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		
Curriculum of TVET	MES1.61.5104	Compulsory Courses / MEVE (Educational aspect) core course	2	0	6	1
Responsible Lecturer	Prof. Dr. Nizwardi Jalinus, M.Ed		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:**
	1. Possess a good ability to apply the basic science (mathematics and natural sciences) and other disciplines in profesional jobs / projects (Knowledge-understanding) 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):*** 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

<table>
<tr><td>Course Learning Outcome</td><td>Course learning outcomes
<table>
<tr><th>CLO</th><th>PLO</th></tr>
<tr><td>1. Students are expected to be able to master the basic concepts of curriculum and the rational development of the CAR curriculum</td><td>4.1, 4.2</td></tr>
<tr><td>2. understand and master the principles and characteristics of the world of work and competency-based curriculum development models</td><td>4.1</td></tr>
<tr><td>3. Analyzing the development of the SMK curriculum, competency-based curriculum, KTSP and curriculum orientation in 2013</td><td>4.1, 4.2, 6.4</td></tr>
<tr><td>4. Have sufficient insight into international CAR education and curriculum. and able to analyze the comparative development of vocational education abroad</td><td>4.1, 4.2, 6.3, 6.4</td></tr>
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<tr><td>Course descriptions</td><td>This course provides knowledge to students to find out the basic concepts, characteristics and rationale of the educational curriculum</td></tr>
<tr><td>References</td><td>Main Reference (RU):
1. Idris, Zahara. (1991) Basic basic education. Padang: Angkasa Raya.
2. Mulyasa, E. (2003) Competency-Based Curriculum: Concept, Characteristics, and Implementation. Bandung: Youth Rosdakarya
Additional Reference (RP)
1. Rachman, Arief. (2007) Home-Schooling: My Class Home, My School World. Jakarta: Kompas Book Publisher.
2. Redja Mudyahardjo. (2001) Introduction to Education: A Preliminary Study of the Basics of Education in General and Education in Indonesia. Jakarta: Raja Grafindo Perkasa</td></tr>
<tr><td>Learning Media</td><td>Software:</td><td>Hardware:</td></tr>
<tr><td></td><td></td><td>Computer, LCD Projector and Whiteboard and peripherals</td></tr>
<tr><td>Team Teaching</td><td colspan="2"></td></tr>
<tr><td>Assessment</td><td colspan="2">Mid-Test Exam, Final Exam, Independent & group assignments, Group presentations</td></tr>
<tr><td>Requirements Subject</td><td colspan="2">No</td></tr>
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Course Objects

Week	Expected competencies	Topics	Method and strategy for leraning	Assignment	Criterion / Assessment indicattor	References
(1)	**CLO-1: (PLO-4.1,6.4)** Summarizes various concepts and principles CAR curriculum	Introduction, vocational education perspective, curriculum definition and characteristics of CAR.	Self-study, group discussions, and simulations	Make a summary and description of the material presented in the resume book	*Question & Answer*	RU-1 and RU-2
(2)	**CLO-1: [PLO-4.1,5.1]** Explain with examples about the rational development of the CAR curriculum	The rationale for developing the CAR curriculum	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book • Task work on questions	*Question & Answer*	RU-1, RU-2,
(3)	**CLO-2: [PLO-4.1, 5.1, 6.2]** Explain with examples about the basics of curriculum planning	Basic foundations of curriculum planning (theory, philosophy, social culture, and psychology)	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book • Task work on questions	*Question & Answer*	RU-1 and RU-2
(4)	**CLO-1-2: [CP-4.1]** Explain with examples about the Curriculum Development model	Curriculum Development Model	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book • Task work on questions	*Question & Answer*	RU-1, RU-2,
(5)	**CLO-2-3: [CP-4.1, 6.2,**	Classification of internal	Self-study, group	• Make a summary	*Question &*	RU-1, RU-3,

Week	Expected competencies	Topics	Method and strategy for leraning	Assignment	Criterion / Assessment indicattor	References
	6.4] Explain with examples about standardization and identification of data in CAR curriculum planning	combustion engines, components, cycle steps, 2 stroke and 4 stroke engines,	discussions, and simulations	and description of the material presented in the resume book • Task work on questions	*Answer*	
(6)	**CLO-3: [CP-4.1,6.1]** Explain with examples about the relationship between technology, school and the world of work	The relationship between technology, school and the world of work	Self-study, group discussions, and simulations (Public lecture)	• Make a summary and description of the material presented in the resume book • Diesel engine / gasoline engine demonstration	*Question & Answer*	RU-1, RU-3,
(7)	**CLO-4: [CP-4.1,6.4]** Explains with examples about curriculum development for technical and vocational education programs	Curriculum Development for Technical and Vocational Education Programs	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book • The task of making a summary of scientific articles	*Question & Answer*	RU-1, RU-2
(8)	**CLO-2.3: [CP-4.1,6.3, 6.4]** Explain with examples of competency-based curriculum and job competency analysis	Competency-based curriculum and job competency analysis	Self-study, group discussions, and simulations	•	*Question & Answer*	RU-1, RU-2
(9)	**Mid-Test exam**					
(10)	**CLO-3: [CP-4.1, 6.3]**	Graduate Competency	Self-study, group	• Make a summary	*Question &*	RU-1, RU-2

Week	Expected competencies	Topics	Method and strategy for leraning	Assignment	Criterion / Assessment indicattor	References
	Explain with examples of graduate Competency Standards and Curriculum Content Standards	Standards and Curriculum Content Standards	discussions, and simulations	and description of the material presented in the resume book • Task work on questions	*Answer*	
(11)	**CLO-3: [CP-4.1, 5.1, 6.4.]** Explain with examples about curriculum implementation	Implementation of the curriculum	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book • The task of summarizing scientific articles related to water turbines	*Question & Answer*	RU-1, RU-2
(12)	**CLO-4: [CP-4.1, 5.1,6.4]** Explains with an example about Dual System Education & Prakerind	Dual System Education & Prakerind	Independent learning, blended learning via WhatsApp, group assignments collected via email.	• Make a summary and description of the material presented in the resume book • Task: identify pump utilization in the surrounding environment	*Question & Answer*	RU-1, RU-2
(13)	**CLO-3-4: [CP-4.1, 4.2, 6.4]** Explain with examples about curriculum evaluation	Curriculum evaluation	Self-study, group discussions, and simulations	• Make a summary and description of the material presented in the resume book	*Question & Answer*	RU-1, RU-2

Week	Expected competencies	Topics	Method and strategy for leraning	Assignment	Criterion / Assessment indicattor	References
(14)	**CLO-3; [PLO-4.1,6.4]** Explain with an example of KTSP	KTSP	Independent learning, blended learning via WhatsApp, group assignments collected via email.	• Make a summary and description of the material presented in the resume book	*Question & Answer*	RU-1, RU-2
(15)	**CLO-3: [PLO-4.1,4.2,6.4]** Explain with an example of the 2013 curriculum orientation (SMK)	2013 curriculum orientation (SMK)	Self-study, group discussions, and simulations	• Making group presentations on non-conventional energy (4 groups) • Group discussion on renewable energy technology	*Question & Answer*	RU-1, RU-2
(16)	**CLO-4: [PLO-4.1,5.1, 6.2]** Explain with examples about Vocational Education abroad	International Vocational Education	Self-study, group discussions, and simulations	Create presentations and group discussions on the environmental impact of conventional energy convention machines	*Question & Answer*	RU-1, 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-2	UTS. 1	5											V							v		V	
CLO-1	UTS. 2	5											V									V	
CLO-1-2	UTS. 3	5											V									V	
CLO-2-3	UTS. 4	10											V	v								V	
CLO-1-2-3	UTS. 5	10											V								v	V	
CLO-3-4	UAS. 1	5											V							v		V	
CLO-3	UAS. 2	5											V									V	
CLO-2-3	UAS. 3	7.5											V							v	v	V	
CLO-3-4	UAS. 4	7.5											V	v						v		V	
CLO-1-2-3	UAS. 5	10											V									V	
CLO-1-2-3-4	Presentation	20											V									V	
CLO-1-2-3-4	Presentation												V	v							v	v	
Presence		10																					
TOTAL		100																					

Assessment Component

Midterm 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				