

Universitas Negeri Surabaya Faculty of Education, Doctoral Study Program in Basic Education

Document Code

SEMESTER LEARNING PLAN

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Courses			CODE		Co	ours	se Fa	amily	'	(Cred	it We	eight		SE	EMES	TER	Cor Dat	npilat e	ion
Mathematical Pra	axis Study*		8602203008					gram ours		٦	Г=3	P=0	ECT	S=7.5	6	3		Apri 202	l 29, 3	
AUTHORIZATION	N		SP Developer					Course Cluster Coordinator					Study Program Coordinator							
			Dr. Wiryanto, M.Si.				-							Prof. Dr. Suryanti, M.Pd.			d.			
Learning model	Project Based Le	earr	ning																	
Program	PLO study prog	rogram that is charged to the course																		
Learning Outcomes (PLO)	PLO-3 Develop logical, critical, systematic and creative thinking in carrying ou expertise and in accordance with work competency standards in the field														eir fiel	d of				
	PLO-5	Ma	astering the philos	oph	iy anc	l lea	arnin	ig me	thod	lolog	y of l	basic	educa	ation to	proc	luce le	earning	g inno	vation	s.
	PLO-7															tribute to the development o basic education needs.				t
	PLO-11	res	le to develop basi sponsive to studer ormation.																	b
	Program Objec	tive	es (PO)																	
	PO - 1 PLO-PO Matrix	Ma thir of s the edu Ma rea	velop knowledge thematics so as hking in looking at study we can see development of ucation that emer thematics educa isoning, and utiliz ucation, especially	to Ma cha hui ge f tion	obtair anges man rom p . 4. hiloso	n a atic s in civi ohile Ma ophi	con s so par lizati osop nago ical	nprel that adigr ion. hical e ar logic	nensi throu n shi 3. Ar stud d de rega	ive u ugh a ifts re nalyz lies r evelo	inder an in egaro e va regar p re	stand ter- o ding t rious ding esear	ding. 2 r mult he his para the na ch ba	2. Cha i-discip storical digms ature o ased o	inging blinary philo in ap f mat on co	g the y appr osophy oproad hema orrect	existir oach of M ches t tics ar and	ng pa with o athem o Ma nd the comp	radign ther fie natics thema natur rehen	n of elds and tics e of sive
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		-	PO-1	_	_	-	-	-	-	-	-	-								
		L															1	1	1	1
Short Course Description	Mathematics edu Mathematics edu and axiology of M for broadening th developing and in from that, this cou	e deepens understanding of the general approach to the philosophy of Mathematics, the pl s education, and the impact of different paradigms of views of the philosophy of Mathematics s education. In detail, this course is designed to provide an in-depth understanding of the ontology, et y of Mathematics, the characteristics and nature of Mathematics education in elementary schools ing the vision of doctoral candidates so that it can trigger the ability to think reflectively and thinl and implementing Mathematics education and its relationship to the development of civilization in s is course is also designed to study and analyze various paradigms in Mathematics education appro- various theories ranging from behavioristics, social constructivism, to critical and postmodern paradi-								cs on y, epis ols as hink c n soci proacl	views stemo a veh riticall ety. Ap nes wi	on logy nicle y in part								
References	Main :																			
	Supporters:																			

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Supporting Dr lecturer		Dr. Wiryanto, M.	SI.					
	learning			Evaluation	Lear Stude	elp Learning, ning methods, nt Assignments, <mark>stimated time]</mark>	Learning materials [References	Assessment Weight (%)
		stage	Indicator	Evaluation Criteria & Form	Lear Stude	ning methods, nt Assignments,	materials	

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2	1. Demonstrate a	1. Able		PBL- and	-	Material:	0%
	responsible attitude	to	Form of	direction by	-	Identification	
	towards work in their field	present	Assessment :	the		of problems	
	of expertise independently.	the	Participatory	Mathematics		according to	
	2. Able to develop knowledge, technology	problems	Activities, Portfolio	Fraction		the issues	
	and/or art that has novelty	raised based on		Study		raised	
	value in the scientific field	sub-	/ 000001110112	subject		regarding	
	of basic education and	CPMK at		instructor		each	
	professional practice	meeting		3x50		participant's	
	through research to	1 and					
	produce creative, original	able to		minutes		dissertation	
	and tested work. 3. Able to	provide				proposal plan	
	discover or develop new	direction				based on a	
	scientific theories/conceptions/ideas,	and				study of	
	contributing to the	solution actions.				mathematical	
	development and practice	actions.				fractions in	
	of science and/or					basic	
	technology that pays					education.	
	attention to and applies the					References:	
	human values of						
	elementary school					Material: 1.	
	education, by producing					Biehler, R.,	
	scientific research based					Scholz, R.W.,	
	on scientific methodology,					Strässer, R.,	
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						shift in	
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						philosophy of	
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						Nature. References:	

3	1. Demonstrate a	1. Able		PBL- and	-	Material:	5%
	responsible attitude	to	Forms of	direction by	-	Identification	
	towards work in their field	present	Assessment :	the		of problems	
	of expertise independently.	the	Participatory	Mathematics		according to	
	2. Able to develop	problems	Activities, Project	Fraction		the issues	
	knowledge, technology	raised	Results Assessment			raised	
	and/or art that has novelty	based on		Study			
	value in the scientific field of basic education and	sub- CPMK at	/ Product	subject		regarding	
	professional practice	meeting	Assessment,	instructor		each	
	through research to	1 and	Portfolio	3x50		participant's	
	produce creative, original	able to	Assessment	minutes		dissertation	
	and tested work. 3. Able to	provide				proposal plan	
	discover or develop new	direction				based on a	
	scientific	and				study of	
	theories/conceptions/ideas,	solution				mathematical	
	contributing to the	actions.				fractions in	
	development and practice					basic	
	of science and/or					education.	
	technology that pays					References:	
	attention to and applies the human values of						
	elementary school						
	education, by producing					Material: 1.	
	scientific research based					Biehler, R.,	
	on scientific methodology,					Scholz, R.W.,	
	logical, critical, systematic					Strässer, R.,	
	and creative thinking. 4.					&	
	Able to discover or develop					Winkelmann,	
	theories/concepts/scientific					B. (Eds.).	
	ideas in the field of basic					(2006).	
	education that have					Didactics of	
	novelty value through inter-					mathematics	
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	disciplinary approaches as well as applying humane					discipline	
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						and	
						implications of	
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						& Moeller, R.	
						(2016). The	
						philosophy of	
						mathematics	
						education.	
						Springer	
						Nature.	
						References:	
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4	1. Internalize the spirit of independence, struggle and entrepreneurship. 2. Able to solve science, technology and/or arts problems in the scientific field of basic education through an interdisciplinary, multidisciplinary or transdisciplinary approach. 3. Able to prepare interdisciplinary, multidisciplinary research, including theoretical studies and/or experiments in the fields of science, technology, arts and innovation which are outlined in the form of dissertations, and papers that have been published in reputable international journals. 4th Meeting 4. Able to communicate research results through publications published in reputable international journals.	Criteria: The assessment criteria are based on the final ability achievements at meeting 4. Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Problem Base Learning (PBL) 3x50 minutes	Material: 3. Ernest, P., Skovsmose, O., Paul van Bendegem, J., Bicudo, M., Miarka, R., Kvasz, L., & Moeller, R. (2016). The philosophy of mathematics education. Springer Nature. 4. Ernest, P. (Ed.). (2003). Mathematics education and philosophy: An international perspective. Routledge. 5. Ernest, P. (1998). Social constructivism as a philosophy of mathematics Sunny Press. 6. Ernest, P. (1994). The philosophy of mathematics and the didactics of mathematics as a scientific discipline, 335-350. References:	5%
5	1. Internalize the spirit of independence, struggle and entrepreneurship. 2. Able to solve science, technology and/or arts problems in the scientific field of basic education through an interdisciplinary or transdisciplinary approach. 3. Able to prepare interdisciplinary or transdisciplinary or transdisciplinary research, including theoretical studies and/or experiments in the fields of science, technology, arts and innovation which are outlined in the form of dissertations, and papers that have been published in reputable international journals. 4th Meeting 4. Able to communicate research results through publications published in reputable international journals.	Criteria: The assessment criteria are based on the final ability achievements at meeting 4. Form of Assessment of Project Results / Product Assessment, Practices / Performance	Problem Base Learning (PBL) 3x50 minutes	Material: 3. Ernest, P., Skovsmose, O., Paul van Bendegem, J., Bicudo, M., Miarka, R., Kvasz, L., & Moeller, R. (2016). The philosophy of mathematics education. Springer Nature. 4. Ernest, P. (Ed.). (2003). Mathematics education and philosophy: An international perspective. Routledge. 5. Ernest, P. (1998). Social constructivism as a philosophy of mathematics. Sunny Press. 6. Ernest, P. (1994). The philosophy of mathematics and the didactics of mathematics as a scientific discipline, 335-350. References:	10%

6	1. Internalize the spirit of independence, struggle and entrepreneurship. 2. Able to solve science, technology and/or arts problems in the scientific field of basic education through an interdisciplinary, multidisciplinary or transdisciplinary approach. 3. Able to prepare interdisciplinary research, including theoretical studies and/or experiments in the fields of science, technology, arts and innovation which are outlined in the form of dissertations, and papers that have been published in reputable international journals. 4th Meeting 4. Able to communicate research results through publications published in reputable international journals.	Criteria: The assessment criteria are based on the final ability achievements at meeting 4. Form of Assessment : Project Results Assessment / Product Assessment	Problem Base Learning (PBL) 3x50 minutes	Material: 3. Ernest, P., Skovsmose, O., Paul van Bendegem, J., Bicudo, M., Miarka, R., Kvasz, L., & Moeller, R. (2016). The philosophy of mathematics education. Springer Nature. 4. Ernest, P. (Ed.). (2003). Mathematics education and philosophy: An international perspective. Routledge. 5. Ernest, P. (1998). Social constructivism as a philosophy of mathematics. Sunny Press. 6. Ernest, P. (1994). The philosophy of mathematics and the didactics of mathematics as a scientific discipline, 335-350.	5%
7	1. Internalize the spirit of independence, struggle and entrepreneurship. 2. Able to solve science, technology and/or arts problems in the scientific field of basic education through an interdisciplinary, multidisciplinary or transdisciplinary approach. 3. Able to prepare interdisciplinary or transdisciplinary research, including theoretical studies and/or experiments in the fields of science, technology, arts and innovation which are outlined in the form of dissertations, and papers that have been published in reputable international journals. 4th Meeting 4. Able to communicate research results through publications published in reputable international journals.	Criteria: The assessment criteria are based on the final ability achievements at meeting 4. Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Problem Base Learning (PBL) 3x50 minutes	References: Material: 3. Ernest, P., Skovsmose, O., Paul van Bendegem, J., Bicudo, M., Miarka, R., Kvasz, L., & Moeller, R. (2016). The philosophy of mathematics education. Springer Nature. 4. Ernest, P. (Ed.). (2003). Mathematics education and philosophy: An international perspective. Routledge. 5. Ernest, P. (1998). Social constructivism as a philosophy of mathematics. Sunny Press. 6. Ernest, P. (1994). The philosophy of mathematics and the didactics of mathematics as a scientific discipline, 335-350. References:	10%

8		Form of Assessment : Test	UTS 3X50 [,]	UTS 3X50'	Material: References: [1], [2], [3], [4], [5], and [6] References :	10%
9	1. Able to manage, lead and develop research and development that is beneficial for the benefit of humanity, and able to gain national and international recognition. 2. Able to choose research that is appropriate, current, most advanced, and provides benefit to humanity through an interdisciplinary, or transdisciplinary, or transdisciplinary approach, in order to develop and/or problems in the fields of science, technology, art, or society, based on the results of studies on resource availability internal and external. 3. Able to solve problems in the field of basic education through inter, multi and transdisciplinary research approaches for the benefit of humanity.	Criteria: Very Poor [0-50], Poor [51-60], Fair [61-75], Good [76- 84], Very Good [86-100] Form of Assessment : Project Results Assessment / Product Assessment	-	Problem Base Learning (PBL) 3x50'		5%
10	1. Able to manage, lead and develop research and development that is beneficial for the benefit of humanity, and able to gain national and international recognition. 2. Able to choose research that is appropriate, current, most advanced, and provides benefit to humanity through an interdisciplinary, multidisciplinary, or transdisciplinary approach, in order to develop and/or produce solutions to problems in the fields of science, technology, art, or society, based on the results of studies on resource availability internal and external. 3. Able to solve problems in the field of basic education through inter, multi and transdisciplinary research approaches for the benefit of humanity.	Criteria: Very Poor [0-50], Poor [51-60], Fair [61-75], Good [76- 84], Very Good [86-100] Form of Assessment : Project Results Assessment / Product Assessment	-	Problem Base Learning (PBL) 3x50'	Material: References: [1], [2], [3], [4], [5], and [6] References :	10%
11	1. Able to manage, lead and develop research and development that is beneficial for the benefit of humanity, and able to gain national and international recognition. 2. Able to choose research that is appropriate, current, most advanced, and provides benefit to humanity through an interdisciplinary, or transdisciplinary approach, in order to develop and/or problems in the fields of science, technology, art, or society, based on the resource availability internal and external. 3. Able to solve problems in the field of basic education through inter, multi and transdisciplinary research approaches for the benefit of humanity.	Criteria: Very Poor [0-50], Poor [51-60], Fair [61-75], Good [76- 84], Very Good [86-100] Form of Assessment : Project Results Assessment / Product Assessment	-	Problem Base Learning (PBL) 3x50'	Material: References: [1], [2], [3], [4], [5], and [6] References :	5%

12	1. Able to develop		PBL	-	Material:	5%
	In Able to develop knowledge, technology and/or art that has novelty value in the scientific field of basic education and professional practice through research to produce creative, original and tested work. 2. Able to develop a research roadmap with an interdisciplinary, multidisciplinary or transdisciplinary approach, based on a study of the main research targets and their constellation of broader targets. 3. Able to formulate scientific, technological or artistic arguments and solutions based on a critical view of facts, concepts, principles or theories that can be justified scientifically and academically, and communicate them through mass media or directly to the public. 4. Able to find or develop innovations, policies and management of basic education through inter, multi and transdisciplinary approaches.	Form of Assessment : Project Results Assessment / Product Assessment	3x50'	-	References: [1], [2], [3], [4], [5], and [6] References :	370
13	1. Able to develop knowledge, technology and/or art that has novelty value in the scientific field of basic education and professional practice through research to produce creative, original and tested work. 2. Able to develop a research roadmap with an interdisciplinary or transdisciplinary approach, based on a study of the main research targets and their constellation of broader targets. 3. Able to formulate scientific, technological or artistic arguments and solutions based on a critical view of facts, concepts, principles or theories that can be justified scientifically and academically, and communicate them through mass media or directly to the public. 4. Able to find or develop innovations, policies and management of basic education through inter, multi and transdisciplinary approaches.	Criteria: 5 Form of Assessment : Project Results Assessment / Product Assessment	PBL 3x50'	-	Material: References: [1], [2], [3], [4], [5], and [6] References :	10%

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14	1. Able to develop knowledge, technology and/or art that has novelty value in the scientific field of basic education and professional practice through research to produce creative, original and tested work. 2. Able to develop a research roadmap with an interdisciplinary, multidisciplinary or transdisciplinary approach, based on a study of the main research targets and their constellation of broader targets. 3. Able to formulate scientific, technological or artistic arguments and solutions based on a critical view of facts, concepts, principles or theories that can be justified scientifically and academically, and communicate them through mass media or directly to the public. 4. Able to find or develop innovations, policies and management of basic education through inter, multi and transdisciplinary approaches.	Form of Assessment : Participatory Activities	PBL 3x50'	-	Material: References: [1], [2], [3], [4], [5], and [6] References :	5%
15	1. Students are able to show proof of having submitted the output of lectures on the study of mathematics fractions at elementary schools in the form of articles that are relevant to the direction or embryo of the dissertation proposal they have prepared. 2. Students have completed the course output stage process in the form of registration with IPR as proof of their work in accordance with the objectives of the mathematics fraction study course in basic education.	Criteria: Very Good [86- 100], Good [76-85], Fair [51-75], Poor [0-50] Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment	-	Question and answer, assignment 3x50'	Material: References: [1], [2], [3], [4], [5], and [6] References :	5%
16	1. Students are able to show proof of having submitted the output of lectures on the study of mathematics fractions at elementary schools in the form of articles that are relevant to the direction or embryo of the dissertation proposal they have prepared. 2. Students have completed the course output stage process in the form of registration with IPR as proof of their work in accordance with the objectives of the mathematics fraction study course in basic education.	Criteria: Very Good [86- 100], Good [76-85], Fair [51-75], Poor [0-50] Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment		Question and answer, assignment 3x50'	Material: References: [1], [2], [3], [4], [5], and [6] References : Material: 1. Biehler, R., Scholz, R.W., Strässer, R., & Winkelmann, B. (Eds.). (2006). Didactics of mathematics as a scientific discipline (Vol. 13). Springer Science & Business Media. 2. Ellis, M. W., & Berry III, R. Q. (2005). The paradigm shift in mathematics education: Explanations and implications of reforming concepts of teaching and learning. The mathematics educator,	5%

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			Taylor &
			Francis.
L			References:

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	20.01%
2.	Project Results Assessment / Product Assessment	57.51%
3.	Portfolio Assessment	7.51%
4.	Practice / Performance	5%
5.	Test	10%
		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.
- 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.
- 9. 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.