



Universitas Negeri Surabaya
Faculty of Engineering,
Building Engineering Education Undergraduate Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date
Engineering Mechanics III	8320502108		T=2 P=0 ECTS=3.18	3	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Dr. Gde Agus Yudha Prawira Adistana, S.T., M.T.

Learning model	Case Studies
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																	
	Program Objectives (PO)																																	
	PLO-PO Matrix																																	
	<table border="1" style="margin: auto;"> <tr> <td style="width: 50px; height: 30px;"></td> <td style="width: 100px; text-align: center;">P.O</td> </tr> </table>		P.O																															
	P.O																																	
	PO Matrix at the end of each learning stage (Sub-PO)																																	
	<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 50px; height: 30px;"></td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 20px; text-align: center;">1</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">3</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">7</td> <td style="width: 20px; text-align: center;">8</td> <td style="width: 20px; text-align: center;">9</td> <td style="width: 20px; text-align: center;">10</td> <td style="width: 20px; text-align: center;">11</td> <td style="width: 20px; text-align: center;">12</td> <td style="width: 20px; text-align: center;">13</td> <td style="width: 20px; text-align: center;">14</td> <td style="width: 20px; text-align: center;">15</td> <td style="width: 20px; text-align: center;">16</td> </tr> </table>		Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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Short Course Description	Introduction and analysis of statically indeterminate structures (continuous beam, fixed portal, swaying portal) Slopedeflection, Clayperon, and Cross methods. Learning is carried out using the Direct Learning Method (MPL) and ends with discussion activities.
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References	<p>Main :</p> <ol style="list-style-type: none"> 1. Referensi: [1]. Sabariman, Bambang.2007. <i>Penyelesaian Statika Slope Deflection</i>. Surabaya: JTS FTUnesa. [2].Sabariman, Bambang. 2013. <i>Mekanika Teknik III (Metode Clapeyron)</i>. Surabaya: JTS FTUnesa. [3].Sabariman, Bambang. 2015. <i>AnalisisStruktur Statis Tak Tentu (Metode Cross)</i>. Surabaya: JTS FTUnesa. [4].Sunggono.1984. <i>Buku TeknikSipil</i>. Jakarta: PenerbitNova. [5]. Wang, Chu-Kia. 1987. <i>Analisis StrukturLanjutan Jilid 1</i>, Kusuma Wirawan & Mulyadi Nataprawira Penterjemah.Jakarta: Erlangga. [6]. Hibbeler, R.C. 2012.<i>StructuralAnalysis, Eighth Edition</i>. NewJersey: Pearson Prentice Hall. [7]. Sabariman, B. & Dani, H.2015. <i>Pemanfaatan Gambar Gaya Lintangdalam Perhitungan Momen Statis Tertentu</i>, Jurnal Kajian Pendidikan TeknikBangunan Vol. 1 Nomer 1/JKPTB/2015. <p>Supporters:</p>
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Supporting lecturer	Dr. Ir. Bambang Sabariman, S.T., M.T. Dr. Suprpto, S.Pd., M.T.
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Week-	Final abilities of each learning stage (Sub-PO)	Evaluation	Help Learning, Learning methods, Student Assignments, [Estimated time]	Learning materials [References]	Assessment Weight (%)
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		Indicator	Criteria & Form	Offline (offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to differentiate between indeterminate static structures and certain static structures.	Explain the difference between a statically certain structure (ST) and a statically indeterminate structure (STT).	Criteria: 1.Score 15 if the explanation of the ST concept is correct 2.Score 15 if the explanation of the STT concept is correct. 3.Score 10 if the explanation of the slope deflection concept is correct. 4.Score 10 if the explanation of Clapeyron's concept is correct. 5.Score 10 if the explanation of the Cross concept is correct. 6.Score 10 if the explanation of the application software program concept is correct. 7.Score 10 if the application of M to the main reinforcement is correct. 8.Score 10 if the application of N to the stirrup reinforcement is correct. 9.Score 10 if the application of D to the stirrup reinforcement is correct.	Discussion lectures and questions and answers 3 X 50			0%
2	Able to analyze forces in M (moment) N (normal force) and D (latitudinal force) Slope Deflection Method in beam structures.	Explains the analysis of MN and D STT beams using the Slope Deflection Method.	Criteria: 1.Score 70 if the moment calculation using the Slope Deflection method is correct 2.Score 15 if the free body diagram calculation includes the positioning reactions of latitude forces and normal forces correctly 3.Score 15 if the depiction of the MN and D fields is correct.	Question and answer lecture and practice discussion of STT beam questions & discussion of 6 X 50			0%
3							0%

4	Able to analyze internal forces M (moment) N (normal force) and D (latitudinal force) Slope Deflection Method on portal structures (fixed & swaying)	Able to explain MN and D portal analysis (fixed & swaying) STT Slope Deflection Method	Criteria: A score of 70 if the moment calculation using the Slope Deflection method is correct. A score of 15 if the free body diagram calculation includes the positioning reaction of latitude forces and normal forces. A score of 15 if the depiction of the MN and D planes is correct.	Question and answer lecture and discussion practice on portal questions (fixed & swaying) STT & discussion Task 1 STT Slope Deflection Method 6 X 50			0%
5							0%
6	UTS 1.	Able to complete MN and D sway portal analysis STT Slope Deflection Method.	Criteria: Score 70 if the moment calculation uses the Slope Deflection method. Score 15 if the free body diagram calculation includes the positioning reaction of latitude and normal forces. Score 15 if the depiction of the MN and D planes is correct.	Written exam and collect assignments 1. 2 X 50			0%
7	Able to analyze forces in M (moment) N (normal force) and D (latitudinal force) Clapeyron method (three moments postulate) in beam structures	Explain the analysis of MN and D STT beams Clapeyron Method (three moments postulate)	Criteria: A score of 70 if the moment calculation using the Clapeyron method is correct. A score of 15 if the calculation of the free body diagram includes the positioning reactions of latitudinal forces and normal forces. A score of 15 if the depiction of the MN and D planes is correct.	Question and answer lecture and practice discussion of STT beam questions & discussion of 6 X 50			0%
8							0%
9	Able to analyze forces in M (moment) N (normal force) and D (latitudinal force) Clapeyron method (three moments postulate) in portal structures (fixed & swaying)	Explain the analysis of MN and D portals (fixed & swaying) STT Clapeyron Method (three moment postulate)	Criteria: A score of 70 if the moment calculation using the Clapeyron method is correct. A score of 15 if the calculation of the free body diagram includes the positioning reactions of latitudinal forces and normal forces. A score of 15 if the depiction of the MN and D planes is correct.	Question and answer lecture and discussion practice on portal questions (fixed & swaying) STT & discussion Task 2 STT Clapeyron Method 6 X 50			0%
10							0%
11	UTS 2.	Able to complete the analysis of MN and D sway portal STT Clapeyron Method	Criteria: A score of 70 if the moment calculation using the Clapeyron method is correct. A score of 15 if the calculation of the free body diagram includes the positioning reactions of latitudinal forces and normal forces. A score of 15 if the depiction of the MN and D planes is correct.	Written exam and collect assignments 2. 2 X 50			0%

12	Able to analyze forces in M (moment) N (normal force) and D (Latitudinal force) Cross Method in beam structures	Explains the analysis of MN and D STT beams using the Cross Method	Criteria: A score of 70 if the Cross method moment calculation is correct. A score of 15 if the free body diagram calculation includes the reaction to the placement of latitude forces and normal forces is correct. A score of 15 if the depiction of the MN and D planes is correct.	Question and answer lectures and practice discussions on STT beam questions & discussions. 6 X 50			0%
13							0%
14	Able to analyze internal forces M (moment) N (normal force) and D (Latitudinal force) Cross Method on portal structures (fixed & swaying)	Explains the analysis of MN and D portals (fixed & swaying) STT Cross Method	Criteria: Score 70 if the calculation of moments using the Cross method is correct. Score 15 if the calculation of the free body diagram includes the positioning reactions of latitude forces and normal forces. Score 15 if the depiction of the MN and D planes is correct.	Question and answer lecture and discussion practice on portal questions (fixed & swaying) STT & discussion Task 3 STT Cross Method 6 X 50			0%
15							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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.

