Semester Learning Plan

INSTITUT PERTANIAN BOGOR (IPB) FACULTY OF MATHEMATICS AND NATURAL SCIENCES DEPARTMENT OF MATHEMATICS		RPS-MAT/22 -05
SEMESTER LERANING PLAN		

Course	Code	Cluster of Course	Credit		SEMESTER	Date of Compilation
Mathematics and Logical Thinking	MAT1101	Mathematics	Theory = 2	Response/Practicum = 1	2 (even)	10 August 2020

AUTHORIZATION / RATIFICATION	Lecturers	RMK Coordinator	Head of Study Program
	Drs. Siswandi, MSi		

Learning Outcomes	Learning outcomes charged to the course	
	CP-KU1	Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values in accordance with their field of expertise.
	CP-KU2	Able to demonstrate independent, quality, and measurable performance.
	CP-PP1	Mastering theoretical concepts of mathematics including mathematical logic, discrete mathematics, algebra, analysis, and geometry, as well as probability theory and statistics.
	CP-KK1	Able to communicate and develop mathematical thinking, starting from mastery of procedural/computational skills to broad mastery including exploration, logical reasoning, generalization, abstraction, and formal proof. formal proof.
	CP-KK2	Able to observe, identify, formulate, and solve problems through a mathematical approach by involving the help of technology.

CP-KK4	Able to make the right decision by using various alternatives to solve mathematical problems that have been available.	
	tical problems that are available.	
CP-KK5	Able to collaborate, adapt, and become a lifelong learner.	
CP-KK6	Able to use and apply software based on computer algebra systems as a tool in analyzing and solving mathematical problems.	
	analysis and solving mathematical problems.	
Course Learning Outcomes (CPMK) - If CPMK as an ability at each stage of learning CPMK = Sub CP MK		
CP MK 1	Able to explain whether there is an error/error in a statement and recognize the type of error/error, as well as recognize the concept of induction deduction thinking.	
CP MK 2	Can explain the difference between propositions and non-propositions, couplers and their modes, the truth value of propositions. Classification of propositions: Tautology, contradiction, contingency. Two equivalent propositions (with table and postulate)	
CP MK 3	Can explain the meaning of predicate, Universe of predicates. Symbolizing a predicate, Quantifying terms, Symbol of quantified propositions, Negation of quantified propositions	
CP MK 4	Students are able to explain the meaning of argument, symbolize argument, determine/check the validity of an argument.	
CP MK 5	Can explain the Principle of Mathematical Induction, use the principle of mathematical induction to prove the origin of mathematics.	
CP MK 6	Can: Enumerate the number of all possibilities of an event occurring, Use the laws of addition, multiplication, permutation	
CP MK 7	Can explain/& Use the permutations of semiannual, circular, combination, distribution	
CP MK 8	Can explain the meaning of System of Linear Equations (SPL), model problems with SPL	
CP MK 9	Can explain and determine the Determinant, Inverse, and Rank of a matrix	
CP MK 10	Explain & determine the solution of SPL and can apply SPL in real life.	
CP MK 11	Can explain the general form of linear, quadratic, intercepted functions.	
CP MK 12	Explain the formulation, graph of exponential function, logarithm function. Formulate/model a function that matches the real data obtained.	
CP MK 13	Can explain the meaning of Linear Programming (PL) & Determine the solution of PL	
CP MK 14	Can formulate real problems to Linear Programming.	

SLO Map - CP MK	*Write down the matrix map between SLO and CPMK (Sub CP MK)*							
		CP- KU1	**CP-KU2**	**CP-PP1**	**CP-PP2**	**CP-KK1**	**CP-KK2**	**CP-KK4**
	CPMK 1 / SUB CPMK 1	√	√	√		√		
	CPMK 2 / SUB CPMK 2	√	√	√		√		
	CPMK 3 / SUB CPMK 3	√	√	√		√		
	CPMK 4 / SUB CPMK 4	√	√	√		√		
	CPMK 5 / SUB CPMK 5	√	√	√		√		
	CPMK 6 / SUB CPMK 6	√	√	√			√	
	CPMK 7 / SUB CPMK 7	√	√	√			√	
	CPMK 8 / SUB CPMK 8	√	√	√	√	√	√	√
	CPMK 9 / SUB CPMK 9	√	√	√	√	√	√	√
	CPMK 10 / SUB CPMK 10	√	√	√	√	√	√	√
	CPMK 11 / SUB CPMK 11	√	√	√		√	√	
	CPMK 12 / SUB CPMK 12	√	√	√		√	√	
	CPMK 13 / SUB CPMK 13	√	√	√	√	√	√	√
	CPMK 14 / SUB CPMK 14	√	√	√	√	√	√	√

Brief description of the course	This Mathematics and Logical Thinking material discusses basic mathematical concepts and some concepts used for tera pan which include the concept of introduction to mathematical logic (informal errors / errors in arguing), Propositional Logic, Predicate Logic, Arguments, Proof by Mathematical Induction Principles, Combinatorics Theory (Permutation, Combination, Distribution).

	System of Linear Equations (solution, modeling & application), Functions as models (linear, quadratic, piecewise, exponential functions, logarithm). Linear Programming and its Applications	
Study Material: Learning materials	1. Introduction to mathematical logic (informal mistakes/errors in arguing), 2. Propositional logic, 3. Predicate Logic, 4. Arguments, 5. Proof by the Principle of Mathematical Induction, 6. Combinatorics 1 (Law of multiplication, addition, permutation), 7. Combinatorics 2 (Similar permutations, circular, combination, Distribution), 8. Mathematical Modeling with Linear Equation System (SPL), solution, modeling & its application), 9. Determinant, Inverse, and Rank of a matrix. 10. SPL Solution and Application. 11. Functions as models (linear, quadratic, intercepted functions), 12. Exponential functions and logarithmic functions. 13. Linear programming 14. Applications of Linear Programming	
References	**Primary:**	1. *Diktat Pengantar Matematika*. 2019. Departemen Matematika IPB. 2. G.C. Berresford, A.M. Rockett. 2013. *Brief Applied Calculus*, 6th Ed, Cencage Learning. 3. Rosen, KH. 2019. *Discrete Mathematics and Its Applications*. 8th Edition. Mc GrawHill, New York. 4. Copi IM, Cohen C, McMahon, K. 2011. *Introduction to Logic*, 14th Edition. Pearson Prentice Hall. 5. M.L. Lial, R.N. Greenwell, N.P. Ritchie.2017. *Calculus with Applications*, 11th Ed. Global Edition, Pearson. 6. M.S. Engel, Bedford. 2014. *With Good Reason: An Introduction to Informal Fallacies*. 7. P.D. Magnus. 2014. *Forallx-An Introduction to Formal Logic*. Http://www.fecundity.com/logic. 8. PR P. Morash. 1987. *Bridge to Abstract Mathematics*. Random House Inc. New York. 9. R.P. Grimaldi. 2003. *Discrete and Combinatorial Mathematics*. 5th Edition. Pearson Addison Wesley, Boston. 10. R.N. Aufman, J.S. Lockwood, R.D. Nation, D.K. Clegg. 2008. *Mathematical Thinking and Quantitative Reasoning*. Houghton Mifflin Co. Boston. 11. Tan ST. 2008. *College Mathematics for the Managerial, Life, and Social Sciences*, 7th Ed, Thomson, Belmont. 12. Taha HA. 2017. *Operations Researh: An Introduction*. 10th Ed. Pearson, Edinburg.

Lecturers	Department of Mathematics teaching team						
Course Requirements	None						
Week	**The final capability of each learning stage (Sub-CPMK)**	**Assessment**		**Forms of Learning; Learning Methods; Student Assignments; [Estimated Time]**		**Learning Materials [Reference]**	**Value (%)**
		Indicator	**Criteria & Techniques**				
(1)	**(2)**	**(3)**	**(4)**	**Tatap Muka (5)**	**Daring (6)**	**(7)**	**(8)**
	After attending this course students will be able to :	Correctness and accuracy in:					
1	Able to explain whether there are whether or not there is an error/inaccuracy fallacy of a statement and recognize the type of error, as well as recognize the concept of induction deduction thinking.	Determining whether there is a statement error & determining the type of error, as well as determining the concept of thinking	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Introduction to Logic	10
2	Can explain the difference between propositions and non-propositions Pro-positions Staples and their modes Truth value pro-position, Classification of propositions: Tautology, contradiction, contingency	Determine what a proposition is or is not, use coupling and determine the truth value of complex propositions, determine the classification of propositions	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Propositional Logic	5

				Lecture:	Lecture:		
3	Explain & determine equivalent/not equivalent between 2 propositions with tables and propositions). Definition of predicate, Universe of predicate predicate symbol Quantifying terms The symbol of quantified propositions. Negation of quantified proposition	Appropriate in Checking the equality of 2 proportions. Symbolize predicates, quantify propositions, & determine their true value.	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Propositional Equivalence and Predicate Logic	5
4	Students are able to explain the meaning of argument, symbolize argument, determine the validity of an argument	Checking the validity of an argument	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Argument	5
5	Can Explain the Principle of Mathematical Induction use the principle of mathematical induction to prove mathematical formulas	Use the principle of mathematical induction to prove the correctness of mathematical formulas	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment	Principle of Mathematical Induction	5

				Time: 100 minutes Practicum: Presentation of each group	questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group		
6	Can: Count the number of times an event is likely to occur. Use the laws of addition, combination and permutation	Accuracy in using the laws of addition and multiplication multiplication with appropriately.	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Combinatorics: Law of sum, law of Multiplication, and Per mutation	10

7	Using permutations with similar objects, circular permutations, combinations, distributions appropriately	Accuracy in solving combinatorics problems related to permutations with similar objects, circular permutations, combinations, distribution	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Permutations Type, Circular Permutation, Combination, Distribution	**10**
8				**Midterm Exam**			Midterm Exam
9	Can: Explain the meaning of Modeling with System of Linear Equations (SPL), can present SPL in matrix	Accurately determine the real error associated with an SPL, can express an SPL in terms of a matrix	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum:	Modeling with System of Equations Linear (SPL)	**5**

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					Discussion of assignment results group		

10	Can: Explain the meaning of Determinant, Inverse, and Rank of a matrix.	Determining the Determinant, Inverse, and Rank of a matrix	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Determinants, In verses, & Ranks of Matrices	10
11	Can: Explain the meaning of Solution of Linear Equation System (SPL), Formulate the problem into SPL and determine the solution	Accurate in determining the number of SPL solutions, and finding the values. Correct in formulating the problem into SPL and solving it	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	SPL Solutions and Their Applications	5
12	Can explain and express Linear Functions, Quadratic Functions, and Integer Functions	Recognize and be able to distinguish Linear, Quadratic, Discontinuous functions.	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials	Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment	Function as Model: Li near function, Kua dratic function, and Sese penggal	10

				Time: 100 minutes Practicum: Presentation of each group	questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group		
13	Can explain and express Exponential function & logarithm function	Accuracy in determining the form, characteristics of exponential and logarithmic functions	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Functions as models: Exponential and Logarithmic Functions	**5**
14	Can explain and state the meaning of Linear Programming (PL)	Determining integral with Techniques mani-pulation integrants, partial integrals, de-composition partial fractions	Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question	Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group	Lecture: Students review hand out/video material & examples at https://course. ipb.ac.id/course/view.php ?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group	Integrant manipulation, partial integrating, partial fraction decomposition	**10**

| 15 | Can formulate real problems in Linear Programming. | Determine area, average value function, Length across a curve with integrals. | Criteria: Accuracy, clarity in answering Technical questions: Completing an essay question | Lecture: Explanation of material, examples followed by discussion/question and answer answer and ended with assignment of response materials Time: 100 minutes Practicum: Presentation of each group | Lecture: Students review hand out/video material & examples at https://course.ipb.ac.id/course/view.php?id=971, followed by discussion & assignment questions. group assignment Time: 100 minutes Practicum: Discussion of assignment results group | Area of the Flat Field, Average Value of the Function, Length of the path. | 5 |
| 16 | | | | **Final Semester Exam** | | | |

LEARNING METHODS

Lectures are designed using lecture, discussion, group discussion, group presentation methods.

ASSIGNMENT DESIGN

Some of the assignments carried out to encourage understanding of the material in this lecture are: Group Assignments, Structured Exercises.

- Group Assignments are homework that is done in groups and presented randomly in class during practicum/responsiveness time. Questions are taken and developed from the handbook used and from the teacher's suggestions.
- Structured Exercises are exercises for each student to deepen their understanding of lecture material by answering multiple choice questions with 5 answer options provided at http://course.ipb.ac.id/login/index.php

GRADING

Assessment Criteria	Value Range	Weight Value (%)	Description
Midterm exam	0 – 100	35	Individual grades
Final exam	0 – 100	35	Individual grades
Quiz 1	0 – 100	10	Individual grades
Quiz 2	0 – 100	10	Individual grades
Structured Exercise	0 – 100	5	Individual grades
Group Assignment	0 – 100	5	Individual grades
Final Grade (NA)		**100**	

Final Grade (NA)	Quality Letter	Description
NA ≥ 75	A	Passed
70 ≤ NA < 75	AB	Passed, not repeated
60 ≤ NA < 70	B	Passed, not repeated
50 ≤ NA < 60	BC	Passed, not repeated
40 ≤ NA < 50	C	Passed, not repeated
20 ≤ NA < 40	D	Passed, may be repeated
NA < 20	E	Did not pass, must be repeated

	CPL	CPMK	MBKM	Midterm exam	Final exam	Quiz 1	Quiz 2	Structured Exercise	Group Assignment	Others			
												Course	Mathematics & Logical Thinking
1	KU1	CPMK1		1		0.5		0.05	0.05		1.6	Midterm exam	35%
2	KU1	CPMK2		1		0.5		0.1	0.1		1.7	Final exam	35%
3	KU1	CPMK3		1		1		0.1	0.1		2.2	Quiz 1	10%
4	KU1	CPMK4		1		1		0.05	0.05		2.1	Quiz 2	10%
5	KU1	CPMK5		1				0.05	0.05		1.1	Sructured Exercise	5%
6	KU1	CPMK6		2				0.05	0.05		2.1	Group Assignments	5%
7	KU1	CPMK7		1				0.05	0.05		1.1		100%
8	KU1	CPMK8			1		0.5	0.05	0.05		1.6		
9	KU1	CPMK9			1		0.5	0.05	0.05		1.6		
10	KU1	CPMK10			1		1	0.05	0.05		2.1		
11	KU1	CPMK11			1		1	0.05	0.05		2.1		

12	KU1	CPMK12		1				0.05	0.05		1.1		
13	KU1	CPMK13		2				0.05	0.05		2.1		
14	KU1	CPMK14		1				0.05	0.05		1.1		
15	KU2	CPMK1	1		0.5			0.05	0.05		1.6		
16	KU2	CPMK2	1		1			0.05	0.05		2.1		
17	KU2	CPMK3	1		1			0.05	0.05		2.1		
18	KU2	CPMK4	1		1			0.05	0.05		2.1		
19	KU2	CPMK5	1					0.05	0.05		1.1		
20	KU2	CPMK6	1					0.05	0.05		1.1		
21	KU2	CPMK7	1					0.05	0.05		1.1		
22	KU2	CPMK8		1		0.5		0.05	0.05		1.6	1.2	
23	KU2	CPMK9		1		1		0.05	0.05		2.1		
24	KU2	CPMK10		1		1		0.05	0.05		2.1		
25	KU2	CPMK11		1		1		0.05	0.05		2.1		
26	KU2	CPMK12		1				0.05	0.05		1.1		
27	KU2	CPMK13		1				0.05	0.05		1.1		
28	KU2	CPMK14		1				0.05	0.05		1.1		
29	PP1	CPMK1	1		0.5			0.05	0.05		1.6		
30	PP1	CPMK2	1		1			0.05	0.05		2.1		
31	PP1	CPMK3	1		1			0.05	0.05		2.1		

32	PP1	CPMK4	1		1		0.05	0.05		2.1		
33	PP1	CPMK5	1				0.05	0.05		1.1		
34	PP1	CPMK6	1				0.05	0.05		1.1		
35	PP1	CPMK7	1				0.05	0.05		1.1		
36	PP1	CPMK8		1		0.5	0.05	0.05		1.6		
37	PP1	CPMK9		1		1	0.05	0.05		2.1		
38	PP1	CPMK10		1		1	0.05	0.05		2.1		
39	PP1	CPMK11		1		1	0.05	0.05		2.1		
40	PP1	CPMK12		1			0.05	0.05		1.1		
41	PP1	CPMK13		1			0.05	0.05		1.1		
42	PP1	CPMK14		1			0.05	0.05		1.1		
	PP2	CPMK1	0.5				0.05	0.05		0.6		
	PP2	CPMK2	0.5				0.05	0.05		0.6		
	PP2	CPMK3	0.5				0.05	0.05		0.6		
	PP2	CPMK4					0.05	0.05		0.1		
	PP2	CPMK5					0.05	0.05		0.1		
	PP2	CPMK6	0.5				0.05	0.05		0.6		
	PP2	CPMK7	0.5				0.05	0.05		0.6		
	PP2	CPMK8		0.5			0.05	0.05		0.6		
	PP2	CPMK9		0.5			0.05	0.05		0.6		

	PP2	CPMK10			0.5			0.05	0.05		0.6		
	PP2	CPMK11						0.05	0.05		0.1		
	PP2	CPMK12						0.05	0.05		0.1		
	PP2	CPMK13			0.5			0.05	0.05		0.6		
	PP2	CPMK14			0.5			0.05	0.05		0.6		
	KK1	CPMK1		1				0.05	0.05		1.1		
	KK1	CPMK2		1				0.05	0.05		1.1		
	KK1	CPMK3		1				0.05	0.05		1.1		
	KK1	CPMK4		1				0.05	0.05		1.1		
	KK1	CPMK5		1				0.05	0.05		1.1		
	KK1	CPMK6		2				0.05	0.05		2.1		
	KK1	CPMK7		1				0.05	0.05		1.1		
	KK1	CPMK8			1			0.05	0.05		1.1		
	KK1	CPMK9			1			0.05	0.05		1.1		
	KK1	CPMK10			1			0.05	0.05		1.1		
	KK1	CPMK11			1			0.05	0.05		1.1		
	KK1	CPMK12			1			0.05	0.05		1.1		
	KK1	CPMK13			2			0.05	0.05		2.1		
	KK1	CPMK14			1			0.05	0.05		1.1		
	KK2	CPMK1						0.05	0.05		0.1		

	KK2	CPMK2						0.05	0.05		0.1		
	KK2	CPMK3						0.05	0.05		0.1		
	KK2	CPMK4						0.05	0.05		0.1		
	KK2	CPMK5						0.05	0.05		0.1		
	KK2	CPMK6						0.05	0.05		0.1		
	KK2	CPMK7						0.05	0.05		0.1		
	KK2	CPMK8						0.05	0.05		0.1		
	KK2	CPMK9						0.05	0.05		0.1		
	KK2	CPMK10						0.05	0.05		0.1		
	KK2	CPMK11						0.05	0.05		0.1		
	KK2	CPMK12						0.05	0.05		0.1		
	KK2	CPMK13						0.05	0.05		0.1		
	KK2	CPMK14						0.05	0.05		0.1		
	KK4	CPMK1		0.5				0.05	0.05		0.6		
	KK4	CPMK2		0.5				0.05	0.05		0.6		
	KK4	CPMK3		0.5				0.05	0.05		0.6		
	KK4	CPMK4						0.05	0.05		0.1		
	KK4	CPMK5						0.05	0.05		0.1		
	KK4	CPMK6		0.5				0.05	0.05		0.6		
	KK4	CPMK7		0.5				0.05	0.05		0.6		