	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
Drawing Machines	2120103049		T=3	P=0	ECTS=4.77	2	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Ir. Priyo Heru Adiwibowo, S.T., M.T.

Learning model	**Project Based Learning**
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	Students can understand how to draw cuts, special drawings, give measurements, give work symbols, draw machine parts and make working drawings.
References	**Main :**

1. [1] Anwari. 1978. Menggambar Teknik Mesin 2. Jakarta: Departemen Pendidikan dan kebudayaan
2. [2] Baharudin Yakob. 1979. Menggambar Mesin 3. Jakarta: Departemen Pendidikan dan Kebudayaan.
3. [3] Juhana Ohan, Suratman. M. 2000. Menggambar Teknik Mesin. Bandung: Pustaka Grafika.
4. [4] Marbun, Moyn. 1993. Menggambar Teknik Mesin. Bandung: Penerbit M2S.
5. [5] Sato Takhesi, Sugiarto. 1986. Menggambar Mesin. Jakarta: Pradnya Paramita.
6. [6] Yogaswara, Eka. 2004. Membaca Gambar Teknik SMK. Bandung: Armico

	Supporters:
Supporting lecturer	Agung Prijo Budijono, S.T., M.T. Akhmad Hafizh Ainur Rasyid, S.T., M.T. Diastian Vinaya Wijanarko, S.T., M.T. Ali Hasbi Ramadani, S.Pd., 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	Be able to mention various technical drawing equipment	Choose a drawing tool that suits your needs	**Criteria:** 1.Able to show each drawing tool and its function 2.Able to draw using drawing equipment	Question and answer discussion lecture and 3 X 50 exercises			0%
2	Able to draw lines and letters	Skilled at drawing lines with different thicknesses Skilled at drawing letters using a letter mall	**Criteria:** 1.Be able to name various types of lines. 2.Be able to explain the function of each type of line. 3.Able to explain various types of letters. 4.Able to draw lines according to procedures.	Lectures, discussions, questions and answers, exercises and assignments 6 X 50			0%
3							0%
4	Able to understand the basics of machining	Describe the definition of machining Describe casting cutting parameters Identify types of cutting tools and machines Identify various defects and quality problems		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
5							0%
6	Able to draw custom cuts and depictions	Skilled in drawing objects that are cut off. Skilled in drawing objects with a special view	**Criteria:** 1.Able to explain the function of cut images. 2.Able to explain how to cut objects. 3.Able to explain how to place cut images. 4.Able to explain the rules for drawing shading. 5.Able to name various kinds of cut pictures. 6.Able to identify specific depictions of objects 7.Able to draw shading. 8.Able to draw various types of pieces. 9.Able to draw special objects.	Lectures, discussions, questions and answers, exercises and assignments 6 X 50			0%
7							0%
8				3 X 50			0%

9	Able to size images and add workmanship symbols to images	Skilled in drawing with dimensions Skilled in drawing with symbols of workmanship	**Criteria:** 1.Able to draw techniques to their size 2.Able to draw techniques and their working symbols	Lectures, discussions, questions and answers, exercises and assignments 6 X 50			0%
10							0%
11	Able to draw machine parts	Skilled in drawing machine parts	**Criteria:** 1.Able to draw threads and springs 2.Able to draw gears 3.Able to draw objects being welded	Lectures, discussions, questions and answers, exercises and assignments 6 X 50			0%
12							0%
13	Able to make working drawings	Skilled in making working drawings	**Criteria:** Can draw machine components in detail	Lectures, discussions, questions and answers, exercises and assignments 9 X 50			0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Project Based Learning

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.