



**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												
Engineering Mechanics I	2120102046		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															
	PO Matrix at the end of each learning stage (Sub-PO)																
	P.O	Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Short Course Description	Understand the resultant of 2 unidirectional forces at one capture point. Understand the resultant of 2 forces in opposite directions at one capture point. Understand the resultant of 2 forces that form an angle of 90° at one capture point. Understand the resultant of 2 forces that form an arbitrary angle at one capture point. Understand the resultant for more than 2 forces at one capture point. Understanding Varignon's Moment theorem. Understand the graphical requirements for balance of a plane style arrangement. Understand the requirements of balance techniques. Understand how to determine the center of gravity of flat images. Understanding Cremona diagrams for flat frames. Understand the Culman and Ritter intersection methods																
References	Main :																
	1. S. Timosenko, DH Young. 1990. Mekanika Teknik, Jakarta, Penerbit Erlangga 2. Ferdinand P. Bear dan E.Russell Johnston, Jr. 1987. Statika. (Mekanika untuk Insinyur), Erlangga Jakarta 3. Soenarko. 1988. Mekanika Kekuatan Material 1. Surabaya: Institut Teknologi Sepuluh Nopember																
	Supporters:																
Supporting lecturer	Dr. Djoko Suwito, M.Pd. Novi Sukma Drastiawati, S.T., M.Eng. Heru Arizal, S.Pd., M.M., M.Pd.																
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	Know what is meant by forces on a flat plane	Able to determine the resultant of two or more forces using vectors. Able to calculate the resultant of two or more forces using vectors	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
2	Continuing Meeting 1	Able to calculate the magnitude of the resultant of more than 2 forces graphically Analyze the magnitude of the resultant and two forces Describe the resultant of more than 2 forces	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
3	Continue meeting 2	Describes styles in components. Determining the perpendicular components of a force, Adding forces by adding	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
4	Know about the resultant forces in space	Understand the concept of force in the field of space. Describe the components of force in the field of space	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
5	Continuing the 4th Meeting	Understand the concept of force in the field of space. Describe the components of force in the field of space	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
6	Continuing the 5th Meeting	Understand the concept of force in the field of space. Describe the components of force in the field of space	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
7	MKnowing the center of gravity of plates and composites	Understand the concept of center of gravity of planes and lines. Understand the concept of center of gravity of planes and lines. Understand the center of gravity of plates and composites	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%

8	Know the center of gravity of plates and composites	Understand the concept of center of gravity of planes and lines. Understand the concept of center of gravity of planes and lines. Understand the center of gravity of plates and composites	Criteria: 1.Attendance 20% 2.Assignments, Presentations and Quizzes 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
9	Midterm exam	Doing questions in writing	Criteria: Ability to take Midterm Exams	Take the Written Exam 2 X 50			0%
10	Understanding the moment of inertia	Explaining the moment of inertia of a plane Explaining the moment of inertia of a pole	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
11	Understanding the moment of inertia	Explaining the moment of inertia of a plane Explaining the moment of inertia of a pole	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
12	MUnderstand the concept of trusses MUnderstand the requirements for balance techniques	Able to draw free body diagrams regarding the principles of force balance. Able to analyze the requirements for balance techniques	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
13	Understanding Cremona diagrams for flat frames	Able to draw Cremona diagrams for flat frames Able to determine external forces using Cremona diagrams Able to determine internal forces using Cremona diagrams	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
14	Understand the Culman wedge methods	Able to describe Culman slices. Able to analyze Culman slices in stem style using the Culman slice method	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
15	Understand the methods of Ritter incision	Able to describe Ritter slices. Able to analyze Ritter slices to determine rod forces in plane frame construction	Criteria: 1.Attendance 20% 2.Duty 30% 3.UTS 20% 4.UAS 30%	Lectures, discussions and questions and answers 2 X 50			0%
16	FINAL EXAMS	FINAL EXAMS	Criteria: Able to do summative exam questions in writing	Do the questions in writing 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** 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.