

## Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences, Mathematics Education Masters Study Program

Document Code

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Courses				С	ODE				Cour	se Far	nily		Cree	lit We	ight		SEME	ESTER	Compilation Date
	) (Dev	pment and Its /eloping Media	and	84	410202	155							T=2	P=0	ECTS=	4.48		3	July 17, 2024
AUTHOR	RIZAT	ION		S	P Deve	elop	er					Course Cluster Coordinator				Study Program Coordinator		m	
																	Dr. Agung Lukito, M.S.		Lukito, M.S.
Learning model	I	Project Based	Lea	rning	g														
Program		PLO study pr	ogra	am t	that is	cha	rged	to the	cours	e									
Learning		PLO-6	Abl	e to	design,	imp	olemer	nt, and	evaluat	te an e	ffect	ive and	innova	ative m	nathemat	ics in	structio	on	
(PLO)		PLO-9	Abl	e to	demon	strat	te matl	hemati	cs peda	agogica	al co	ntent kr	nowled	ge and	d underst	andir	ng		
		PLO-11			rate an on task		e respo	onsible	profess	sionally	y and	d ethica	lly in c	omplet	ting math	emat	tics and	d mathen	natics
		PLO-13	Abl pre	e to sent	work in and sc	dep ienti	enden ifically	tly on a discus	a compl is the re	ex pro esults t	blen ooth	n in mat orally a	hemat nd in v	ics and riting	d mathen	natics	educa	ation, and	l highly
		Program Obj	ectiv	ves (	(PO)														
		PLO-PO Matr	ix																
					P.0			PLO-	6	F	PLO-	-9	F	LO-11	-	PL	0-13		
		PO Matrix at	the e	ne end of each learning stage (Sub-PO)															
			_																
				P.0		1						1 1	Week					<u> </u>	
					1	2	2 3	4	5	6	7	8	9	10	11 1	L2	13	14	15 16
Short Course Descript																			
Referen	ces	Main :																	
		Supporters:																	
Support lecturer		Dr. Agung Luki Dr. Janet Trine Dr. Siti Khabiba	ke M	anoy															
Week-	eac stag				E	Eval	uatior	1				Help Learning, Learning methods, Student Assignments, [ Estimated time]			ma	arning terials erences	Assessment Weight (%)		
	(Su	b-PO)		Indi	cator		Crit	teria &	Form		Offli offli	ine( ine)	C	nline	( online	)	1		
(1)		(2)			(3)			(4)			(t	5)	(6)					(7)	(8)

1		Form of Assessment : Participatory Activities	Explanation of mathematics learning media as a representation of mathematical objects		5%
2		Criteria: Display of power point slides and videos about mathematics learning media Form of Assessment : Participatory Activities	Student presentations related to: • Concept of mathematics learning media • Characteristics of mathematics learning media		5%
3		Form of Assessment : Participatory Activities	Student presentations related to the types and properties of mathematics learning media		5%
4	<ol> <li>Identifying relevant learning media components</li> <li>Exploring the relationship between learning media components</li> <li>Determining the objectives of learning media</li> </ol>	Form of Assessment : Participatory Activities	Analyzing examples of learning media		5%

5	Designing and	<ul> <li>Designing</li> </ul>	Criteria:	Designing and	Materials: 1.	18%
_	producina	manipulative	Quantitative &	producing	Mathematics	
	manipulative	manipulative learning media	Non-test	manipulative	books, both	
	learning media	for certain	(Performance			
	5	mathematics	report)	learning media	student	
		topics •	reporty		books and	
		Producing	Form of		teacher	
		manipulative			books. 2.	
		learning media	Assessment		Bell-Gredler,	
		for certain	Project Results		Margaret E.	
		mathematics	Assessment /			
		topics	Product Assessment		1986.	
					Learning and	
					Instruction.	
					New York:	
					Macmillan	
					Publishing	
					Company. 3.	
					Fenrich, P.	
					(1997).	
					Practical	
					Guidelines	
					For	
					Developing	
					Instructional	
					Multimedia	
					Applications.	
					USA:Harcour	
					Brace	
					College	
					Dublisher	
					Publishers. 4	·
					Heinich, R.,	
					Molenda.	
					(1999).	
					Instructional	
					Media and	
					Technologies	,
					for Learning.	
					USA:	
					Prentice Hall	
					5. Journal of	
					Education,	
					both foreign	
					and domestic	;
					6. School	
					curriculum 7.	
					Robert	
					Heinich	
					Merrill, (2002	<b>`</b>
						)
					Instruction	
					Media and	
					Technologies	
					for learning 8	.
					Smaldino,	
					SE, Deborah	
					LL, and	
					James DR,	
					(2011)	
					Instructional	
					Technology	
					and Media fo	r l
					Learning:	
					Learning	
					Technology	
						.
					and Media fo	r
					Learning.	
					Jakarta:	
					Kencana. 9.	
					Manoy, JT,	
					(2021)	
					Flipbook	
					Class VIII	
					Middle	
					School	
					Mathematics	
					Learning	
					Media	
					(Manual)	
					Library:	

6	Designing and	<ul> <li>Designing</li> </ul>	Criteria:	Designing and	Materia	als: 1. 09	%
•	producing	manipulative	Quantitative &	producing	Mathen		
	manipulative	learning media	Non-test	manipulative	books,		
	learning media	for certain	(Performance				
	ioug inoulu	mathematics	report)	learning media	student		
		topics •	reporty		books a	and	
		Producing	<b>F</b>		teacher		
		manipulative	Form of		books.	2	
		learning media	Assessment :		Bell-Gr		
		for certain	Project Results				
		mathematics	Assessment /		Margar	ЭГ⊏.	
		topics	Product Assessment		1986.		
					Learnin		
					Instruct	ion.	
					New Yo	ork:	
					Macmil	an	
					Publish		
					Compa		
					Compa	ny. 5.	
					Fenrich		
					(1997).		
					Practica	al	
					Guidelii	nes	
					For		
					Develo	oina	
					Instruct		
					Multime		
					Applica		
					USA:Ha	arcourt	
					Brace		
					College	.	
					Publish	ors 1	
					Heinich	D	
					Molend		
					(1999).		
					Instruct	ional	
					Media a		
					Techno	logios	
					for Lear	ning.	
					USA:		
					Prentice	e Hall.	
					5. Jouri	nal of	
					Educati	on.	
					both for		
					and dor		
					6. Scho		
					curricul		
					Robert		
					Heinich		
					Merrill,		
					Instruct		
1					Media a		
					Techno		
					for lean		
1					Smaldir		
					SE, De		
					LL, and		
1					James		
1					(2011)		
					Instruct	ional	
1					Techno		
					and Me		
					Learnin		
					Learnin		
					Techno		
					and Me		
					Learnin		
1					Jakarta		
1							
					Kencan		
1					Manoy,	JI,	
					(2021)		
1					Flipboo		
1					Class V		
					Middle		
					School		
1							
1					Mathen		
					Learnin	g	
					Media		
1					(Manua	l)	
					Library		
1			1		<b>E</b> 151 <b>A</b> 1 y	-	

7	Designing and	<ul> <li>Presenting</li> </ul>	Criteria:	Presentation	Materials	s: 1. 14%
	producing	manipulative	Quantitative &	of	Mathema	
	manipulative	learning media	Non-test	manipulative	books, bo	
	learning media	designs for		learning media	student	501
		certain	Form of	designs	books an	d
		mathematics	Assessment :	uesigns	teacher	.u
		topics •	Project Results			
		Presenting	Assessment /		books. 2.	
		manipulative learning media	Product Assessment		Bell-Grec	
		products for	Product Assessment		Margaret	. E.
		certain			1986.	
		mathematics			Learning	
		topics			Instructio	n.
					New York	k:
					Macmilla	n
					Publishin	a
					Company	
					Fenrich	
					(1997).	
					Practical	
					Guideline	25
					For	
					Developi	
					Instructio	
					Multimed	
					Application	ons.
					USA:Har	court
					Brace	
					College	
					Publisher	rs 1
					Heinich,	
					Molenda.	
					(1999).	
					Instructio	
					Media an	ld
					Technolo	ogies
					for Learn	ing.
					USA:	Ū.
					Prentice	Hall.
					5. Journa	
					Education	
					both fore	
					and dom	
					6. Schoo	
					curriculur	n /.
					Robert	
					Heinich	
					Merrill, (2	
					Instructio	
					Media an	ld
					Technolo	ogies
					for learning	
					Smalding	•
					SE, Debo	brah
					LL, and	
					James D	P
						13,
					(2011)	mal
					Instructio	
					Technolo	
					and Medi	
					Learning	
		1			Learning	
					Technolo	уgy
					and Medi	
					Learning	
					Jakarta:	
		1			Kencana	9
					Manoy, J	
					(2021)	',
					Flipbook	
					Class VII	1
					Middle	
					School	
					Mathema	
					Learning	
					Media	
					(Manual)	
					Library:	
		1			Libidiy.	

		1			1		
8	Designing and	<ul> <li>Presenting</li> </ul>	Criteria:	Presentation		Materials: 1.	0%
	producing	manipulative	Quantitative &	of		Mathematics	
	manipulative	learning media	Non-test	manipulative		books, both	
	learning media	designs for certain		learning media		student	
		mathematics	Form of	designs		books and	
		topics •	Assessment :			teacher	
		Presenting	Project Results			books. 2.	
		manipulative	Assessment /			Bell-Gredler,	
		learning media products for	Product Assessment			Margaret E.	
		certain				1986.	
		mathematics				Learning and	
		topics				Instruction.	
						New York:	
						Macmillan	
						Publishing Company. 3.	
						Fenrich, P.	
						(1997).	
						Practical	
						Guidelines	
						For	
						Developing	
1						Instructional	
						Multimedia	
						Applications.	
						USA:Harcourt	
						Brace	
						College	
						Publishers. 4.	
						Heinich, R.,	
						Molenda.	
						(1999).	
						Instructional	
						Media and	
						Technologies	
						for Learning.	
						USA: Prentice Hall.	
						5. Journal of	
						Education,	
						both foreign	
						and domestic	
						6. School	
						curriculum 7.	
						Robert	
						Heinich	
						Merrill, (2002)	
						Instruction	
						Media and	
1						Technologies	
1						for learning 8.	
1						Smaldino,	
						SE, Deborah	
1						LL, and James DR,	
1						(2011)	
1						Instructional	
						Technology	
						and Media for	
						Learning:	
1						Learning	
1						Technology	
1					i	and Media for	
						Learning.	
						Jakarta:	
						Kencana. 9.	
1						Manoy, JT,	
1						(2021)	
						Flipbook	
						Class VIII Middlo	
						Middle	
						School Mathematics	
						Mathematics Learning	
						Media	
1						(Manual)	
						Library:	

9	Designing and	<ul> <li>Presenting</li> </ul>	Criteria:	Presentation		Materials: 1.	0%
	producing	manipulative	Quantitative &	of		Mathematics	
	manipulative	learning media	Non-test	manipulative		books, both	
	learning media	designs for certain		learning media		student	
		mathematics	Form of	designs		books and	
		topics •	Assessment :			teacher	
		Presenting	Project Results			books. 2.	
		manipulative	Assessment /			Bell-Gredler,	
		learning media products for	Product Assessment			Margaret E.	
		certain				1986.	
		mathematics				Learning and	
		topics				Instruction.	
						New York:	
						Macmillan	
						Publishing Company. 3.	
						Fenrich, P.	
						(1997).	
						Practical	
						Guidelines	
						For	
						Developing	
						Instructional	
						Multimedia	
						Applications.	
						USA:Harcourt	
						Brace	
						College	
						Publishers. 4.	
						Heinich, R.,	
						Molenda.	
						(1999). Instructional	
						Media and	
						Technologies	
						for Learning.	
						USA:	
						Prentice Hall.	
						5. Journal of	
						Education,	
						both foreign	
						and domestic	
						6. School	
						curriculum 7.	
						Robert	
						Heinich	
						Merrill, (2002)	
						Instruction	
						Media and	
1						Technologies for learning 8.	
						Smaldino,	
						SE, Deborah	
						LL, and	
1						James DR,	
						(2011)	
						Instructional	
						Technology	
						and Media for	
						Learning:	
						Learning	
						Technology	
						and Media for	
						Learning. Jakarta:	
						Kencana. 9.	
						Manoy, JT,	
						(2021)	
						Flipbook	
1						Class VIII	
1						Middle	
1						School	
						Mathematics	
						Learning	
						Media	
						(Manual)	
1						Library:	
L			1		1		

10	Design and	<ul> <li>Presenting</li> </ul>	Criteria:	Designing IT-		Material: [1].	27%
	produce IT-	IT-based	Quantitative &	based learning		School	-
	based learning	learning media	Non-test	media		curriculum	
	media	designs for	(Performance	media		[2]. School	
		certain	report)			mathematics	
		mathematics				books, both	
		topics ● Presenting IT-	Form of			student	
		based learning	Assessment :			books and	
		media products	Project Results				
		for certain	Assessment /			teacher	
		mathematics	Product Assessment			books [3].	
		topics				Ivers, KS &	
						Barron, AE	
						2009.	
						Multimedia	
						Projects in	
						Education:	
						Designing,	
						Producing,	
						and	
						Assessing.	
						Libraries	
						Unlimited. [4].	
						Gredler, ME	
						2009.	
						Learning and	
						Instruction:	
						Theory into	
						Practice.	
						Merrill	
						Pearson	
						Education,	
						Inc. [5]. Janet	
						Trineke	
						Manoy, 2021.	
						Class VIII	
						Manual	
						Learning	
						Media Series.	
						Flipbook [6].	
						Various	
						educational	
						journals	
						published	
						both abroad	
						and	
						domestically	
1						. Library:	
						Material: [7].	
						Lang-Raad,	
						ND &	
						Marzano, RJ	
						2019. The	
						New Art and	
						Science of	
						Teaching	
						Mathematics.	
						Solution Tree	
1						Press.	
						References:	
						Material:	
						Principles of	
						decigning	
						designing	
						and	
						producing IT-	
						based	
1						learning	
						media	
						Library:	
L	L	L	1	l	1		

11	Design and	<ul> <li>Presenting</li> </ul>	Criteria:	Designing IT-	Material: [1	.]. 0%
	produce IT-	IT-based	Quantitative &	based learning	School	
	based learning	learning media	Non-test			
	media	designs for	(Performance	media	curriculum	
		certain	report)		[2]. School	
		mathematics	reporty		mathematic	s
		topics •	Forme of		books, both	1
		Presenting IT-	Form of		student	
		based learning	Assessment :		books and	
		media products	Project Results			
		for certain	Assessment /		teacher	
		mathematics	Product Assessment		books [3].	
			FIGURE ASSESSMENT		Ivers, KS &	
		topics			Barron, AE	
					2009.	
					Multimedia	
					Projects in	
					Education:	
					Designing,	
					Producing,	
					and	
					Assessing.	
			1		Libraries	
			1			41
			1		Unlimited. [	4].
			1		Gredler, MI	=
			1		2009.	
			1		Learning ar	nd
			1		Instruction:	-
			1			
			1		Theory into	
					Practice.	
					Merrill	
					Pearson	
					Education,	
					Inc. [5]. Jar	let
					Trineke	
					Manoy, 202	21.
					Class VIII	
					Manual	
					Learning	
					Media Serie	es.
					Flipbook [6	
					Various	
					educationa	
					journals	
					published	
					both abroad	4
					and	
					domestical	У
			1		. Library:	
			1			
			1		Billion and a line of the	n
			1		Material: [7	
					Lang-Raad	,
			1		ND &	
			1		Marzano, F	J
					2019. The	
						4
			1		New Art an	u
			1		Science of	
			1		Teaching	
			1		Mathematic	· s
			1		Solution Tr	
			1			ee
			1		Press.	
			1		Reference	S:
			1			
			1			
					Material:	.
			1		Principles of	of
			1		designing	
			1			
			1		and	-
			1		producing I	1-
			1		based	
	1	1	1		learning	
					i e e el -	
					media Library:	

Solution Tr Press. Reference Material: Principles of designing and		media	designs for certain mathematics topics ● Presenting IT- based learning media products for certain mathematics topics	Non-test (Performance report) Form of Assessment : Project Results Assessment / Product Assessment	media	References: Material: Principles of designing and producing IT- based learning media	
13          • Present IT- based learning media designs for certain mathematics topics • Present IT- based learning media designs for certain mathematics topics •          Criteria: Quantitative & Non-test          Presenting IT- based learning media designs and products         Form of Assessment : Project Results for certain mathematics          Form of Assessment / Product Assessment          Presenting IT- based learning media designs and products	13		based learning media designs for certain mathematics topics • Present IT- based learning media products for certain	Quantitative & Non-test Form of Assessment : Project Results Assessment /	based learning media designs		21%

14	ba m foi m to Pr ba m foi m	Present IT- ased learning edia designs r certain athematics pics • resent IT- ased learning edia products r certain athematics pics	Criteria: Quantitative & Non-test Form of Assessment : Project Results Assessment / Product Assessment	Presenting IT- based learning media designs and products		0%
15	ba m foi m to Pr ba m foi m	Present IT- ased learning edia designs r certain athematics pics • resent IT- ased learning edia products r certain athematics pics	Criteria: Quantitative & Non-test Form of Assessment : Project Results Assessment / Product Assessment	Presenting IT- based learning media designs and products		0%
16	ba m foi m to Pr ba m foi m	Present IT- ased learning edia designs r certain athematics pics • resent IT- ased learning edia products r certain athematics pics	Criteria: Quantitative & Non-test Form of Assessment : Project Results Assessment / Product Assessment	Presenting IT- based learning media designs and products		0%

## Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	20%
2.	Project Results Assessment / Product Assessment	80%
		100%

## Notes

- 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.
- 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.
- 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.