



**Universitas Negeri Surabaya
Vocational Faculty,
D4 Civil Engineering Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																
Mechanics of Materials	99992240102011		T=2 P=0 ECTS=3.18	2	July 17, 2024																																
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator																																	
	Puguh Novi Prasetyono, S.Pd., M.T.																																	
Learning model	Case Studies																																				
Program Learning Outcomes (PLO)	PLO study program which 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="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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References	Main : 1. Timoshenko & Gere J.M., alih bahasa Wospakrik H.J., 1987, Mekanika Bahan Edisi kedua versi S1, Penerbit Erlangga Jakarta. 2. Suwarno Wirjomartono, 1986, Mekanika Teknik ,Yogyakarta : Universitas Gajah Mada. 3. V.N. Vasirani & M.N Ratwani, "Analysis of Structure" 4. POPOV, " Mechanical of Material "																																				
	Supporters:																																				
Supporting lecturer	Dr. Suprpto, S.Pd., M.T. Anggi Rahmad Zulfikar, M.T. Berkat Cipta Zega, S.Pd., M.Eng. Irfan Prasetyo Loekito, S.T., M.Sc.																																				
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	Analyze the center of gravity and moment of inertia	<ol style="list-style-type: none"> 1.analyze several concepts of calculating center of gravity and moment of inertia. 2.explain the mechanism of center of gravity and moment of inertia. 3.explain orally the sequence of calculating the center of gravity and moment of inertia. 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
2	Analyze normal stress and strain.	<ol style="list-style-type: none"> 1.Analyze tensile stress and strain 2.Analyze compressive stress and strain 3.Understand how to create stress and strain graphs 4.Explain verbally tensile stress and strain 5.Explain verbally compressive stress and strain 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
3	Analyze normal stress and strain.	<ol style="list-style-type: none"> 1.Analyze tensile stress and strain 2.Analyze compressive stress and strain 3.Understand how to create stress and strain graphs 4.Explain verbally tensile stress and strain 5.Explain verbally compressive stress and strain 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%

4	Explain linear elasticity and Hook's law	<ol style="list-style-type: none"> 1.Explain the meaning of elasticity 2.Explain Hook's law 3.Explain the concept of poison ratio numbers 4.Explain orally the meaning of elasticity 5.Explain orally the concept of Hook's law 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
5	Analyze shear stress and strain	<ol style="list-style-type: none"> 1.Explain the concepts of shear stress and strain 2.Analyze shear stress and strain 3.Explain verbally shear stress and strain 	Criteria: Listen actively to the material explained by the lecturer. Discuss the concept of shear stress and strain. Discuss stress and strain analysis in materials.	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
6	Analyze bending deformation and axial deformation.	<ol style="list-style-type: none"> 1.Analyze the deformation of bending structures 2.Analyzing deformation in compression members 3.Explain verbally flexural and compressive deformations 	Criteria: Perfect score if answered well and correctly	Bending deformation Axial deformation 2 X 50			0%
7	Analyze bending deformation and axial deformation.	<ol style="list-style-type: none"> 1.Analyze the deformation of bending structures 2.Analyzing deformation in compression members 3.Explain verbally flexural and compressive deformations 	Criteria: Perfect score if answered well and correctly	Bending deformation Axial deformation 2 X 50			0%
8	UAS	-	Criteria: -	- 2 X 50			0%
9	Analyzing Strain Energy	<ol style="list-style-type: none"> 1.Explain the concept of strain energy 2.Analyzing strain energy 3.Explain orally the strain energy 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%

10	Analyze the elastic modulus and shear modulus	<ol style="list-style-type: none"> 1.Explain the concept of elastic modulus 2.Explain the concept of shear modulus 3.Explain orally the elastic modulus and shear modulus 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
11	Analyze pure shear and pure twist	<ol style="list-style-type: none"> 1.Explains the concept of sliding and pure punter 2.Analyzing pure Shear 3.Analyzing pure twisting 4.Explain orally the concepts of pure shear and twisting 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
12	Analyze pure shear and pure twist	<ol style="list-style-type: none"> 1.Explains the concept of sliding and pure punter 2.Analyzing pure Shear 3.Analyzing pure twisting 4.Explain orally the concepts of pure shear and twisting 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
13	Analyze latitude and bending forces	<ol style="list-style-type: none"> 1.Explain the concepts of latitude and bending forces 2.Analyzing latitude forces 3.Analyzing Bending Force 4.Explain orally the concepts of latitude and bending forces 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
14	Analyze latitude and bending forces	<ol style="list-style-type: none"> 1.Explain the concepts of latitude and bending forces 2.Analyzing latitude forces 3.Analyzing Bending Force 4.Explain orally the concepts of latitude and bending forces 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%

15	Analyzing Stresses in beams	<ol style="list-style-type: none"> 1.Explain the concept of internal stress in beams 2.Describe the cross-sectional stress and strain diagram 3.Analyzing internal stresses in beams 4.Explain verbally the concept of internal stress in beams 	Criteria: Perfect score if answered well and correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
16	UAS	-	Criteria: -	Written test 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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.