



MODULE HAND BOOK

MECHANICAL ENGINEERING VOCATIONAL EDUCATION STUDY PROGRAM

FACULTY OF ENGINEERING – UNIVERSITAS NEGERI PADANG

COURSE NAME	CODE	Course classification	CU		Sem	Version
			Theory	Pract		
Machining Technology	MES1.61.1105	Compulsory Courses/ MEVE core course	1	2	1	1
Responsible	Drs. Abd. Aziz, M.Pd, Drs. Nofri helmi, M.Pd, Dr. Eko Indrawan, M.Pd; Zainal Abadi, S.Pd., M.Eng; Budi Syahri, S.Pd., M.PdT; Febri Prasetya, S.Pd., M.PdT; Rahmat Aziz Nabawi, S.Pd., M.Pd.T; Rifelino, S.Pd., MT			Signature		
INFORMATION	Dean	Head of Department	Coordinator of study program			
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Program Learning Outcome	Program learning outcome of Mechanical engineering vocational education:					
	<ol style="list-style-type: none"> 1. Possess a good ability to apply the basic science (mathematics and natural sciences) and other disciplines in profesional jobs / projects (Knowledge-understanding) <ol style="list-style-type: none"> 1.1. possess a good understanding and can apply the basic concept of mathematics to solve various technical problems 1.2. possess a good understanding and can apply basic the concept of physic to solve various technical problems 1.3. possess a good understanding and can apply basic the concept of chemistry to solve various technical problems 2. Possess a critical and creative thingking in identifying, formulating, problem solving and evaluating various problems in mechanical engineering using the most appropriate and effective scientific method (Engineering analysis, investigations and assessment): <ol style="list-style-type: none"> 2.1. problem identification skills 2.2. problem analysis skills 					

- 2.3. problem evaluation skills
3. Possess a good ability in designing, manufacturing and operating machines (**Engineering design**)
 - 3.1. able to formulate ideas/concepts into a technical drawing, design and budget plans
 - 3.2. able to operate various machines and other engineering equipment with the correct standard operating procedure
 - 3.3. able to design a machine or machinery system based on a valid scientific theory
 - 3.4. able to realize a concept/design into a prototype, manufacturing process and engineering system
4. Possess a good ability to design, organize and evaluate the education and learning process in *mechanical engineering vocational education*. (**Education design**)
 - 4.1. able to design curriculum and learning process by considering various aspects
 - 4.2. able to organize, control, evaluate and improve the quality of the learning process
 - 4.3. able to develop an interesting, effective and efficient learning medias
5. Possess a good ability to adapt to development in science and technology and apply it into professional jobs by considering any non-technical aspects. (**Engineering practice**)
 - 5.1. able to innovate and develop technology in the field of mechanical engineering by considering social, economic and environmental aspects
 - 5.2. able to carry out the optimization process and increase the efficiency of machines or machining system.
 - 5.3. able to improve the performance of machine/ machinery system by applying the information technology
6. Possess a good softskil and spirit of lifelong learning (**Transferable skill / softskill**)
 - 6.1. possess a religious character
 - 6.2. possess a spirit of nasionalisme, social sensitivity and environmental consevation orientation
 - 6.3. possess the ability to communicate effectively and work together in teamwork
 - 6.4. possess the ability to transfer science and technology to society to improve the quality of life
 - 6.5. possess a good characters of entrepreneur

Course learning outcomes	Course learning outcomes	
	CLO	PLO
	1. Knowing the types of machining processes	2.1, 2.2, 2.3
	2. Understand the basic concepts of bench work	3.1, 3.2, 3.3., 3.4
	3. Perform work processes with hand tools	3.1, 3.2, 3.3., 3.4
	4. Mastering the basic concepts of the lathe machine work process	3.1, 3.2, 3.3., 3.4
	5. Mastering the basic concepts of scrap machinery work processes	3.1, 3.2, 3.3., 3.4
	6. Mastering the basic concepts of grinding machine work processes	3.1, 3.2, 3.3., 3.4
	7. Mastering the basic concepts of the Gurdi process	3.1, 3.2, 3.3., 3.4
8. Mastered the basic concepts of threading	3.1, 3.2, 3.3., 3.4	
Course descriptions	Providing skills knowledge in sharpening cutting tools with grinding machines, operating conventional machine tools, such as lathes, scrap machines, drilling machines and fris machines for making various non-assembled objects	
References	Main Reference (RU):	
	1. Machine tool working instructions 2. The relevant textbook (Practicum Jobsheet)	
	Additional Reference (RP)	
Learning Media	Software:	Hardware:
		Bench work tools, machine tools and accessories
Team Teaching		
Assessment	Create product, progress reports and final reports	
Requirements Subject	No	

Course Objects

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
(1)	CLO-1: (PLO-1.2, 1.3) Students are able to explain: 1. Types of machining processes: 2. The types of machines used,	-Introduction of the machining process - get to know the machine tools and their supporting tools	Material explanation [1x100 ' Question and answer [1x50 ' Work on Image assignments[1x150 ']	Make a summary and description of the material presented in the resume book	Be able to explain the types of machining processes	RU-1 and RU-2
(2)	CLO-2: [PLO-1.2, 1.3, 2.1, 2.2] Students are able to master the basic concepts of bench work.	get to know the work process of hand tools	Material explanation [1x100 ' Question and answer [1x15 ' Work on assignments [1x185 ']	<ul style="list-style-type: none"> • Make a summary and description of the material presented in the resume book • 	Be able to explain the types of hand tools,	RU-1 and RU-2
(3)	CLO-3.1: [PLO-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are able to do practical work with hand tools.	Bench work practice with hand tools - cut - sawing off	Material explanation [1x100 ' Question and answer [1x15 ' Bench work practice[1x185 ']	<ul style="list-style-type: none"> • Bench work practice 	Able to do bench work practice	RU-1 and RU-2
(4)	CLO-3.2: [PLO-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are able to do practical work with hand tools.	Bench work practice with hand tools - File the surface - Smooth file	Material explanation [1x100 ' Question and answer [1x15 ' Bench work practice[1x185 ']	Bench work practice	Able to do bench work practice, file	RU-1 and RU-2
(5)	CLO-4,1: [CP- 1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the	Lathe: <ul style="list-style-type: none"> • Get to know how a lathe works • Lathe support 	Material explanation [1x100 ' Question and answer [1x15 ' Lathe work practice[1x185 ']	Lathe work practice	Able to perform lathe machine work practices	RU-1 and RU-2

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	basic concepts of lathe work processes	equipment				
(6)	CLO-4,2: [CP- 1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the basic concepts of lathe work processes	Lathe: <ul style="list-style-type: none"> Doing practical work using a lathe, turning the surface 	Material explanation [1x100 ' Question and answer [1x15 ' Lathe work practice[1x185 '	Lathe work practice	Able to perform lathe machine work practices	RU-1 and RU-2
(7)	CLO-4.3: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the basic concepts of lathe work processes	Lathe <ul style="list-style-type: none"> Doing a flat lathe Doing groove lathe 	Material explanation [1x100 ' Question and answer [1x15 ' Lathe work practice[1x185 '	Lathe work practice	Able to perform lathe machine work practices	RU-1 and RU-2
(8)	CLO-4.4: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the basic concepts of lathe work processes	Lathe <ul style="list-style-type: none"> Perform multilevel lathe Perform taper lathe process 	Material explanation [1x100 ' Question and answer [1x15 ' Lathe work practice[1x185 '	Lathe work practice	Able to perform lathe machine work practices	RU-1 and RU-2
(9)	Mid Test Exam					
(10)	CLO-5,1: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable mastering the basic concepts of	Lathe: <ul style="list-style-type: none"> Get to know how the scrap machine works. Scrap machine support equipment 	Material explanation [1x100 ' Question and answer [1x15 ' Working practice of scrap machines[1x185 '	Working practice of scrap machines	Able to perform scrap machine work practices	RU-1 and RU-2

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	scrap machine work processes	<ul style="list-style-type: none"> Doing practical work using scrap machines 				
(11)	CLO-5.2: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable mastering the basic concepts of scrap machine work processes	Scrap machine <ul style="list-style-type: none"> Project flat Straight ahead Shredding the Grooves 	Material explanation [1x100 ' Question and answer [1x15 ' Working practice of scrap machines[1x185 ']	Working practice of scrap machines	Able to perform scrap machine work practices	RU-1 and RU-2
(12)	CLO-6: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the basic concepts of grinding machine work processes	Lathe: <ul style="list-style-type: none"> Get to know how a grinding machine works. Grinding machine support equipment Doing practical work using a grinding machine 	Material explanation [1x100 ' Question and answer [1x15 ' Working practice of grinding machines[1x185 ']	Working practice of grinding machines	Able to perform grinding machine work practices	RU-1 and RU-2
(13)	CLO-7: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capable master the basic concepts of the work process of the drill machine	Lathe: <ul style="list-style-type: none"> Get to know how the drill machine works. Machine support equipment Doing practical work using a drill machine 	Material explanation [1x100 ' Question and answer [1x15 ' Work practice of the drill machine[1x185 ']	Work practice of the drill machine	Able to do drill machine work practices	RU-1 and RU-2
(14)	CLO-8.1: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2]	threading <ul style="list-style-type: none"> Know how to work 	Material explanation [1x100 ' Question and answer [1x15 '	Threading machine work practice	Able to do rolling machine work	RU-1 and RU-2

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	Students are capablemaster the basic concepts of the threading process	making outer thread and inner thread. <ul style="list-style-type: none"> • Get to know the screw making tool. • Doing practical work making external threads by using threaded Senai 	Threading work practice[1x185 ']		practice	
(15)	CLO-8.2: [CP-1.1., 1.2, 1.3, 2.1, 2.2., 3.2] Students are capablemaster the basic concepts of the threading process	threading <ul style="list-style-type: none"> • Doing practical work making threads using Hand Tap 	Material explanation [1x100 '] Question and answer [1x15 '] Threading work practice[1x185 ']	Threading machine work practice	Able to do rolling machine work practice	RU-1 and RU-2
(16)	Final Exam					

Note : 1 credit = (50 'TM + 60' BT + 60 'BM) / Week

TM = Face to Face (Lecture)

BT = Structured Learning.

BM = Independent Study

PS = Simulation Practicum (160 minutes / week)

PL = Laboratory Practicum (160 minutes / week)

T = Theory (aspects of science)

P = Practice (aspects of work skills)

The linkage between CLO and PLO and assessment methods

MSN1.62.4007	Assessment	Point (%)	PLO-1			PLO-2			PLO-3				PLO-4			PLO-5			PLO-6				
			1	2	3	1	2	3	1	2	3	4	1	2	3	1	2	3	1	2	3	4	5
CLO-1	TL.1, TL.2	10		V	V																		
CLO-2	TL.1, TL.2	20	V	V	V	V	V																
CLO-3.1	TP.1	5	V	V	V	V	V			V													
CLO-3.2	TP.1	5	V	V	V	V	V			V													
CLO-4.1	TP.2	5	V	V	V	V	V			V													
CLO-4.2	TP.2	5	V	V	V	V	V			V													
CLO-4.3	TP.2	5	V	V	V	V	V			V													
CLO-4.4	TP.2	5	V	V	V	V	V			V													
CLO-5.1	TP. 3	5	V	V	V	V	V			V													
CLO-5.2	TP. 3	5	V	V	V	V	V			V													
CLO-6	TP.4	5	V	V	V	V	V			V													
CLO-7	TP.4	5	V	V	V	V	V			V													
CLO-8.1	TP. 5	5	V	V	V	V	V			V													
CLO-8.2	TP. 5	5	V	V	V	V	V			V													
Presence		10																					
TOTAL		100																					

Assessment Component

- Practicum (TP) : 60%
- Practicum Report (TL) : 30%
- Presence : 10%
- Total : 100%

Scoring/Grading level description

	Excellent	Good	Satisfy	Fail
ability to describe	Able to describe correctly and completely	Able to describe correctly but not complete	Able to describe but less clear and incomplete	Unable to describe
ability to formulate	Able to formulate correctly and completely	Able to formulate correctly but not complete	Able to formulate but less clear and incomplete	Unable to formulate
ability to calculate	Able to calculate correctly and completely	Able to calculate correctly but not complete	Able to calculate but less clear and incomplete	Unable to calculate
ability to analyze	Able to analyze correctly and completely	Able to analyze correctly but not complete	Able to analyze but less clear and incomplete	Unable to analyze

Scoring and grading system

Score	Quality	Quality score	Designation	Score	Quality	Quality score	Designation
85 – 100	A	4.0	Outstanding	55 – 59	C	2.0	Acceptable
80 – 84	A-	3.6	Excellent	50 – 54	C-	1.6	Poor
75 – 79	B+	3.3	Very good	40 – 49	D	1.0	Poor
70 – 74	B	3.0	Good	≤ 39	E	0.0	Fail
65 – 69	B-	2.6	Good	-	T	-	Postpone
60 – 64	C+	2.3	Acceptable				

