

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

Document Code

SEMESTER LEARNING PLAN

Courses			CODE		Co	urse	Fami	ly		Cred	it We	ight	SE	EMEST	ER	Com Date	pilatio
Analysis of C Structures	ertain Static	-	8320503003			mpuls Igram				T=3 P=0 ECTS=4.77 1 August 1 2022							
AUTHORIZAT	TION	:	SP Develope	•				Course Cluster Coordinator				St	udy P	rograr	n Coo	rdinat	
			Suprapto, S.Pd., M.T.; Meity Wulandari, S.T., M.T.				-					Di			Yudha S.T., N	Prawi M.T.	
Learning model	Project Based	d Lear	ning														
Program	PLO study p	rogra	m which is o	harged	to tł	1е со	urse	<u>.</u>									
Learning Outcomes	Program Ob	jectiv	es (PO)	(PO)													
(PLO)	PO - 1		Students are able to calculate forces, reactions and monents and are able to draw shear force fields, normal force fields and moment fields														
	PO - 2	Students are able to master knowledge of basic ideas, concepts, examples, techniques and methor calculating forces, reactions and monents and are able to draw shear force planes, normal force plane moment planes															
	PO - 3	Stude shear	Students are able to apply accuracy in calculating forces, reactions and monents and are able the shear force planes, normal force planes and moment planes								to dra						
	PLO-PO Mat	rix															
			P.0 PO-1 PO-2 PO-3														
	PO Matrix at	the e	nd of each l	earning	stag	e (Sı	ıb-P	0)									
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	Supporters:	Supporters:							
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Support lecturer									
Week-	Final abilities of each learning stage	each Student Assignments, materials Assessment							
	(Sub-PŎ)	P-PO) Indicator Criteria & Form Offline (Online (<i>online</i>)] offline)							
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						Department of	
						Education and	
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					beams,	-
					cantilevers	3,
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					Bibliogra	ohy:
					Williams,	
					Alan. 2009	
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					Analysis: I	n d
					Theory an Practice.	u
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					Elsevier.	

			1	1	1		
4	Able to analyze	Explaining	Criteria:	Lectures,		Material:	10%
	two-support	the various	Full if the	discussions,		Types of	
	beams, cantilevers,	types of supports	calculation	questions		supports and	
	draw D,N,M	and their	answers are sequential and	and		their	
	planes.	properties,	correct.	answers and		properties,	
		analysis of		individual		Analysis of	
		two- supported	Form of	assignments		two-support	
		beams,	Assessment :	3 X 50		beams, cantilevers,	
		cantilevers,	Participatory			drawing	
		drawing the	Activities, Tests			D,N,M planes.	
		D,N,M				References:	
		planes.				Darmali, Arief	
						and Ichwan.	
						1979. Civil	
						Force	
						Science.	
						Jakarta:	
						Department of	
						Education and	
						Culture.[2].	
						-	
						Material:	
						Types of	
						supports and	
						their	
						properties,	
						Analysis of	
						two-support	
						beams,	
						cantilevers,	
						drawing	
						D,N,M planes.	
						References:	
						Hibbeler, R C.	
						2012.	
						Structural	
						Analysis. New	
						Jersey:	
						Pearson Education Inc.	
						[3].	
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						supports and their	
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						beams,	
						cantilevers,	
						drawing	
						D,N,M planes.	
						Reference:	
						Karyoto. 2014.	
						Analysis of	
						Certain Static	
						Structures.	
						Unesa.	
						Material:	
						Types of	
						supports and	
						their	
						properties,	
						Analysis of	
						two-support	
						beams,	
						cantilevers,	
						drawing	
						D,N,M planes.	
						Bibliography: Williams,	
						Alan. 2009.	
						Structural	
						Analysis: In	
						Theory and Practice	
						Practice.	
						Burlington: Elsevier.	
						EISEVIEI.	

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5	Able to analyze beams with indirect loads and Gerber beams	Explains how to analyze beams with indirect loads and Gerber beams	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions, questions and answers and individual assignments 3 X 50	Material: Analysis of beams with indirect loads and Gerber beams References: Darmali, Arief and Ichwan. 1979. Civil Force Science. Jakarta: Department of Education and Culture.[2].	5%
					Material: Analysis of beams with indirect loads and Gerber beams Reference: Hibbeler, R C. 2012. Structural Analysis. New Jersey: Pearson Education Inc. [3].	
					Material: Analysis of beams with indirect loads and Gerber beams Reference: Karyoto. 2014. Analysis of Certain Static Structures. Unesa.	
					Material: Analysis of beams with indirect loads and Gerber beams Reference: Williams, Alan. 2009. Structural Analysis: In Theory and Practice. Burlington: Elsevier.	

6	Able to analyze beams with indirect loads and Gerber beams	Explains how to analyze beams with indirect loads and Gerber beams	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions, questions and answers and individual assignments 3 X 50	Material: Analysis of beams with indirect loads and Gerber beams References: Darmali, Arief and Ichwan. 1979. Civil Force Science. Jakarta: Department of Education and Culture.[2]. Material: Analysis of beams with indirect loads and Gerber beams Reference: Hibbeler, R C. 2012. Structural Analysis. New Jersey: Pearson Education Inc. [3]. Material: Analysis of beams with indirect loads and Gerber beams Reference: Karyoto. 2014. Analysis of Structures. Unesa.	5%
7	Able to analyze beams with indirect loads, Gerber beams	Explains how to analyze structures with three- joint supports	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions, questions and answers and individual assignments 3 X 50		10%
8	Master ASTT material from meetings 1 - 8 by taking the mid-semester exam (UTS)		Criteria: Form of Assessment : Participatory Activities	3 X 50		0%

9	Able to analyze beams due to moving loads with lines of influence	Explains how to analyze beams due to moving loads with lines of influence	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers 3 X 50	Material: Analysis of beams caused by moving loads with lines of influence. Reference: <i>Hibbeler, R C.</i> 2012. <i>Structural</i> <i>Analysis. New</i> <i>Jersey:</i> <i>Pearson</i> <i>Education Inc.</i> [3].	5%
					Material: Analysis of beams caused by moving loads using lines of influence. Reference: Karyoto. 2014. Analysis of Certain Static Structures. Unesa.	
					Material: Analysis of beams caused by moving loads using lines of influence. Reference: <i>Williams,</i> <i>Alan. 2009.</i> <i>Structural</i> <i>Analysis: In</i> <i>Theory and</i> <i>Practice.</i>	
					Burlington: Elsevier.	

11	Able to calculate the forces on the frame using the Cremona method	Explains how to calculate forces on a frame using the Cremona method.	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions and answers 3 X 50	Material: Forces on the framework using the Cremona method. Reference: Hibbeler, R C. 2012. Structural Analysis. New Jersey: Pearson Education Inc. [3]. Material: Style on the framework using the Cremona method. Library: Karyoto. 2014. Analysis of Certain Static Structures. Unesa. Material: Forces on the framework using the Cremona method References: Williams, Alan. 2009.	10%
					Cremona method References: <i>Williams,</i>	

12	Able to calculate the forces on the frame using the Balance method and Ritter method	Explain how to calculate forces on a frame using the balance method and Ritter method	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers. 3 X 50	Material: Forces on the framework using the Balance method and Ritter method References: Hibbeler, R C. 2012. Structural Analysis. New Jersey: Pearson Education Inc. [3].	5%
					Material: Forces on the skeleton using the Balance method and Ritter method Library: Karyoto. 2014. Analysis of Certain Static Structures. Unesa.	
					Material: Forces on the frame using the Balance method and Ritter method References: Williams, Alan. 2009. Structural Analysis: In Theory and Practice. Burlington: Elsevier.	

13	Able to calculate the forces on the frame using the Balance method and Ritter method	Explain how to calculate forces on a frame using the balance method and Ritter method	Criteria: According to the rubric Form of Assessment : Participatory Activities	Lectures, discussions and answers. 3 X 50	Material: Forces on the framework using the Balance method and Ritter method References: Hibbeler, R C. 2012. Structural Analysis. New Jersey: Pearson Education Inc. [3]. Material: Forces on the skeleton using the Balance method and Ritter method Library: Karyoto. 2014. Analysis of Certain Static Structures. Unesa. Material: Forces on the frame using the Balance method and Ritter method Ritter method References: Williams, Alan. 2009. Structural	10%
					Structural Analysis: In Theory and Practice. Burlington: Elsevier.	

14	load moving with the line of influence	Explain how to calculate the force on a frame due to a load moving with a line of influence Criteria: According to the rubric Form of Assessment : Participatory Activities	According to the rubric Form of Assessment : Participatory	Lectures, discussions and questions and answers. 3 X 50	Material: Force on the frame due to moving loads with lines of influence References: <i>Hibbeler, R C.</i> <i>2012.</i> <i>Structural</i> <i>Analysis. New</i> <i>Jersey:</i> <i>Pearson</i> <i>Education Inc.</i> [<i>3</i>].	5%
					Material: Forces on the frame due to loads moving with lines of influence. Reference: Karyoto. 2014. Analysis of Certain Static Structures. Unesa.	
					Material: Force on the frame due to loads moving with lines of influence References: Williams, Alan. 2009. Structural Analysis: In Theory and Practice. Burlington: Elsevier.	

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	95%
2.	Test	5%
		100%

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 10. Learning inderinas are details of descriptions of study inderinas which can be presented in the form of 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.