

UNES			Mechani		culty	of Eng	eri Surab gineering ergraduat	ļ, Ē		Prog	ıram						
				SEM	EST	ER LE		g pi	LAN	I							
Courses			CODE Course Fa			amily			Credit Weight			SEN	SEMESTER			ation D	ate
Energy C	onversion Mach	ine 2	2120102131	2120102131 Comput		ory Study Program Subjects			T=2 P=0 ECTS=3.18			8	4		Februar	y 4, 202	24
AUTHOR	IZATION		SP Develope	er			Course	Cluste	er Coor	dinator		Stu	dy Progr	am Cool	rdinato	r	
		Indra Herlam	ba Siregar, ST,M		Indra Herlamba Siregar, ST.,MT.					I	Ir. Priyo Heru Adiwibowo, S.T., M.T.						
Learning model	Case Studi	es															
Program Learning	PLO study	/ program	that is charge	ed to the course	е												
Outcom		Wor	k independently	independently and in groups													
(PLO)	PLO-11	Des	ign and develop	n and development of solutions that take into account the environment and sustainability													
	PLO-14	Scie	nce and engine	ce and engineering knowledge													
	Program C	Objectives	(PO)														
	PO - 1	Able	to calculate the	Performance of B	Energy Co	onversion I	Machines and	able to	conserv	ve energ	y in vehic	cles, bu	iildings a	nd indust	try		
	PLO-PO M	latrix															
			P.0	PLO-5	PL	.0-11	PLO-14										
			PO-1														
	PO Matrix	at the end	l of each learn	ning stage (Sub	-PO)												
			P.0						Week								
				1 2	3 4	5	6 7	8	9	10	11	12	13	14	15	16	
		P	0-1														
Short Course Descript	finally the a			based on the BK sion systems with				convers	sion ma	ichine ca	alculation	mater	ial with 6	i discuss	ion sub	-chapter	rs and
Reference	ces Main :																
	2. Kre 3. Kre 4. Pat 5. Din 6. You 7. PP ⁻ 8. http 9. http	eith, F, Gosw eith, F, Gosw rrick, D.R., e icer, I., Ros utube T ps://www.yo ps://www.yo	wami, DY, Energy wami, DY, Energy et.al, Energy Co en, Thermal Energy putube.com/watco putube.com/watco	h Konversi Energi gy Conversion (M gy management a nservation Guidel ergy Storage: Sys h?v=6NIVe_XRIF h?v=1XBCJ7txUv aan Efisiensi Ene	echanical and Conse book, 3rd stems and Ro	l Engineerii ervation Ha ed. Fairmo I Applicatio	andbook, CNC ont Press 2014 ons 2nd ed, Wil	Press,	2007								
	Supporters	s:															
Support lecturer	ing Indra Herlar Ir. Priyo Her Dany Iman	ru Adiwibov	r, S.T., M.T. vo, S.T., M.T. .T., M.T.														
Week-	Final abilities of each learning stage (Sub-PO)	of	Help Learning, Evaluation Student Assignments, [Estimated time]					sment nt (%)									
	(64516)		Indicator	Criteria & F	Form	Of	fline (offline))	Or	nline (o	nline)						
(1)	(2)		(3)	(4)			(5)			(6)				(7)		(8	
1	Be able to class internal combus motors	stion cla inte cor	scribe the ssification of ernal nbustion gines	Criteria: according to the Form of Assess Participatory Ac	sment :	Lectures, Assignme 2 X 50	, Discussions a ents	Ind				com Ref Heri Con	erial: Inte bustion r erence: I amba Sii version E Press 200	notors Indra regar, En Engines,	ergy	29	6
2	the performance of an internal combustion engine Pa		Criteria: according to ti Form of Asses Participatory Ac Practice/Perform	ssment : ctivities,	LectureD 2 X 50	viscussionAssig	ssionAssignment Material: II combustion Reference Herlamba : Conversior UniPress 2			bustion r erence: I amba Sii version E	motors Indra regar, En Engines,	ergy	109	%			

Document Code

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4 Interface Address and addres address andress and addres address and address andres address	3	working principles and main components of a steam generator	the working principles and main components of the Steam Power generating	according to the rubric Form of Assessment :		Systems References: Kreith, F, Goswami, DY, Energy Conversion (Mechanical Engineering), CNC Press, 2007 Material: Boiler Library: Youtube Material: Boiler	3%
Image: series in the series	4	competence to collect data and analyze steam	and analyze the performance of steam generator	according to the rubric Form of Assessment : Participatory Activities,	case studies	Material: Data and analysis of steam generator system performance. Reference: Kreith, F, Goswami, DY, Energy Conversion (Mechanical Engineering), CNC Press,	10%
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8 UTS 2 × 50 20% 9 students are able to classify cooling machines able to classify cooling machines able to classify cooling machines friteria: according to the rubric Porm of Assessment : 2 × 50 Lectures, Discussions and assignments Material: Classification of References: Indra Heriamba Siegar, Energy Conversion Machines, UmPress 2007 5% 10 Students are able to analyze cooling machines thermodynamically able to analyze cooling machines, thermodynamically Criteria: according to the rubric Porm of Assessment : Participatory Activities Lectures, Discussions and assignments 2 × 50 Material: Cooling Systems References: Indra Heriamba Siegar, Energy Conversion Machines, UmPress 2007 2% 11 Students are able to theoretically carry ordines able to analyze cooling machines thermodynamically Criteria: according to the rubric Porm of Assessment : Participatory Activities Lectures, Discussions and according to the rubric Porm of Assessment : Participatory Activities Porm of Assessment : Participatory Activities PracticePerformance Lecture/DiscussionAssignment Material: Cooling Systems References: Indra Heriamba Siegar, Energy Conversion Machines, UmPress 2007 3% 12 students are able to theoretically carry ordines able to industrial coording to the rubric Porm of Assessment : Participatory Activities, PracticePerformance Lecture/DiscussionAssignment Material: Energy Conservation Tips for Industrial according t	7	classification, working principles and analysis of fluid machines	resources and working principles and analysis of fluid machines	according to the rubric Form of Assessment :	Assignments	Material: Pump Library: Indra Herlamba Siregar, Energy Conversion Machine, UniPress 2007 Material: pump	5%
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	16	Summative exam					15%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	60%
2.	Portfolio Assessment	10%
3.	Practice / Performance	15%
4.	Test	15%
		100%

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.
 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
- 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. Learning Methods: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative 9. Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
- Learning, Contextual Learning, Project based Learning, and other equivalent methods.
 Learning materials are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.