



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																																	
Materials Science II	8320302037		T=2 P=0 ECTS=3.18	3	July 18, 2024																																	
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																	
		Ir. Wahyu Dwi Kurniawan, S.Pd., M.Pd.																																	
Learning model	Case Studies																																					
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: 100px; height: 30px;">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;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 20px;">1</td> <td style="width: 20px;">2</td> <td style="width: 20px;">3</td> <td style="width: 20px;">4</td> <td style="width: 20px;">5</td> <td style="width: 20px;">6</td> <td style="width: 20px;">7</td> <td style="width: 20px;">8</td> <td style="width: 20px;">9</td> <td style="width: 20px;">10</td> <td style="width: 20px;">11</td> <td style="width: 20px;">12</td> <td style="width: 20px;">13</td> <td style="width: 20px;">14</td> <td style="width: 20px;">15</td> <td style="width: 20px;">16</td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
Short Course Description	This course studies metallic bonding, mechanical properties, physical properties, chemical properties, defects in materials, introduction to material testing, diffusion and phase transformation processes, Fe-Fe ₃ C diagrams, heat treatment and its effect on performance and engineering of material properties.																																					
References	Main :																																					
	<ol style="list-style-type: none"> 1. Suherman, W. 1999. Ilmu Logam 1. Penerbit ITS: Surabaya 2. Suherman, W. 1999. Ilmu Logam II. Penerbit ITS: Surabaya 3. Callister, William D. 2003. Material Science and Engineering An Introduction. Sixth Edition. Jhon Wiley & Sons, Inc: USA 4. Smith, William F. Hashemi, Javad. 2006. Foundations of Material Science and Engineering. Fourth Edition. Mc-Graw-Hill Companies, Inc: New York 5. Smith, William F. 1993. Structure and Properties of Engineering Alloy. Second Edition. Mc-Graw-Hill Companies, Inc: New York 																																					
	Supporters:																																					
Supporting lecturer	Arya Mahendra Sakti, S.T., M.T. Andita Nataria Fitri Ganda, S.T., M.Sc.																																					
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	Able to describe the relationship between the influence of microstructure and defects in materials on the properties of materials.	<ol style="list-style-type: none"> 1. Able to explain the relationship of microstructure to the properties of materials 2. Able to explain the mechanisms of various kinds of defects in materials 	Criteria: Appropriate in the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%																															

2	Able to describe the relationship between the influence of microstructure and defects in materials on the properties of materials.	1. Able to explain the relationship of microstructure to the properties of materials 2. Able to explain the mechanisms of various kinds of defects in materials	Criteria: Appropriate in the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
3	Able to identify defects and their advantages on the mechanical properties of materials.	Able to identify the advantages and disadvantages of defects in materials	Criteria: Appropriate in the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
4	Able to identify defects and their advantages on the mechanical properties of materials.	Able to identify the advantages and disadvantages of defects in materials	Criteria: Appropriate in the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
5	Be able to describe diffusion and phase transformation	Be able to explain the process of diffusion and phase transformation	Criteria: Appropriate in the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
6	Be able to describe diffusion and phase transformation	Know the types of diffusion and phase transformation	Criteria: In accordance with the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
7	Be able to describe diffusion and phase transformation	Able to explore diffusion and phase transformation	Criteria: In accordance with the assessment rubric	LectureDiscussionQuestion and AnswerPracticeAssignment 2 X 50			0%
8	U.S.S			2 X 50			0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							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.

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.