals and their applications	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
8	USS (attached)	USS (attached)	Criteria: USS (attached)	USS (attached) 1 X 1			0%

9	Students are able to communicate their understanding of ordinary differential equations	Students can: · Explain ordinary differential equations. Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
10	Students are able to communicate their understanding of ordinary differential equations	Students can: · Explain ordinary differential equations. Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
11	Students are able to communicate their understanding of ordinary differential equations	Students can: · Explain ordinary differential equations. Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
12	Students are able to communicate their understanding of ordinary differential equations	Students can: · Explain ordinary differential equations. Convey ideas/questions	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
13	Students are able to communicate their understanding of matrices and determinants	Students can: · Explain matrices and determinants. Explain the types of matrices, inverses and determinants of matrices	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
14	Students are able to communicate their understanding of matrices and determinants	Students can: · Explain matrices and determinants. Explain the types of matrices, inverses and determinants of matrices.	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
15	Students are able to communicate their understanding of the System of Linear Equations for Liquid Pressure	Students can: Explain Systems of Linear Equations using the Gauss Elimination Method, Gauss – Jourdan Elimination, Inverse Matrix, Cramer and their applications	Criteria: According to the Rubric	Lectures, discussions, questions and answers 2 X 50			0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
		0%

Notes

- 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.
- 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.
- 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.
- 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.