



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																																
Mechanics of Material Strength	2120102045		T=2	P=0	ECTS=3.18	3	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	Understanding various types of loads and stresses due to loading on systems/construction and being able to analyze stresses that occur in certain and indeterminate static rigid body systems.																																						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 5%;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 2%;">1</td> <td style="width: 2%;">2</td> <td style="width: 2%;">3</td> <td style="width: 2%;">4</td> <td style="width: 2%;">5</td> <td style="width: 2%;">6</td> <td style="width: 2%;">7</td> <td style="width: 2%;">8</td> <td style="width: 2%;">9</td> <td style="width: 2%;">10</td> <td style="width: 2%;">11</td> <td style="width: 2%;">12</td> <td style="width: 2%;">13</td> <td style="width: 2%;">14</td> <td style="width: 2%;">15</td> <td style="width: 2%;">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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Supporting lecturer	Mochamad Arif Irfai, 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	Understand the study contract for one semester. Understand the concept of material mechanics. Understand the meaning of stress in materials	Agree to a study contract for 1 semester. Explain the concept of material mechanics. Describe the mechanical properties of materials related to the concept of material mechanics. Explain the concept of stress in materials. Describe stress in materials. Analyze the concept of stress and its effect on materials.	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric.	question and answer lecture on solving cases in class 2 X 50			0%
2	Students understand the concept of strain. Students understand the concept of elastic properties of a material. Students understand Hooke's Law	Students are able to explain the meaning of strain in materials Students are able to describe strain in materials Students are able to explain the elastic properties of a material Students are able to describe the elastic properties of materials in graphical form Students are able to explain Hooke's Law Students are able to apply Hooke's Law to cases related to material strength	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric.	Lecture Question and answer / Discussion Analysis of the 2 X 50 case study			0%
3	Students are able to understand the allowable stress in a material. Students understand the Bulk Modulus of a material	able to explain the allowable stress limit on a material, able to analyze the allowable stress on a material, able to explain the Bulk Modulus on a material, able to apply the use of Bulk Modulus on materials	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric.	Lecture Discussion Problem solving 2 X 50			0%

4	Understanding Poision Ratio Understanding Young's Modulus Understanding the relationship between Young's Modulus and Bulk Modulus	Able to explain the meaning of Poision Ratio Able to explain the function of Poision RATIO in relation to material strength Able to explain Young's Modulus Able to explain the relationship between Young's modulus and bulk modulus Able to analyze the relationship between Young's modulus and bulk modulus for material strength	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric	lecture question and answer case study 2 X 50			0%
5	Able to understand deflections in structures. Able to understand the deformation of objects that work due to the forces that work	Able to explain deflections in structures. Able to describe deformation of objects acting due to acting forces. Able to analyze deformation of objects under acting forces	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric	Lecture Question and answer Case study 2 X 50			0%
6	Understanding deflections in members due to axial loads. Understanding deflections in statically indeterminate structures	Explaining the deflection in a member due to an axial load. Describing the deflection in a member due to an axial load. Understanding the deflection in a statically indeterminate structure. Describing the deflection in a statically indeterminate structure	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric.	lecture question and answer case study 2 X 50			0%
7	Understand the theory of bending of area plane moments. Understand the theory of bending of small blocks	Explaining the theory of bending of area of moment planes Describing the theory of bending of area of moment planes Analyzing the theory of bending of area of moment planes Explaining the theory of bending of small blocks Describing the theory of bending of small blocks Analyzing the theory of bending of small blocks	Criteria: The weight of the assessment results of 20% is obtained from the level of student participation both in terms of attendance at lectures, activeness in attending lectures (asking questions, paying attention, and being serious), and activeness in group discussion activities and class presentations. The following is a class presentation rubric.	Lecture Discussion Case Study 2 X 50			0%
8							0%
9							0%

10							0%
11							0%
12							0%
13							0%
14							0%
15							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.**