Universitas Negeri Surabaya
Faculty of Education,
Bachelor of Primary School Teacher Education Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Ethnomathematics-Based RME in Elementary School	8620603255	Study Program Elective Courses	T=3	P=0	ECTS=4.77	5	July 16, 2020

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 that is charged to the course	
	PLO-7	Distinguish the characteristics of research types and apply them in designing, implementing and reporting research results through the publication of articles as the development of science in elementary schools.
	PLO-10	Demonstrate pedagogical knowledge and skills related to designing, implementing, evaluating learning in elementary schools by utilizing ICT, local wisdom and research results.
	Program Objectives (PO)	
	PO - 1	After taking this course, students understand more about realistic mathematics and ethnomathematics and can mathematize various mathematics topics in elementary school.
	PLO-PO Matrix	

P.O	PLO-7	PLO-10
PO-1		

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																

Short Course Description	This course is a mandatory course that discusses in depth the school mathematics learning approach which has a social constructivist view, and prioritizes students learning to reinvent themselves ('reinvention") concepts and alternative problem solving through the presentation of contextual and interrelated mathematical problems. The way of presenting topics and evaluating student learning outcomes discussed in this approach is adjusted to the student's initial knowledge, the stage of student cognitive development, and the student's environment so that meaningful knowledge (product and process) of student mathematics is formed.

References	Main :

1. Van den Heuvel-Panhuizen, M. H. A. M. (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.
2. Quintero, A. H., & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. World Scientific.

Supporters:

1. Mariana, N., Sholihah, S. A., Riski, R., Rahmawati, I., Wiryanto, W., Indrawati, D., & Budiyono, B. (2021, July). In-service teachers' perception on implementing realistic mathematics education approach in their best practices. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012022). IOP Publishing.
2. Fauziana, A., Budiarto, M. T., & Wiryanto, W. (2020). Metakognitif dalam Pembelajaran Berbasis Realistic Mathematics Education. Phenomenon: Jurnal Pendidikan MIPA, 10(2), 160-176.
3. Indrawati, D., Septiana, A. H. Z., Rahmawati, I., Siwi, D. A., Mariana, N., Wiryanto, W., & Istianah, F. (2021, July). Ethnomathematics on Surabaya Regional song notation. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012043). IOP Publishing.
4. Rahmawati, I., Ayun, N. Q., Mariana, N., Indrawati, D., Wiryanto, W., Budiyono, B., & Istianah, F. (2021, July). Edu-Game media based on Android to learn Least Common Multiplication (LCM) and Great Common Divisor (GCD) for the 4th graders. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012042). IOP Publishing.
5. Abidin, Z., Supriatna, M., Herman, T., Farokhah, L., & Febriandi, R. (2023, June). The geometric patterns in Kawung Surakarta batik motif: An ethnomathematical exploration. In AIP Conference Proceedings (Vol. 2727, No. 1). AIP Publishing.

Supporting lecturer	Dr. Wiryanto, M.Si. Neni Mariana, S.Pd., M.Sc., Ph.D. Ika Rahmawati, S.Si., M.Pd. Delia Indrawati, S.Pd., M.Pd. Putri Rachmadyanti, S.Pd., 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	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	**Criteria:** UNESA Assessment Guide **Form of Assessment** : Participatory Activities	Scientific, HOTs 3 X 50		**Material:** RME as an approach and model **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	5%
2	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	**Criteria:** UNESA Assessment Guide **Form of Assessment** : Participatory Activities	Scientific, HOTs 3 X 50		**Material:** Ethnomathematics as an approach to learning mathematics using culture **References:** *Abidin, Z., Supriatna, M., Herman, T., Farokhah, L., & Febriandi, R. (2023, June). The geometric patterns in Kawung Surakarta batik motif: An ethnomathematical exploration. In AIP Conference Proceedings (Vol. 2727, No. 1). AIP Publishing.*	5%
3	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	Able to study and implement mathematics content, especially Ethnomathematics in elementary school using the RME approach	**Criteria:** UNESA Assessment Guide **Form of Assessment** : Participatory Activities	Scientific, HOTs 3 X 50		**Material:** Ethnomathematics as an approach to learning mathematics using culture **References:** *Abidin, Z., Supriatna, M., Herman, T., Farokhah, L., & Febriandi, R. (2023, June). The geometric patterns in Kawung Surakarta batik motif: An ethnomathematical exploration. In AIP Conference Proceedings (Vol. 2727, No. 1). AIP Publishing.* **Material:** Ethnomathematics as an approach to learning mathematics using **cultural references:** *Indrawati, D., Septiana, AHZ, Rahmawati, I., Siwi, DA, Mariana, N., Wiryanto, W., & Istianah, F. (2021, July) . Ethnomathematics on Surabaya Regional song notation. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012043). IOP Publishing.*	5%

4	Able to examine the meaning of RME as an approach and model	Able to examine the meaning of RME as an approach and model	**Criteria:** In accordance with Unesa guidelines **Form of Assessment** : Participatory Activities	Science, PBL, 3 X 50 presentation assignments		**Material:** Ethnomathematics in elementary school with the RME approach **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.* **Material:** Ethnomathematics in elementary school with the RME approach **Reader:** *Indrawati, D., Septiana, AHZ, Rahmawati, I., Siwi, DA, Mariana, N., Wiryanto, W., & Istianah, F. (2021, July). Ethnomathematics on Surabaya Regional song notation. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012043). IOP Publishing.* **Material:** Ethnomathematics in elementary school with the RME approach **References:** *Abidin, Z., Supriatna, M., Herman, T., Farokhah, L., & Febriandi, R. (2023, June). The geometric patterns in Kawung Surakarta batik motif: An ethnomathematical exploration. In AIP Conference Proceedings (Vol. 2727, No. 1). AIP Publishing.*	5%
5	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	**Criteria:** Based on the guidebook	Scientific/Assignments/PBL-Projects/supervised presentations 3 X 50		**Material:** Iceberg theory **References:** *Quintero, AH, & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. WorldScientific.*	5%
6	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	**Criteria:** Based on the guidebook **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Science/Assignments/PBL-Projects/supervised presentations 3 X 50		**Material:** LKPD based on iceberg theory **References:** *Quintero, AH, & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. WorldScientific.* **Material:** Results of draft LKPD **Library:** *Quintero, AH, & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. WorldScientific.*	5%

			Criteria:				
7	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	Able to present the relationship between elementary school mathematics and ethnomathematics in elementary school	**Criteria:** Based on the guidebook **Form of Assessment** : Project Results Assessment / Product Assessment	Science/Assignments/PBL-Projects/supervised presentations 3 X 50		**Material:** Results of draft LKPD **Library:** *Quintero, AH, & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. WorldScientific.*	5%
8	UTS	UTS	**Criteria:** GUIDE BOOK **Form of Assessment** : Test	UTS 3 X 50		**Material:** Midterm Exam **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.* **Material:** Midterm Exam **References:** *Quintero, AH, & Rosario, H. (2016). Math makes sense!: A constructivist approach to the teaching and learning of mathematics. WorldScientific.*	15%
9	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	**Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment	Science/questionnaire, assignment/PBL/Guided presentation 3 X 50		**Material:** Hypothetical Learning Trajectory Concept **References:** *Fauziana, A., Budiarto, MT, & Wiryanto, W. (2020). Metacognitive in Learning Based on Realistic Mathematics Education. Phenomenon: Journal of Mathematics and Natural Sciences Education, 10(2), 160-176.*	5%

			Criteria & Form of Assessment	Learning Method		Material & References	%
10	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	**Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment	Scientific/question and answer, assignment/PBL/Guided presentation 3 X 50		**Material:** Hypothetical Learning Trajectory based learning design **References:** *Mariana, N., Sholihah, SA, Riski, R., Rahmawati, I., Wiryanto, W., Indrawati, D., & Budiyono, B. (2021, July). In-service teachers' perception on implementing realistic mathematics education approach in their best practices. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012022). IOP Publishing.* ⸺⸺⸺⸺ **Material:** Hypothetical Learning Trajectory based learning design **References:** *Rahmawati, I., Ayun, NQ, Mariana, N., Indrawati, D., Wiryanto, W., Budiyono, B., & Istianah, F. (2021, July). Edu-Game media based on Android to learn Least Common Multiplication (LCM) and Great Common Divisor (GCD) for the 4th graders. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012042). IOP Publishing.*	5%
11	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	**Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment, Portfolio Assessment	Science/questionnaire, assignment/PBL/Guided presentation 3 X 50		**Material:** Limited trial (1) on students in elementary schools **Reference:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	2%
12	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	**Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment	Science/questionnaire, assignment/PBL/Guided presentation 3 X 50		**Material:** Reflection on limited trial results (1) **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	3%
13	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation	**Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment, Portfolio Assessment	Scientific/question and answer, assignment/PBL/Guided presentation 3 X 50		**Material:** Limited trials (2) on students in elementary schools **Reference:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	2%

| 14 | Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation | Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation | **Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment | Science/questionnaire, assignment/PBL/Guided presentation 3 X 50 | | **Material:** Reflection on the results of limited trials (2) **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.* | 3% |
| 15 | Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation | Able to present in groups and individually regarding elementary mathematics studies using the RME approach and based on ethnomathematics and their implementation | **Criteria:** According to the UNESA guidebook: 20% Participation 30% Assignments 20% UTS 30% UAS **Form of Assessment** : Project Results Assessment / Product Assessment | Science/questionnaire, assignment/PBL/Guided presentation 3 X 50 | | **Material:** Scientific articles resulting from the implementation of ethnomathematics-based RME learning in elementary schools. **Library:** *Mariana, N., Sholihah, SA, Riski, R., Rahmawati, I., Wiryanto, W., Indrawati, D., & Budiyono, B. (2021 , July). In-service teachers' perception on implementing realistic mathematics education approach in their best practices. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012022). IOP Publishing.*

Material: Scientific articles resulting from the implementation of ethnomathematics-based RME learning in elementary schools. **Library:** *Fauziana, A., Budiarto, MT, & Wiryanto, W. (2020). Metacognition in Learning Based on Realistic Mathematics Education. Phenomenon: Journal of Mathematics and Natural Sciences Education, 10(2), 160-176.*

Material: Scientific articles resulting from the implementation of ethnomathematics-based RME learning in elementary schools. **Library:** *Indrawati, D., Septiana, AHZ, Rahmawati, I., Siwi, DA, Mariana, N., Wiryanto, W., & Istianah, F. (2021, July). Ethnomathematics on Surabaya Regional song notation. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012043). IOP Publishing.*

Material: Scientific articles resulting from the implementation of ethnomathematics-based RME | 10% |

No						Material/Reference	
						learning in elementary schools. **Library:** *Rahmawati, I., Ayun, NQ, Mariana, N., Indrawati, D., Wiryanto, W., Budiyono, B., & Istianah, F. (2021 , July). Edu-Game media based on Android to learn Least Common Multiplication (LCM) and Great Common Divisor (GCD) for the 4th graders. In Journal of Physics: Conference Series (Vol. 1987, No. 1, p. 012042). IOP Publishing.*	
						Material: Scientific articles resulting from the implementation of ethnomathematics-based RME learning in elementary schools. **Library:** *Abidin, Z., Supriatna, M., Herman, T., Farokhah, L., & Febriandi, R. (2023, June). The geometric patterns in Kawung Surakarta batik motif: An ethnomathematical exploration. In AIP Conference Proceedings (Vol. 2727, No. 1). AIP Publishing.*	
16			**Form of Assessment** : Project Results Assessment / Product Assessment			**Material:** UAS **Reference:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	25%
						Material: Final Semester Exam **References:** *Van den Heuvel-Panhuizen, MHAM (1996). Assessment and realistic mathematics education (Vol. 19). Utrecht University.*	

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	24%
2.	Project Results Assessment / Product Assessment	59%
3.	Portfolio Assessment	2%
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.

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.