	Universitas Negeri Surabaya Faculty of Engineering, Mechanical Engineering Education Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Coating Techniques	8320302174		T=2	P=0	ECTS=3.18	5	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Ir. Wahyu Dwi Kurniawan, S.Pd., M.Pd.

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	Understanding the various metal plating processes, the ability to analyze the mechanism of the metal plating process, being able to differentiate between the various types of metal plating and the factors that influence the metal plating process.
References	**Main :**

1. Anton J. Hartomo & Tomijiro Kaneko. 1995. Mengenal Pelapisan Logam (Elektroplating). Yogyakarta : Andi Offset.
2. Heryando Palar. 2004. Pencemaran dan Toksikologi Logam Berat. Jakarta : PT. Asdi Mahasatya.
3. Milan Paunovic & Mordechay Schlesinger. 2000. Modern Electroplating. USA, John Willey & Sons,Inc.
4. Suparni S Rahayu. Sulasih. Sudirman. 1996. Petunjuk praktikum elektroplating. Bandung:Pusat pengembangan pendidikan politeknik.
5. LKM Petunjuk Praktek Pelapisan Logam.

	Supporters:
Supporting lecturer	Arya Mahendra Sakti, S.T., M.T.

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	Explain the understanding of electrochemistry, corrosion and metals	Able to understand electrochemistry, corrosion and metals	**Criteria:** According to the assessment rubric	Lectures and questions and answers 2 X 50			0%

2	Understand electroplating preparation, basics of electroplating implementation	Able to know the basics of the metal plating process	**Criteria:** According to the assessment rubric	Lectures and questions and answers 2 X 50			0%
3	Understanding about sacrificial coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lecture, question and answer 2 X 50			0%
4	Understand about decorative - protective coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lecture, question and answer 2 X 50			0%
5	Understanding of engineered coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures and questions and answers 2 X 50			0%
6	Understand about rarely used coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures and questions and answers 2 X 50			0%
7	Understand about alloy coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures and questions and answers 2 X 50			0%
8	Understand autocatalytic coatings	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures, discussions, questions and answers, presentations 2 X 50			0%
9	Understand about plastic substrates	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures, discussions, questions and answers, presentations 2 X 50			0%
10	Understand electroforming	Able to know the various types of metal plating processes	**Criteria:** According to the assessment rubric	Lectures, discussions, questions and answers, presentations 2 X 50			0%
11	U.S.S		**Criteria:** According to the assessment rubric	2 X 50			0%
12	Able to demonstrate copper plating	Practicing the copper plating process	**Criteria:** According to the assessment rubric	Practice, discussion, consultation 2 X 50			0%
13	Able to demonstrate nickel plating	Practicing the nickel plating process	**Criteria:** According to the assessment rubric	Practice, discussion, consultation 2 X 50			0%
14	Able to demonstrate chrome plating	Practicing the chrome plating process	**Criteria:** According to the assessment rubric	Practice, discussion, consultation 2 X 50			0%
15	Able to make reports on copper, nickel and chrome plating	Conduct analysis of the metal plating process	**Criteria:** According to the assessment rubric	Discussion, consultation and presentation 2 X 50			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.