



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		
Engineering Drawing	MES1.61.1104	Compulsory Courses / MEVE core course	1	2	1	1
Responsible	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; Dr. Waskito, M.Pd			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 thinking in identifying, formulating, problem solving and evaluating various problems in mechanical engineering using the most appropriate and effective scientific method (<i>Engineering analysis, investigations and assessment</i>): <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. Know the types of lines, letters and numbers in technical drawings	3.1
	2. Understand the basic concepts of using lines in drawings	3.1
	3. Students are able to explain and paint Line constructions	3.1, 3.4
4. Understand the projection concept in the image	3.1, 3.3	
Short course descriptions	Discusses the knowledge of engineering drawings which is the media / language of communication in the engineering field. Students are expected to be able to transfer information accurately through images in accordance with the standard rules set by the International Standard Organization (ISO)	
References	Main Reference (RU):	
	<ol style="list-style-type: none"> 1. E. Giesecke, et.al., Eng Graphics, 5th Edition, Prentice Hall (1993). 2. ISO 1101, Technical Drawings, 3. AW Boundy, Engineering Drawing, McGraw-Hill Book Company 4. Colin Simmons & Dennis Maguire, Manual of Engineering Drawing, Edward Arnold 5. Takeshi SG, Sugiarto Hartanto, Drawing Machines, Pradnya Paramita, 1983 6. Warren J.Luzadder, Fundamentals of Eng Drawing, Prentice-Hall, Inc. 	
	Additional Reference (RP)	
	1. Giesecke-Mitchell-Spencer-Hill-Dygdon-Novak, Technical Drawing, Prentice Hall Inc	
Learning Media	Software:	Hardware:
		Computer, LCD Projector and Whiteboard and peripherals
Team Teaching		
Assessment	Mid Test (UTS),Final Exam (UAS), Independent assignments	
Requirements Subject	No	

Course Objects

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
(1)	CLO-1.1: (PLO-3.1) Students are able to explain: <ol style="list-style-type: none"> 1. Drawing tools introduction: 2. standard machine drawing, 3. Synthesis of geometry 	Drawing tools introduction: standard drawing machine, drawing tools, geometry synthesis	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	Able to explain the types of technical drawing tools, technical drawing standards, geometric synthesis	RU-2 and RU-5
(2)	CLO-1.2: [PLO-3.1] Students are able to explain and paint various kinds of lines, in technical drawings according to ISO standards, write various lines and their uses.	Introduction of various lines in technical drawings according to ISO Standards	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 • The task of making Pictures 	Able to explain and paint various lines in technical drawings according to ISO standards	RU-2 and RU-5
(3)	CLO-2: [PLO - 3.1] Students are able to explain and paint types of letters and numbers in technical drawings according to ISO standards	Introduction of various letters and numbers in technical drawings according to ISO Standards	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 • The task of making Pictures 	Able to explain and paint fonts and numbers in technical drawings according to ISO standards	RU-2 and RU-5
(4)	CLO-3: [CP - 3.1]	Line construction:	Material explanation [1x100 ']	<ul style="list-style-type: none"> • Make a summary 	Able to explain	RU-2 and RU-5

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	Students are able to explain and paint Line constructions	<ul style="list-style-type: none"> • Plumb line • Divide the corner • Make pentagons and other facets • Make an ellipse 	Question and answer [1x15 '] Work on assignments [1x185 ']	and description of the material presented in the resume book <ul style="list-style-type: none"> • The task of making Pictures 	and paint line construction in pictures	
(5)	CLO-4.1: [CP - 3.1] 1. Students are capable Read and create American system projection images. 2. Read and create European system projection images. 3. Distinguishes American and European system projection images.-1	Projection image: <ul style="list-style-type: none"> • View in technical drawing • American projection image 	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 • The task of making Pictures 	Able to explain and paint American and European projection images	RU-2 and RU-5
(6)	CLO-4,2: [CP - 3.1] 1. Students are able to read and make American system projection images. 2. Read and create European system projection images. 3. Distinguishes American and European system	Projection Image: <ul style="list-style-type: none"> • European Projection Image 	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 • The task of making Pictures 	Able to explain and paint American and European projection images	RU-2 and RU-5

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	projection images - 2					
(7 and 8)	CLO-4.3: [CP - 3.1] Students are able to read and create orthogonal projection images	Projection Image: <ul style="list-style-type: none"> • Orthogonal Projection • Orthogonal isometric • Orthogonal Dimetric • Orthogonal Slanted • Orthogonal Perspective 	Material explanation [2x100 ' Question and answer [2x15 ' Work on assignments [2x185 ' ']	<ul style="list-style-type: none"> • Make a summary and description of the material presented in the resume book • The task of making Pictures 	Be able to explain and paint orthogonal projections	RU-2 and RU-5
(9)	Mid-Test Exam					
(10)	CLO-4.4: [CP - 3.1] 1. Students are capable Identify the various ways of giving measurements. 2. Place the correct size assignments on the image. 3. Modify the sizing of the engineering drawing. 4. Distinguish the size given on the inside and outside. 5. Read and interpret the measurements in the working drawing.	Image Size: various sizes of images, rules give the size of the image and paint the size of the image.	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 • The task of making pictures 	Be able to explain about the size and the rules in writing the size in technical drawings according to ISO standards	RU-2 and RU-5
(11 and 12)	CLO-4.5: [CP - 3.1, 3.3] 1. Students are capable	Image Cuts: Various kinds of cutouts,	Material explanation [2x100 ' ']	<ul style="list-style-type: none"> • Make a summary 	Be able to explain various cutout	RU-2 and RU-5

Week	Expected competencies	Topics	Method and strategy for learning	Assignment	Criterion / Assessment indicator	References
	Shows the various types of slices presentation. 2. Demonstrating how to draw a cut. 3. Clarify the image of objects that should not be cut. 4. Designing images of multiple objects that are cut the construction	how to draw a cut	Question and answer [2x15'] Work on assignments [2x185']	and description of the material presented in the resume book • The task of making pictures	images and how to make them	
(13)	CLO-4.6: [CP - 3.1, 3.3] 1. Students are capable State the function of the mark of work. 2. Planning various marks of work on working drawings. 3. Using work marks on working drawings	Work marks, work mark functions and writing work marks	Material explanation [1x100'] Question and answer [1x15'] Work on assignments [1x185']	• Make a summary and description of the material presented in the resume book • Task: create a picture	Able to mention, plan and use work marks in technical drawings	RU-2 and RU-5
(14 and 15)	CLO-4.7: [CP - 3.1, 3.3] 1. Students are capable Describe the difference in the picture of an outer thread (bolt) and an inner thread (nut). 2. Draw an outer thread	Picture of nuts and bolts Create outer thread and inner thread images	Material explanation [2x100'] Question and answer [2x15'] Work on assignments [2x185']	• Make a summary and description of the material presented in the resume book	Able to draw bolts and nuts and calculate the dimensions of nuts and bolts	RU-2 and RU-5

	8,9,10																						
Presence		10																					
TOTAL		100																					

Assessment Component

Midtest exam : 35%
 Final exams : 35%
 Duty : 20%
Presence : 10%
 Total : 100%

Scoring/Grading Level description

	Excellent	Good	Satisfy	Fail
Description	Be able to describe with right and complete	Be able to describe with right but less complete	Be able to describe but unclear and less complete	Not capable describe
Formulations	Able to formulate correctly and completely	Able to formulate correctly but incomplete	Able to formulate but less clear and incomplete	Not able to formulate
Calculate	Able to calculate correctly and completely	Able to calculate correctly but not complete	Able to count but less clear and incomplete	Not able to count
Analysis	Able to analyze correctly and completely	Able to analyze correctly but incomplete	Able to analyze but less clear and incomplete	Not able to analyze

Scoring/grading system

Score	Quality Value	Quality Score	Designation of Quality	Score	Quality Value	Quality Score	Designation of Quality
85 - 100	A	4.0	With compliments	55 - 59	C	2.0	Enough
80 - 84	A-	3.6	Very very good	50 - 54	C-	1.6	Not enough
75 - 79	B +	3.3	Very well	40 - 49	D	1.0	Less
70 - 74	B	3.0	Good	≤ 39	E	0.0	Failed
65 - 69	B-	2.6	Pretty good	-	T	-	Delayed
60 - 64	C +	2.3	More than enough				

