

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

Document Code

SEMESTER LEARNING PLAN

Courses Philosophy of Mathematics Education (Philosophy of Mathematics Education)		CODE			Cou	ırse Famil	ly	Credit	Weight		SEM	IESTER	2	Com	pilatior	1 Date
		841020	2148	.48				T=2 P=0		0 ECTS=4.48		2		July 17, 202		4
UTHORIZA	TION	SP Dev	eloper				Cour	se Clust	er Coor	dinator	Stuc	ly Prog	ram Co	oordina	tor	
		Prof. Di	. Tatag Yi	uli Eko	Siswono	o, M.Pd						C)r. Agur	ng Lukit	o, M.S.	
.earning nodel	Case Studies															
Program	PLO study pro	gram which is	charged	l to the	e cours	е										
earning. Dutcomes	PLO-7	Able to design	, impleme	nt, and	critically	/ evaluate	conterr	porary m	athema	tics educ	ation re	esearch	1			
PLO)	PLO-9	Able to demor	strate ma	themat	ics peda	gogical co	ontent k	nowledge	and un	derstand	ling					
	PLO-11	Collaborate ar	id be resp	onsible	profess	ionally an	d ethica	lly in con	pleting	mathema	atics ar	nd math	ematics	s educa	tion tasl	ks
	PLO-13	Able to work in scientifically d	depender scuss the	ntly on a results	a comple both ora	ex problen ally and in	n in mat writing	hematics	and ma	thematic	s educ	ation, a	nd high	ly pres	ent and	
	Program Obje	ctives (PO)														
	PO - 1	Analyzing the	neaning a	and role	e of Philo	sophy of I	Mathem	atics Edu	cation (FPM)						
	PO - 2	Comparing va	ious educ	ational	philosop	ohical epis	temolo	jies and	heir rela	ationship	to Mat	hematic	S			
	PO - 3	Analyzing vari	ous episte	mologie	es of Ma	thematics	philoso	phy and	heir rela	ationship	to edu	cation				
	PO - 4	Analyzing various epistemologies of Mathematics philosophy and their relationship to education Evaluating beliefs in mathematics and mathematical aesthetics.														
	-	Analyzing the epistemological relationship between mathematics and learning theories in mathematics education.														
	PO - 5	Analyzing the	epistemolo	ogical re	elationsh	nip betwee	en math		nd lear	ning theo	ries in	mathem	natics e	ducatio	n.	
	PO - 5 PO - 6	Analyzing the Communicate education effe	ideas and	d result	s of ana	alysis of v		ematics a		-						athem
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	PO - 6 PO - 7 PLO-PO Matrix	Communicate education effe Collaborate au mathematics e P.O PO-1 PO-2 PO-3 PO-4 PO-5 PO-6 PO-7 ne end of each P.O PO-1	learning	PLO-	s of ana i written le profes n. -7	PLO	-9	ematics a cases of ically in PLC	D-11	PI	LO-13	signmer	f mathe	ematics arding	and mathe ana	alysis
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Short Course Descrip	mathematics, and	the nature of educa				ristics of mathematics, beliefs ng theory, and basic principles i	
Referen	ces Main :						
	 FitzSimm Ernest, http://ped 	nons, J. A. 2014. Phil P. Tanpa pple.exeter.ac.uk/PEr	osophy of Teaching an	d Learning Mat nat is 20for_ICME_04	the Philosophy 4.htm	ESA ington.edu/faculty/jfitzs/tchg_ph of Mathematics	i.htm. Education.
	Supporters:						
	2. Soedjadi	, R. 1999. Kiat-Kiat P	ducation Journal ISSN : endidikan Matematika.				
Support lecturer	Prof. Dr. Mega Te Prof. Dr. Tatag Y	eguh Budiarto, M. Pd uli Eko Siswono, S.Po					
Week-	Final abilities of each learning stage	Eval	luation	Lear Stude	elp Learning, rning methods, ent Assignments, <mark>stimated time]</mark>	Learning materials [References]	Assessment Weight (%)
	(Sub-PO)	Indicator	Criteria & Form	Offline(offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Describe the meaning of the Philosophy of Mathematics Education.	Analyzing the meaning of the Philosophy of Mathematics Education	Criteria: Answer Accuracy Form of Assessment : Participatory Activities	Face to face, Discussion, Question and answer 2 x 50'	Live (Zoom meeting), Discussion, Question and answer 2 x 50'	Material: Understanding the Philosophy of Mathematics Education Reference: Siswono, T. 2014. Philosophy of Mathematics Education and History of Mathematics. UNESA PLPG Module	3%
2	Analyzing the role of Mathematics Education Philosophy in learning and teaching.	Describe the role of Mathematics Education Philosophy in learning and teaching	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2 x 50'	Live (Zoom meeting), Discussion, Q&A. Case 1: Is there a contribution from philosophy? 2 x 50'	Material: The role of Mathematics Education Philosophy in learning and teaching Reference: Siswono, T. 2014. Philosophy of Mathematics Education and History of Mathematics. UNESA PLPG Module	3%
3	Describe various epistemological educational philosophies and their relationship to Mathematics by analyzing a case.	Comparing idealism and realism.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer. 2 x 50'	Live (Zoom meeting), Discussion, Q&A. Case 2: Realism or Idealism? 2 x 50'	Material: Realism and Idealism References: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
4		Comparing essentialism and existentialism	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 3: Can everyone learn mathematics in various ways? 2x50'	Material: Essentialism and existentialism References: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
5		Comparing social reconstructionism and progressivism	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 4: What philosophical view is held? 2x50'	Material: Social reconstructionism and progressivism References: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
6		Comparing pragmatism and perennialism in mathematics education.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 5: What are the philosophical aspects of online learning? 2x50'	Material: Pragmatism and perennialism in mathematics education. References: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/ Material: Pragmatism and perennialism in mathematics education. Bibliography: Philosophy of Mathematics Education Journal ISSN 1465-2978 (Online)	3%

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7	Analyzing various epistemological philosophies of Mathematics and their relationship to education by analyzing a case.	Compare logicalism and formalism	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 6: Is mathematical logic necessarily true? 2x50'	Material: Logicism and formalism Reference: Siswono, T. 2014. Philosophy of Mathematics Education and History of Mathematics. UNESA PLPG Module Material: Logicism and formalism Bibliography: Ernest, P. 1991. The Philosophy of	4%
						Mathematics Education,	
8		Midterm exam	Criteria: Answer Accuracy	Midterm Exam		London: Falmer Press.	20%
9		Compare logicalism, formalism, and intuitionism	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	2x50' Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 7: Do numbers exist or were they created to exist? 2x50'	Material: Logicism, formalism, and intuitionism References: Ernest, P. 1991. The Philosophy of Mathematics Education, London: Falmer Press.	3%
10	Evaluate mathematical aesthetics by analyzing a case.	Describe the aesthetics of mathematics by analyzing a case.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Case 8: Isn't it crazy to say mathematics is beautiful? 2x50'	Material: Mathematical aesthetics by analyzing a case References: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	3%
11	Analyzing the epistemological relationship between mathematics and learning theory based on a case.	Describe the epistemological relationship between mathematics and learning theory based on a case.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. 2x50'	Material: Mathematical epistemology and learning theory based on a case Reference: Siswono, T. 2014. Philosophy of Mathematics Education and History of Mathematics. UNESA PLPG Module	3%
12	Designing project assignments regarding the analysis of a mathematics education problem collaboratively and/or independently in written form.	Create a project assignment design regarding the analysis of a mathematics education problem collaboratively and/or independently in written form	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. 2x50 [.]	Material: Project assignment design regarding analysis of a problem Mathematics education Reference: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
13		Create a project assignment design regarding the analysis of a mathematics education problem collaboratively and/or independently in written form.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50 ⁴	Live (Zoom meeting), Discussion, Q&A. Assignment 8: Philosophical Analysis of 2x50' Prototype Curriculum	Material: Project assignment design regarding the analysis of an educational problem. Reference: <i>FitzSimmons,</i> <i>James A. 2014. Philosophy</i> <i>of Teaching and Learning</i> <i>Mathematics.</i> <i>http://plato.wilmington.edu/</i>	4%
14		Create a project assignment design regarding the analysis of a mathematics education problem collaboratively and/or independently in written form.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50'	Live (Zoom meeting), Discussion, Q&A. Assignment: Philosophical Analysis of 2x50' Prototype Curriculum	Material: Project assignment design regarding analysis of a problem Mathematics education Reference: FitzSimmons, James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
15	Complete project assignments regarding the analysis of a mathematics education problem collaboratively and/or independently by paying attention to academic ethics.	Presenting project assignments regarding the analysis of a mathematics education problem collaboratively and/or independently by paying attention to academic ethics.	Criteria: Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Face to face, Discussion, Question and answer 2x50 ⁴	Live (Zoom meeting), Discussion, Q&A. Assignment: Presentation of project assignments on the analysis of a problem Mathematics education 2x50'	Material: Project assignment on analysis of a problem Mathematics education Reference: <i>FitzSimmons</i> , James A. 2014. Philosophy of Teaching and Learning Mathematics. http://plato.wilmington.edu/	4%
16		Final Semester Examination (UAS)-Project for Preparing Analysis of Mathematics Education Problems		Project Report Preparing Analysis of Mathematics Education Problems 2x50 ⁴			30%

Evaluation Percentage Recap: Case Study

P	10	Evaluation	Percentage	
1	L.	Participatory Activities	3%	
			3%	

Notes

- Learning Outcomes of Study Program Graduates (PLO Study Program) are the abilities possessed by each Study Program 1. 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.
- 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 subtopics.
- 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.