UNESA	**Universitas Negeri Surabaya** **Faculty of Mathematics and Natural Sciences** **Bachelor of Mathematics Education Study Program**	**Document Code**

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
RESEARCH METHODOLOGY	8420203128		T=3	P=0	ECTS=4.77	4	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)

PLO study program which is charged to the course	
PLO-5	Demonstrate a scientific, critical and innovative attitude in teaching and learning mathematics and professional tasks
PLO-7	Apply basic mathematical principles to solve simple mathematical problems
PLO-9	Communicate ideas and research results effectively, verbally and literally
PLO-14	Demonstrate knowledge related to mathematics education research
Program Objectives (PO)	
PO - 1	Describe the basic concepts of research and types of research.
PO - 2	Comparing various experimental, non-experimental, qualitative, classroom action, development, and combined method research methods.
PO - 3	Designing educational research proposals

PLO-PO Matrix

P.O	PLO-5	PLO-7	PLO-9	PLO-14
PO-1				
PO-2				
PO-3				

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																

Short Course Description

Studying the nature, objectives, types of research methods that are relevant to educational research and equipping students to be able to make decisions in applying research methods to find alternative solutions in solving educational problems which include research paradigms, frameworks of thinking, hypotheses and variables, population and samples, research instruments, research design, data collection techniques, and data analysis are packaged in a research proposal for mathematics education through task-based learning.

References

Main :

1. Siswono, Tatag Y.E. 2020. Paradigma Penelitian Pendidikan: Pengembangan Teori dan Aplikasi Pendidikan Matematika . Bandung: Rosdakarya.
2. Laksono, K., Siswono, T.Y.E. 2020. Penelitian Tindakan Kelas . Bandung: Remaja Rosdakarya.

Supporters:

1. Research Methods in Education (Louis Cohen, Lawrence Manion and Keith Morrison; 2007:Abingdon: Routledge)
2. Merriam, S. B. 2007. Qualitative research and case study application in education. San Fransisco: Jossey Bass Publisher.
3. English, L. D. (ed.). 2002. Handbook of international research in mathematics education. London : Rouledge.

Supporting lecturer	Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd. Dr. Siti Khabibah, M.Pd. Prof. Rooselyna Ekawati, Ph.D. Nina Rinda Prihartiwi, S.Pd., M.Pd. Dr. Yurizka Melia Sari, M.Pd. Novita Vindri Harini, M.Pd.

Week-	**Final abilities of each learning stage (Sub-PO)**	**Evaluation**		**Help Learning, Learning methods, Student Assignments, [Estimated time]**		**Learning materials [References]**	**Assessment Weight (%)**
		Indicator	**Criteria & Form**	**Offline (*offline*)**	**Online (*online*)**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
1	Explain the basic concepts of research.	Describe the basic concepts of research.	**Form of Assessment** : Participatory Activities	Expository, discussion, question and answer. 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Source of knowledge and various kinds of truth; The Nature of Science and the Nature of Research: Research Methodologies and Paradigms **Literature:** *Siswono, Tatag YE 2020. Educational Research Paradigms: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	3%
2	1. Identifying research problems 2. Describe the types and characteristics of each type of research.	1. Compare research problems and research questions 2. Describe the types and characteristics of each type of research.	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, question and answer, discussion Case 1: Why do you need to research? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Nature and sources of research problems; Identification and Formulation of Research Problems **Literature:** *Siswono, Tatag YE 2020. Educational Research Paradigms: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	3%
3	Analyze the characteristics and design of experimental research	Describe the characteristics and design of experimental research	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, question and answer, discussion Case 2: Is There a Best Learning Model? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Experimental Research **References:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%

4		Describe credible research instruments	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, question and answer, discussion Case 3: How to collect tested data? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Research Instruments **Library:** *Siswono, Tatag YE 2020. Educational Research Paradigms: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%
5	Analyze the characteristics and design of non-experimental (descriptive) research.	Describe non-experimental (quantitative) research	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, question and answer, discussion Case 4: How do students develop in understanding the definition of blocks from elementary school grade 1 to grade 6? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Non-Experimental Research (Descriptive) **References:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%
6		Describe non-experimental (correlational) research	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Task discussion, divided by presenters and discussants. Case 5: Is there a relationship between the number of Covid-19 patients and students' ability to solve geometry questions? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Correlational Research **Bibliography:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%
7	Analyze the characteristics and design of qualitative research	Describe the characteristics and design of qualitative research		Expository, DiscussionCase Assignment 6: How do students' mathematical thinking solve algebra problems? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Qualitative Research **References:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%
8		Answer Accuracy	**Form of Assessment** : Test	Midterm Exam 3 X 50	Midterm Exam 3 x 50'		20%

9	Analyze the characteristics and design of classroom action research and development research.	Analyze the characteristics and design of classroom action research and development research	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, DiscussionCase Assignment 7: How to improve the quality of learning in the classroom? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Classroom Action Research **Bibliography:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	4%
10	Analyzing the characteristics and design of mixed research (mixed method)	Describe the characteristics and design of mixed research (mixed method)	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving	Expository, question and answer, discussion Case 8: How to develop effective technology-based learning? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** Combined Research Methods **Literature:** *Research Methods in Education (Louis Cohen, Lawrence Manion and Keith Morrison; 2007: Abingdon: Routledge)*	4%
11	Analyze research approaches and designs according to the problem being solved	Prepare a research proposal	**Criteria:** Suitability and accuracy of case solutions, depth of understanding of cases, critical thinking and analytical skills, creativity in problem solving **Form of Assessment** : Project Results Assessment / Product Assessment	Expository, question and answer, discussion Case 9: What theme is most appropriate for my thesis? 3 X 50	Expository, question and answer, discussion via zoom or google meeting 3 x 50'	**Material:** **Literature** Article Review : *Research Methods in Education (Louis Cohen, Lawrence Manion and Keith Morrison; 2007: Abingdon: Routledge)*	4%
12	Prepare a research proposal as a thesis draft.	Communicate research plans	**Criteria:** Suitability and accuracy of project solutions, depth of understanding of the project, critical thinking and analytical skills, creativity in problem solving	Discussion Seminar. Project Assignment: Preparation of 3 X 50 Proposal	Question and answer, discussion via zoom or google meeting 3x50'	**Material:** Preparation of Proposal Draft Bibliography **:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	3%
13	Communicate the research proposal plan as a thesis draft.	Communicate the research proposal plan as a thesis draft.	**Criteria:** Suitability and accuracy of project solutions, depth of understanding of the project, critical thinking and analytical skills, creativity in problem solving	Discussion Seminar. Project Task: Preparation of 3 X 50' Proposal	Question and answer, discussion via zoom or google meeting 3x50'	**Material:** Preparation of Draft Proposal **Literature:** *Research Methods in Education (Louis Cohen, Lawrence Manion and Keith Morrison; 2007: Abingdon: Routledge)*	3%

14	Communicate the research proposal plan as a thesis draft.	Communicate the research proposal plan as a thesis draft.	**Criteria:** Suitability and accuracy of project solutions, depth of understanding of the project, critical thinking and analytical skills, creativity in problem solving	Discussion Seminar 3 X 50‘	Question and answer, discussion via zoom or google meeting 3x50‘	**Material:** Preparation of Draft Proposal **Literature:** *Research Methods in Education (Louis Cohen, Lawrence Manion and Keith Morrison; 2007: Abingdon: Routledge)*	3%
15	Communicate the research proposal plan as a thesis draft.	Communicate the research proposal plan as a thesis draft.	**Criteria:** Suitability and accuracy of project solutions, depth of understanding of the project, critical thinking and analytical skills, creativity in problem solving	Discussion Seminar 3 X 50‘	Question and answer, discussion via zoom or google meeting 3x50‘	**Material:** Preparation of Proposal Draft Bibliography **:** *Siswono, Tatag YE 2020. Educational Research Paradigm: Theory Development and Applications in Mathematics Education. Bandung: Rosdakarya.*	3%
16		Final Semester Examination (UAS)-Proposal Project Report	**Criteria:** Appropriateness and accuracy of the article format (20%), novelty of the research theme (30%), accuracy and coherence of the theoretical framework (40%) and accuracy of writing and use of language (10%)	Final Semester Exam 3x50‘			30%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	3%
2.	Project Results Assessment / Product Assessment	4%
3.	Test	20%
		27%

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.
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.