

MODULE PORTFOLIO
ODD SEMESTER ACADEMIC YEAR 2019/2020

MODULE NAME	: Problem Solving	LECTURER:																				
MODULE CODE	:	Rooselyna Ekawati, M.Sc. Nina Rinda Prihartiwi, M.Pd.																				
CLASS	: 2017																					
SEMESTER	: 6																					
DATE	: 27 Januari 2020																					
COURSE LEARNING OUTCOMES	<p>Programme Learning Outcomes (PLO) KNO-1 Able to demonstrate mathematical knowledge and insight. KNO-2 Able to demonstrate pedagogical knowledge in designing, implementing and evaluating Mathematics' learning. COM-2 Able to make decision based on data/information in solving task that become students' responsibility and evaluate the work that has been done.</p> <p>CLO-1 Able to solve mathematical problems (algebra, geometry, statistics, discrete, probability, mathematical literacy, and numeracy) CLO-2 Able to explain problems and their meaning, problem solving in learning, problem solving and posing, mathematical thinking and problem solving, and problem solving skills CLO-3 Able to compile problem categories CLO-4 Able to determine strategies and stages in solving problems and evaluating the work that has been done</p> <p style="text-align: center;">Correlation Between PLO and CLO Problem Solving</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Problem Solving</th> <th>KNO-1</th> <th>KNO-2</th> <th>COM-2</th> </tr> </thead> <tbody> <tr> <td>CLO-1</td> <td style="text-align: center;">√</td> <td></td> <td></td> </tr> <tr> <td>CLO-2</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td>CLO-3</td> <td></td> <td style="text-align: center;">√</td> <td></td> </tr> <tr> <td>CLO-4</td> <td></td> <td></td> <td style="text-align: center;">√</td> </tr> </tbody> </table>		Problem Solving	KNO-1	KNO-2	COM-2	CLO-1	√			CLO-2		√		CLO-3		√		CLO-4			√
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CLO-3		√																				
CLO-4			√																			

LEARNING STRATEGIES	: The Course is conducted by activating students with several strategies: Collaborative Learning Approaches (Lectures, discussions, question and answer, problem solving and problem posing)
ASSESSMENT	: <p>The assessment carried out during the course includes the following three components.</p> <ol style="list-style-type: none"> 1. Assignment 2. Mid-term exam 3. Final Exam <p>1. Assignment</p> <ul style="list-style-type: none"> ✓ Assignments are given three times in one semester, two times before Mid-term exam (assignments and in the form of presentations) and after Mid-term exam (in the form of presentations) ✓ The assignment before Mid-term exam is an independent / individual task in the form of developing two HOTS (Higher Order Thinking Skill) questions along with their completion and group presentations on the material to be discussed before Mid-term exam. ✓ The presentation after the Mid-term exam is a group assignment in the form of a group presentation about the materials that will be discussed after the Mid-term exam. ✓ Each group presents one material while the other groups pay attention and ask questions if any material is not clear. Presentations are assessed based on the Presentation Assessment Rubric (Attached) ✓ Assessment of assignments is carried out to see the achievements of the PLO and CLO that are in accordance with the characteristics of the Problem Solving course. <p>2. Mid-term exam</p> <ul style="list-style-type: none"> ✓ Mid-term exam is held at the 8th meeting. ✓ Mid-term exam is held in class with 100 minutes of implementation time according to the class schedule. ✓ Mid-term exam is conducted to see the achievements of the PLO and CLO that correspond to the characteristics of Problem Solving courses.

3. Final Exam

- ✓ The final exam is held at the 16th meeting.
- ✓ The final exam is carried out in the classroom in the form of presenting the results of the efforts made. Final exam is carried out following the UAS implementation schedule of the department and the assessment is based on an assessment rubric.
- ✓ The final exam is conducted to see the achievements of the PLO and CLO which correspond to the characteristics of Problem Solving courses.

Assesmen Plan

Problem Solving	KNO-1	KNO-2	COM-2
CLO-1	Assignment, mid-term test, final test		
CLO-2		Assignment, mid-term test, final test	
CLO-3		Assignment, mid-term test, final test	
CLO-4			Assignment, mid-term test, final test

Weight of Test Ability

Problem Solving	KNO-1	KNO-2	COM-2
Assignment	25%	50%	25%
Mid-term test	50%	30%	20%
Final test	50%	40%	10%

The Calculation of PLO's Weight

	T	UT S	UA S	
KNO-1	0,25	0,5	0,5	1,25
KNO-2	0,5	0,3	0,4	1,2
COM-2	0,25	0,2	0,1	0,55
	1	1	1	3

LEARNING
OUTCOMES

The Calculation of PLO for each students

NO	NIM	x			NO	NIM	x		
		KNO-1	KNO-2	COM-2			KNO-1	KNO-2	COM-2
1	15030174040	70,77	73,82	77,52	38	17030174049	91,00	89,91	87,28
2	16030174054	68,00	67,82	70,48	39	17030174050	91,62	90,27	87,83
3	17030174003	73,54	77,09	80,41	40	17030174051	86,31	87,64	85,03
4	17030174006	69,46	73,73	77,90	41	17030174052	91,15	89,55	88,45
5	17030174007	82,77	83,27	82,90	42	17030174053	85,00	85,91	82,93
6	17030174011	76,85	78,64	79,14	43	17030174054	88,85	87,73	87,41
7	17030174012	81,85	83,64	84,14	44	17030174056	79,00	80,64	81,48
8	17030174014	81,15	82,27	82,59	45	17030174062	79,46	81,55	80,45
9	17030174018	88,85	88,82	89,07	46	17030174080	81,69	81,27	80,90
10	17030174020	83,85	84,36	84,90	47	17030174082	83,85	83,64	80,34
11	17030174021	79,77	80,64	81,14	48	17030174084	81,54	81,82	79,31
12	17030174023	81,85	82,55	82,48	49	17030174087	84,46	83,09	82,97
13	17030174025	85,92	86,27	86,24	50	17030174090	71,15	75,00	76,72
14	17030174027	77,08	78,91	80,07	51	17030174093	71,15	75,00	76,72
15	17030174028	82,31	83,45	83,52	52	17030174002	91,85	91,09	91,66
16	17030174029	80,69	82,45	83,21	53	17030174005	81,85	83,64	84,14
17	17030174032	79,23	79,09	80,34	54	17030174010	79,85	82,91	83,38
18	17030174064	71,46	71,91	74,10	55	17030174013	83,69	84,55	84,14

19	17030174065	76,77	78,00	79,38
20	17030174066	71,69	73,45	76,28
21	17030174067	66,15	66,36	69,66
22	17030174068	81,38	82,18	82,28
23	17030174069	69,62	72,64	76,59
24	17030174070	77,92	77,00	77,00
25	17030174071	77,92	80,09	82,38
26	17030174073	82,08	82,45	82,17
27	17030174075	83,92	85,00	84,66
28	17030174076	79,15	78,09	77,28
29	17030174077	81,15	81,73	81,76
30	17030174078	79,77	81,00	82,38
31	17030174035	70,92	74,91	79,52
32	17030174036	85,85	87,09	85,24
33	17030174040	80,38	81,36	82,93
34	17030174041	71,31	74,82	77,48
35	17030174043	81,85	83,82	83,72
36	17030174045	77,46	79,18	81,34
37	17030174048	74,92	76,36	76,90

56	17030174015	82,00	83,09	83,66
57	17030174016	82,46	84,00	84,69
58	17030174017	80,77	82,55	84,21
59	17030174022	83,85	85,64	86,14
60	17030174024	80,77	83,64	83,79
61	17030174026	81,08	82,18	83,66
62	17030174030	81,15	82,27	82,59
63	17030174031	80,77	82,36	82,55
64	17030174034	81,77	82,64	83,14
65	17030174038	87,23	87,27	87,93
66	17030174039	81,15	82,27	82,59
67	17030174044	87,00	89,36	89,90
68	17030174046	80,62	82,55	83,86
69	17030174057	91,15	91,91	93,41
70	17030174059	81,38	82,91	84,76
71	17030174061	81,69	84,18	84,62
72	17030174081	83,69	84,91	85,38
73	17030174083	82,62	83,45	84,21

The predicate of PLO for each student

NO	NIM	KNO-1	KNO-2	COM-2
1	15030174040	G	G	G
2	16030174054	S	S	G
3	17030174003	G	G	E
4	17030174006	S	G	G
5	17030174007	E	E	E
6	17030174011	G	G	G
7	17030174012	E	E	E
8	17030174014	E	E	E
9	17030174018	E	E	E
10	17030174020	E	E	E
11	17030174021	G	E	E

NO	NIM	KNO-1	KNO-2	COM-2
38	17030174049	E	E	E
39	17030174050	E	E	E
40	17030174051	E	E	E
41	17030174052	E	E	E
42	17030174053	E	E	E
43	17030174054	E	E	E
44	17030174056	G	E	E
45	17030174062	G	E	E
46	17030174080	E	E	E
47	17030174082	E	E	E
48	17030174084	E	E	G

E = Excellent
 G = Good
 S = Satisfy
 F = Fail

LEARNING
 OUTCOMES
 ANALYSIS

PLO Assessment Rubric

PLO	Description	Excellent	Good	Satisfy	Fail
KNO-1	Able to demonstrate mathematical knowledge and insight.	Able to solve mathematical problems (algebra, geometry, statistics, discrete, probability, mathematical literacy, and numeracy) with a minimum score 80	Able to solve mathematical problems (algebra, geometry, statistics, discrete, probability, mathematical literacy, and numeracy) with a score of at least 70 and less than 80	Able to solve mathematical problems (algebra, geometry, statistics, discrete, probability, mathematical literacy, and numeracy) with a score of at least 55 and less than 70	Able to solve mathematical problems (algebra, geometry, statistics, discrete, probability, mathematical literacy, and numeracy) with a score of less than 55
KNO-2	Able to demonstrate pedagogical knowledge in designing, implementing and evaluating Mathematics' learning.	Able to explain problems and their meaning, problem solving in learning, problem solving and posing, mathematical thinking and problem solving, problem solving skills, and compile	Able to explain problems and their meaning, problem solving in learning, problem solving and posing, mathematical thinking and problem solving, problem solving skills, and compile problem categories with a score of at least 70 and less than 80	Able to explain problems and their meaning, problem solving in learning, problem solving and posing, mathematical thinking and problem solving, problem solving skills, and compile problem categories with a score of at least 55 and less than 70	Able to explain problems and their meaning, problem solving in learning, problem solving and posing, mathematical thinking and problem solving, problem solving skills, and compile problem categories with a score of less than 55

		problem categories with a minimum score 80			
COM-2	Able to make decision based on data/information in solving task that become students' responsibility and evaluate the work that has been done	Able to determine strategies and stages in solving problems and evaluating the work that has been done with a minimum score 80	Able to determine strategies and stages in solving problems and evaluating the work that has been done with a score of at least 70 and less than 80	Able to determine strategies and stages in solving problems and evaluating the work that has been done with a score of at least 55 and less than 70	Able to determine strategies and stages in solving problems and evaluating the work that has been done with a score of less than 55

CLASSICAL VALUE OF PLO			
	KNO-1	KNO-2	COM-2
Max	91,85	91,91	93,41
Rat	80,55	81,73	82,35
Min	66,15	66,36	69,66

ACHIEVEMENT NUMBER OF PLO				ACHIEVEMENT PERCENTAGE OF PLO (%)		
E	47,00	53,00	56,00	64,38	72,60	76,71
G	22,00	18,00	16,00	30,14	24,66	21,92
S	4,00	2,00	1,00	5,48	2,74	1,37
F	0,00	0,00	0,00	0,00	0,00	0,00
	73,00	73,00	73,00	100,00	100,00	100,00

	<h3 style="text-align: center;">ACHIEVEMENT PERCENTAGE OF PLO</h3> <table border="1"> <caption>Achievement Percentage of PLO</caption> <thead> <tr> <th>PLO</th> <th>E</th> <th>G</th> <th>S</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>KNO-1</td> <td>64.38%</td> <td>30.00%</td> <td>5.00%</td> <td>0.00%</td> </tr> <tr> <td>KNO-2</td> <td>72.60%</td> <td>25.00%</td> <td>3.00%</td> <td>0.00%</td> </tr> <tr> <td>COM-1</td> <td>76.71%</td> <td>22.00%</td> <td>1.00%</td> <td>0.00%</td> </tr> <tr> <td>COM-2</td> <td>76.71%</td> <td>22.00%</td> <td>1.00%</td> <td>0.00%</td> </tr> </tbody> </table>	PLO	E	G	S	F	KNO-1	64.38%	30.00%	5.00%	0.00%	KNO-2	72.60%	25.00%	3.00%	0.00%	COM-1	76.71%	22.00%	1.00%	0.00%	COM-2	76.71%	22.00%	1.00%	0.00%	<h3 style="text-align: center;">CLASSICAL VALUE OF PLO</h3> <table border="1"> <caption>Classical Value of PLO</caption> <thead> <tr> <th>PLO</th> <th>Max</th> <th>Rat</th> <th>Min</th> </tr> </thead> <tbody> <tr> <td>KNO-1</td> <td>90.00</td> <td>80.00</td> <td>65.00</td> </tr> <tr> <td>KNO-2</td> <td>75.00</td> <td>65.00</td> <td>55.00</td> </tr> <tr> <td>COM-1</td> <td>55.00</td> <td>45.00</td> <td>35.00</td> </tr> <tr> <td>COM-2</td> <td>45.00</td> <td>35.00</td> <td>25.00</td> </tr> </tbody> </table>	PLO	Max	Rat	Min	KNO-1	90.00	80.00	65.00	KNO-2	75.00	65.00	55.00	COM-1	55.00	45.00	35.00	COM-2	45.00	35.00	25.00
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STUDENT'S LEARNING PERFORMANCE ANALYSIS	<p>On average, students who program problem solving courses have mastered the material given. Of the 73 students who took this course, 64.38% had met the excellent criteria at KNO-1, 72.60% had met the excellent criteria at KNO-2, and 76.71% had met the excellent criteria at COM-2. Meanwhile, the percentage of students who failed was 0% at KNO-1, KNO-2, and COM-2. There are four students who have satisfy categories on KNO-1, KNO-2, or COM-2. These four students have a relatively low UAS score (55-59), so that indirectly it has an impact on the achievement of the specified PLO. The achievement of this relatively low UAS score could be due to the lack of interaction with other students during online independent learning and learning that combines synchronous and asynchronous learning in online learning has not been designed. This combination of learning provides an opportunity for students to study independently asynchronously and then synchronously discuss what they do not understand.</p>																																														

RECOMMENDATION FOR FUTURE LEARNING	:	<p>There are several things that are recommended for improvement for the next lecture, namely:</p> <ol style="list-style-type: none"> 1. Motivate students to discuss online through forums or chat about the material by giving inducement questions and asking students to write their thoughts 2. Ask other students to respond to thoughts in the forum directly and provide feedback on their thoughts on learning synchronously
RECOMMENDATION FOR INSTITUTION	:	<p>Recommendations given to institutions are to provide clear rules regarding the provisions for implementing online learning so that the implementation of online learning can be maximized in accordance with applicable regulations</p>

