



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

Document Code

**SEMESTER LEARNING PLAN**

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>			<b>SEMESTER</b>	<b>Compilation Date</b>																																																																																			
Realistic Mathematics Education (Realistic Mathematics Education)	8410202143	Mathematics Learning	T=2	P=0	ECTS=4.48	3	July 17, 2024																																																																																			
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																																																																				
	Roeselyna Ekawati, Ph.D		.....			Dr. Agung Lukito, M.S.																																																																																				
<b>Learning model</b>	<b>Project Based Learning</b>																																																																																									
<b>Program Learning Outcomes (PLO)</b>	<b>PLO study program that is charged to the course</b>																																																																																									
	<b>PLO-6</b>	Able to design, implement, and evaluate an effective and innovative mathematics instruction																																																																																								
	<b>PLO-9</b>	Able to demonstrate mathematics pedagogical content knowledge and understanding																																																																																								
	<b>PLO-11</b>	Collaborate and be responsible professionally and ethically in completing mathematics and mathematics education tasks																																																																																								
	<b>PLO-13</b>	Able to work independently on a complex problem in mathematics and mathematics education, and thoroughly present and scientifically discuss the results both orally and in writing																																																																																								
	<b>Program Objectives (PO)</b>																																																																																									
	<b>PO - 1</b>	able to explain the principles and characteristics of Realistic Mathematics Education (RME)																																																																																								
	<b>PO - 2</b>	able to apply some RME principles on designing a mathematics teaching in primary and secondary school levels.																																																																																								
	<b>PO - 3</b>	able to work on mathematics teaching problems using RME approach and present it both written and orally.																																																																																								
	<b>PLO-PO Matrix</b>																																																																																									
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td>P.O</td> <td>PLO-6</td> <td>PLO-9</td> <td>PLO-11</td> <td>PLO-13</td> <td></td> <td></td> </tr> <tr> <td>PO-1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PO-2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PO-3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						P.O	PLO-6	PLO-9	PLO-11	PLO-13			PO-1							PO-2							PO-3																																																													
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<b>PO Matrix at the end of each learning stage (Sub-PO)</b>																																																																																										
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td rowspan="2">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>PO-1</td> <td>✓</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-3</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>						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																
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<b>Short Course Description</b>	This course examines didactic phenomenology of Realistic Mathematics Education, principles and characteristics of Realistic Mathematics, embodied cognition, types of contexts for learning mathematics related to life phenomena, Hypothetical Learning Trajectory and local instructional theory based on research results through task-based active learning and IT-assisted presentations .																																																																																									
<b>References</b>	<b>Main :</b>																																																																																									

- Hadi, S.2016. Pendidikan Matematika Realistik: Teori, Pengembangan dan Implementasinya,
- Van den Heuvel, M. 1996. Assessment and Realistic Mathematics Education. Technipress Culemborg, Utrecht

**Supporters:**

- Holt, Rinehart, Winston. 2006. Mathematics in Context. Chicago: Encyclopædia Britannica, Inc.
- Johnson, Elanie B. 2002. Contextual Teaching and Learning. California: Corwin Press, Inc.

**Supporting lecturer** Prof. Rooselyna Ekawati, Ph.D.

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	Understand the meaning, philosophy, principles and characteristics of PMR		<b>Form of Assessment :</b> Participatory Activities	Discusses the meaning, philosophical studies, principles and characteristics of Realistic Mathematics.  Questions and answers about the meaning, philosophy and history of the development of Realistic Mathematics. 100			5%
2	Understanding the didactic phenomenology of Realistic Mathematics learning		<b>Form of Assessment :</b> Participatory Activities, Practice/Performance	Literature Review about didactic phenomenology in mathematics learning 100			5%
3	Understanding the didactic phenomenology of Realistic Mathematics learning		<b>Form of Assessment :</b> Participatory Activities	Explains the results of a literature review regarding didactic phenomenology in Realistic Mathematics Education			5%
4	Understanding embodied cognition and its relationship with Realistic Mathematics		<b>Forms of Assessment :</b> Participatory Activities, Portfolio Assessment, Practice / Performance	Explains the results of a literature review about embodied cognition and its relationship to Realistic Mathematics 100			10%
5	Understand the meaning and examples of hypothetical learning trajectories for PMR		<b>Form of Assessment :</b> Participatory Activities, Practice/Performance	Discussion in small groups to understand hypothetical learning trajectories and examples.  Presentation of group discussion results is accompanied			5%
6	Understanding local instructional theory		<b>Form of Assessment :</b> Practice / Performance	Explain the results of the literature review on Local Instructional Theory 100			5%

7	Describe the types of context for learning Mathematics		<b>Form of Assessment :</b> Participatory Activities	Discussion in small groups to describe the types of context with examples 100			5%
8			<b>Form of Assessment :</b> Test	UTS 100			30%
9			<b>Form of Assessment :</b> Project Results Assessment / Product Assessment		Discussion in small groups to analyze teaching material (context for several mathematical materials, namely numbers, algebra, measurement, geometry, probability & statistics, calculus and combinatorics) and context for elementary, middle and high school books.  Presentation of group discussion results accompanied by questions and answers. 100		0%
10			<b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Discuss students' work according to PMR 100			0%
11	Designing assessments that are appropriate to Realistic Mathematics learning		<b>Form of Assessment :</b> Participatory Activities		Working on a project developing hypothetical learning trajectories and 100 assessments		0%
12	Developing Hypothetical Learning Trajectories for Realistic Mathematics learning		<b>Form of Assessment :</b> Participatory Activities		Working on a project developing hypothetical learning trajectories and 100 assessments		0%
13	Developing Hypothetical Learning Trajectories for Realistic Mathematics learning		<b>Form of Assessment :</b> Participatory Activities		Working on a project developing hypothetical learning trajectories and 100 assessments		0%
14	Communicating Hypothetical Learning Trajectories with the PMR approach		<b>Form of Assessment :</b> Portfolio Assessment		Communicating Hypothetical Learning Trajectories with the PMR 100 approach		0%
15	Communicating Hypothetical Learning Trajectories with the PMR approach		<b>Form of Assessment :</b> Project Results Assessment / Product Assessment	Collaborative approach (discussions and seminars) 100	Communicating Hypothetical Learning Trajectories with the PMR 100 approach		30%
16			<b>Form of Assessment :</b> Project Results Assessment / Product Assessment				0%

#### Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	23.33%
2.	Project Results Assessment / Product Assessment	30%
3.	Portfolio Assessment	3.33%
4.	Practice / Performance	13.33%
5.	Test	30%
		99.99%

## 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.