



**Universitas Negeri Surabaya  
Faculty of Engineering,  
Mechanical Engineering Undergraduate Study Program**

Document Code

## SEMESTER LEARNING PLAN

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>			<b>SEMESTER</b>	<b>Compilation Date</b>																																	
Casting Technology	2120102096		T=2	P=0	ECTS=3.18	6	July 18, 2024																																	
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																		
	.....		.....			Ir. Priyo Heru Adiwibowo, S.T., M.T.																																		
<b>Learning model</b>	Case Studies																																							
<b>Program Learning Outcomes (PLO)</b>	PLO study program that is charged to the course																																							
	Program Objectives (PO)																																							
	PLO-PO Matrix																																							
		P.O																																						
<b>Short Course Description</b>	PO Matrix at the end of each learning stage (Sub-PO)																																							
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"></td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="text-align: center;">P.O</td> <td style="width: 3%;">1</td> <td style="width: 3%;">2</td> <td style="width: 3%;">3</td> <td style="width: 3%;">4</td> <td style="width: 3%;">5</td> <td style="width: 3%;">6</td> <td style="width: 3%;">7</td> <td style="width: 3%;">8</td> <td style="width: 3%;">9</td> <td style="width: 3%;">10</td> <td style="width: 3%;">11</td> <td style="width: 3%;">12</td> <td style="width: 3%;">13</td> <td style="width: 3%;">14</td> <td style="width: 3%;">15</td> <td style="width: 3%;">16</td> </tr> </table>							Week																P.O	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Week																																							
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<b>References</b>	<b>Main :</b>  1. Heine,R.W. et al., <i>Priciples of Metal Casting</i> ,Mc Graw Hill Pub., New Delhi, 1986 Surdia,T., <i>Teknologi Pengecoran Logam</i> , P.Paramita, 1985 JohnCampbell, <i>Castings</i> , Second Edition,Elsevier Butterwoth-Heinemann, 2004 JohnCampbell, <i>Castings Practice: The TenRules of Castings</i> , Elsevier Butterwoth- Heinemann, 2005  <b>Supporters:</b>																																							
<b>Supporting lecturer</b>	Mochamad Arif Irfa'i, S.Pd., M.T.																																							
<b>Week-</b>	<b>Final abilities of each learning stage (Sub-PO)</b>	<b>Evaluation</b>		<b>Help Learning, Learning methods, Student Assignments, [ Estimated time]</b>		<b>Learning materials [ References ]</b>	<b>Assessment Weight (%)</b>																																	
		<b>Indicator</b>	<b>Criteria &amp; Form</b>	<b>Offline ( offline )</b>	<b>Online ( online )</b>																																			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																																	

1	understand the properties of liquid metals	<ol style="list-style-type: none"> <li>1.understand the difference between liquid metal and water</li> <li>2.understand the flow of molten metal</li> <li>3.understand the surface tension of liquid metal</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
2	understand the freezing of metals	<ol style="list-style-type: none"> <li>1.understand the solidification of pure metals</li> <li>2.understand the solidification of alloys</li> <li>3.understand freezing of castings</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
3	understand alloy equilibrium diagrams	<ol style="list-style-type: none"> <li>1.Able to read equilibrium diagrams</li> <li>2.able to explain the growth of aluminum structures</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
4	understand the microstructure and properties of castings	<ol style="list-style-type: none"> <li>1.understand the structure and properties of copper alloy castings</li> <li>2.understand the structure and properties of aluminum alloy castings</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
5	understand the shape and size of castings	<ol style="list-style-type: none"> <li>1.understand standard shapes and sizes of castings</li> <li>2.understand the accuracy of casting sizes</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
6	understand pattern making	<ol style="list-style-type: none"> <li>1.understand the determination of additional depreciation</li> <li>2.understand the additional determination of machine completion</li> <li>3.understand materials for patterns</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%

7	understand the casting channel system	<ol style="list-style-type: none"> <li>1.understand the shape of the parts of the channel system</li> <li>2.grouping channel systems</li> <li>3.understand channel systems for aluminum castings</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
8	Midterm exam	understand meeting material 1-7		written test 2 X 50			0%
9	understand adder in the casting process	<ol style="list-style-type: none"> <li>1.understand the terms of various enhancers and their roles</li> <li>2.adder for aluminum castings</li> </ol>		lectures, discussions, questions and answers, assignments and exercises 2 X 50			0%
10	understand cil in the casting process	<ol style="list-style-type: none"> <li>1.understand the terms for cil and its use</li> <li>2.understand cil determination for aluminum castings</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
11	understand sand molds in casting	<ol style="list-style-type: none"> <li>1.understand mold making with common couplings and drags</li> <li>2.understand core creation</li> <li>3.understand wet sand molding</li> <li>4.understand dry sand molding</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
12	understand molding sand in foundries	<ol style="list-style-type: none"> <li>1.understand the requirements for molding sand</li> <li>2.understand the properties of molding sand</li> <li>3.understand the theory of molding sand testing</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
13	understand sand molds with special binders	<ol style="list-style-type: none"> <li>1.understand leather mold making</li> <li>2.understand leather molding sand</li> </ol>		lectures, questions and answers, discussions, exercises and assignments 2 X 50			0%
14	understand the finishing work and heat treatment of castings	<ol style="list-style-type: none"> <li>1.understand repairs to post-casting castings</li> <li>2.understand heat treatment for aluminum alloy castings</li> </ol>		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%

15	understand casting defects and their prevention	1. understand the types of fluid defects and their properties 2. understand defects in aluminum castings		lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
16							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.**