



**Universitas Negeri Surabaya
Vocational Faculty,
D4 Mechanical Engineering Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																
Manufacturing Process I	2130203031	Compulsory Study Program Subjects	T=3	P=0	ECTS=4.77	4	July 17, 2024																																
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																	
	Arya Mahendra Sakti, S.T., M.T. ; Firman Yasa Utama, S.Pd., M.T. ; Ir. Wahyu Dwi Kurniawan, S.Pd., M.Pd. ; Ali Hasbi Ramadani, S.Pd., M.Pd.		Firman Yasa Utama, S.Pd., M.T			Arya Mahendra Sakti, S.T., M.T.																																	
Learning model	Case Studies																																						
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																						
	PLO-4	Develop yourself continuously and collaborate.																																					
	PLO-6	Able to communicate effectively both verbally and in writing accurately and validly to other parties who need it.																																					
	PLO-7	Able to use engineering tools as tools to design and produce components, manufacturing tools and mechanical equipment.																																					
	PLO-9	Able to apply knowledge of mathematics, science and/or materials, and engineering to gain a thorough understanding of engineering principles.																																					
	Program Objectives (PO)																																						
	PLO-PO Matrix																																						
		<table border="1" style="margin: auto;"> <tr> <td style="width: 15%;">P.O</td> <td style="width: 15%;">PLO-4</td> <td style="width: 15%;">PLO-6</td> <td style="width: 15%;">PLO-7</td> <td style="width: 15%;">PLO-9</td> </tr> </table>						P.O	PLO-4	PLO-6	PLO-7	PLO-9																											
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	PO Matrix at the end of each learning stage (Sub-PO)																																						
	<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 10%;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 5%;">1</td> <td style="width: 5%;">2</td> <td style="width: 5%;">3</td> <td style="width: 5%;">4</td> <td style="width: 5%;">5</td> <td style="width: 5%;">6</td> <td style="width: 5%;">7</td> <td style="width: 5%;">8</td> <td style="width: 5%;">9</td> <td style="width: 5%;">10</td> <td style="width: 5%;">11</td> <td style="width: 5%;">12</td> <td style="width: 5%;">13</td> <td style="width: 5%;">14</td> <td style="width: 5%;">15</td> <td style="width: 5%;">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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Short Course Description	This course is an understanding of various processes for making manufactured products starting from the casting process, machining, and also discusses the types of cooling fluids.																																						
References	Main :																																						
	<ol style="list-style-type: none"> 1. [1] Darmodiharjo, Darmaji. 2004. Petunjuk Kerja Mesin Bubut, Sekrap, dan Frais 1. Jakarta: Dikmenjur. 2. [2] Kalpakjian, Seroke. 2003. Manufacturing Processes Engineering Materials, Fourth edition, Prentice Hall 3. [3] Krar, S.F., Amand, J.W., Oswald, J.E.St., 1996. Machine Tool Operation, McGraw Hill, USA. 4. [4] Soetardjo. 1990. Mesin-Mesin Perkakas. Surabaya: Unipress IKIP Surabaya. 5. [5] Stephenson, David A, (2006). Metal Cutting Theory and Practice, Second edition, Taylor & Francis Group 6. [6] Suherman, Wahid. 1987. Pengetahuan Bahan. Jurusan Teknik Mesin & ITS 																																						
	Supporters:																																						
Supporting lecturer	Arya Mahendra Sakti, S.T., M.T. Firman Yasa Utama, S.Pd., M.T. Ir. Wahyu Dwi Kurniawan, S.Pd., M.Pd. 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	Able to understand basic manufacturing processes	Accuracy explains the basis of the manufacturing process	Form of Assessment : Participatory Activities	Lectures, discussions, questions and answers, exercises and assignments 2 X 50		Material: introduction & overview of manufacturing References: [2] Kalpakjan, Seroke. 2003. <i>Manufacturing Processes Engineering Materials, Fourth edition, Prentice Hall</i>	4%
2	What is manufacturing	accuracy in explaining what manufacturing is 2. accuracy in explaining industrial & product manufacturing 3. accuracy in explaining materials in manufacturing	Form of Assessment : Participatory Activities	Lectures, discussions, questions and answers, exercises and assignments 2 X 50		Material: Introduction and Overview of Manufacturing References: [2] Kalpakjan, Seroke. 2003. <i>Manufacturing Processes Engineering Materials, Fourth edition, Prentice Hall</i>	4%
3	What is manufacturing process	1. accuracy explains what the process operation is 2. accuracy explains what the assembly process is 3. accuracy explains production machines and chisels		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			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	Able to understand the cutting process	Identify the angles of the cutting tool. Describe the cutting process. Identify the occurrence of BUE		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%

6	Able to analyze the time and selection of machining processes	Analyzing the limitations and advantages of the machining process Calculating the cutting machining process time Identifying machining alternatives for a product based on specification limits, minimizing machining time and minimizing machining		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
7	Able to understand the turning process	Describe the definition of the turning process. Identify the cutting parameters of the turning process. Identify the types of cutting in the turning process. Identify the shape of the turning process. Calculate the time of the turning process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
8				2 X 50			0%
9	Able to understand the drilling process	Describe the definition of the drilling process. Identify the cutting parameters of the drilling process. Identify the types of cutting processes. Identify the shape of the cutting process. Calculate the time of the drilling process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
10	Able to understand the milling process	Describe the definition of the milling process. Identify the cutting parameters of the milling process. Identify the types of cuts in the milling process. Identify the shape of the milling process. Calculate the time of the milling process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%

11	Able to understand the grinding process	Describe the definition of the grinding process. Identify the cutting parameters of the grinding process. Identify the types of cuts in the grinding process. Identify the chip shape of the grinding process. Calculate the time of the grinding process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
12	Able to understand the drilling process	Describe the definition of the drilling process. Identify the cutting parameters of the drilling process. Identify the types of cutting in the drilling process. Identify the chip shape of the drilling process. Calculate the drilling process time.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
13	Able to understand the shaping process	Describe the definition of the scraping process. Identify the cutting parameters of the scrapping process. Identify the types of scrapping process. Identify the shape of the scraping process. Calculate the time of the scrapping process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
14	Able to understand the sawing process	Describe the definition of the sawing process. Identify the cutting parameters of the sawing process. Identify the types of cuts in the sawing process. Identify the chip shape of the sawing process. Calculate the time of the sawing process.		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
15	Able to understand the types and functions of cooling fluids	Describe the definition of coolant. Identify the types of coolant. Describe the function of coolant		Lectures, discussions, questions and answers, exercises and assignments 2 X 50			0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	8%
		8%

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.