

Course Syllabus Second Semester, Academic Year 2024

1. Faculty of Agriculture at Kamphaeng Saen

2. Course code: 02027423 Credit: 3(2-3-6) Pre: 02027321 **Course name:** Testing and Evaluation of Agricultural Machinery and Equipment

Department of Farm Mechanics

3. Instructor team:

Assoc.Prof. Pongsak Chontanasawat Asst. Prof. Dr. Sombat Khawprateep Asst. Prof. Nonthawat Chainarong Assis. Prof. Chuti Moungprasert Assis. Prof. Vitawas Yomchinda Assoc. Prof. Dr. Ratana Tangwongkit Mr. Thawatchai Koedsuk E-mail: agrpoc@ku.ac.th E-mail: agrsbk@ku.ac.th E-mail: agrrtnc@ku.ac.th E-mail: agrctm@ku.ac.th E-mail: vitawas@sut.ac.th E-mail: agrrnt@gmail.com E-mail: thawatchai.koed@ku.ac.th

4. Providing students with access to and advice outside of class hours:

Working days During official hours, except during teaching periods or when on official business outside of the premises. In case of emergency, students can contact us via Line group or Mobile phone.

5. Course Objectives:

5.1 Able to explain the meaning and plan for testing and evaluating various types of agricultural machinery and equipment.

5.2 Able to test and evaluate various types of agricultural machinery and equipment.

5.3 Can analyze the economics of the operation of various agricultural machinery and equipment.

5.4 Able to explain the relationship between human anatomy and agricultural machinery.

6. Course Description

Testing and evaluation meaning, basic of measurement, body and machine relation, economic assessment, standard and test procedures and evaluation of agricultural machinery and equipment.

PLOs	Knowledge	Specific skills	Attitude
PLO3: Be able to select	- Principles of testing	- Able to plan, manage, test	- Awareness of safety in
agricultural machinery	and evaluation of	and evaluate agricultural	using tractors
correctly and appropriately	agricultural machinery	machinery according to	- Responsibility and
with the objectives and goals	according to	international standards	discipline in working
of the desired results in a	international standards	- Able to calculate economics	
comprehensive manner	- Principles of economic	of using agricultural	
	analysis of agricultural	machinery	
	machinery use	- Able to use Excel program	
	- Able to creatively	to calculate agricultural	
	present the results of	machinery	
	agricultural machinery		
	and technology analysis		

7. Program Learning Outcomes: PLOs 2565 (8PLOs of 2024 revised curriculum)

1

PLO6: Be able to choose information technology (IT) to operate tasks appropriately	-Have skills in using IT in agriculture.	- Value and love to seek knowledge in IT
PLO7: Be able to use Thai and English language on duty for listening, speaking, reading and writing appropriately.	 Use relevant technical terms correctly in both Thai and English Write various reports that are assigned Have confidence in presenting the information you have studied. 	
PLO8: Display a willingness to be responsible, disciplined, diligent, patient, and honest, human relations in working with others, be a good leader and follower and have a relationship with the organization.	 Have skills in working with others and be a good leader and follower Have problem-solving skills 	-Be responsible and disciplined in your work - Be diligent and patient - Be punctual - Be honest

8. Course Learning Outcomes: CLOs and Methods for measuring learning outcomes:

Course Learning Outcomes: CLOs	Methods for measuring learning outcomes:	PLOs
CLO1: Students can explain the	1.1 Lecture exam	PLO3
meaning, plan and test the	1.2 Evaluate students' practical skills and provide advice during	PLO6
performance of agricultural	every practice.	PLO7
machinery and equipment, and		
explain the relationship between		
human anatomy and agricultural		
machinery.		
CLO2: Able to plan, manage, test and	2.1 Evaluate students' practical skills and provide advice during	PLO3
evaluate agricultural machinery	every practice.	PLO6
according to international standards	2.2 Discussion on analyzing data obtained from each operation	PLO7
	together to ensure that students have a correct understanding	
	and can calculate, analyze the capabilities, efficiency, and	
	costs of agricultural machinery and equipment.	
	2.3 Make individual performance reports every time.	
CLO3: Can calculate and analyze the	3.1 Test result of machinery performance and cost analysis by	PLO3
capabilities, efficiency and operating	using Excel program.	PLO6
costs of agricultural machinery and		PLO7
equipment by using Excel program of		
related program.		
CLO4: Be responsible, moral, ethical,	4.1 Attend classes and be attentive to learning and practice and	PLO8
disciplined, punctual, honest,	submit assigned work on time.	
responsible for oneself and society		
CLO5: Have the skills to work with	5.1 Evaluate group work skills and provide advice on how to	
others as a good leader and member	interact well in group work.	
and can adapt to various situations		
appropriately.		

9. Academic achievement measurement:

9.1 Students must attend both lectures and practical classes for at least 80 percent of the total class time.

9.2 Assessment criteria and academic achievement measurement

9.2.1 Lecture Section	1. Examination of all chapter lectures	30%			
	2. Assignment. report and presentation	13%			
9.2.2 Laboratory Section	1. Individual reports every section.	20%			
	2. Practical skill evaluation of machinery performance test	15%			
	3. Presentation skills of machinery test results	10%			
9.2.3 Interest in learning, determination to perform, responsibility and teamwork.					
Total					

Score level	>80	75-79	70-74	65-69	60-64	55-59	50-54	<50
Grade	Α	B+	В	C+	С	D+	D	F

10. Documents to read:

Books, research reports, articles, and other relevant and up-to-date documents as assigned.

11. Evaluation of teaching results:

From the student's questionnaire, students must evaluate their teaching results at www.kps.ku.ac.th (go to Students, Teaching System) with the university's teaching evaluation form before the mid-term and final exams.

12. Review to improve teaching methods and teaching systems:

☑ No review because students were satisfied with the teaching in the previous session with a score of 4.73 without suggestion

□Reviewed by reviewing from

☑ Not revised.....

 \Box Revised to be consistent with.....

13. Teaching improvement from teaching evaluation results:

□ No teaching evaluation

☑ Teaching evaluation,

- □ No improvement,
- Improvements as follows: Even though the evaluation result was as high as 4.73, it came from only 6 evaluators out of 37 learners (16.22%). Therefore, there must be a method to encourage more learners to evaluation in the system and it should be more than 80%.

14. Schedule of activities related to teaching and learning (see Table 1)

Tuesday: Lecture 10:00-12:00 Laboratory 13:00-16:00 at Seminar room AMM Building, Mechanical workshop and Field lab.

Signature_____

(Assoc.Prof. Pongsak Chontanasawat) 15 November 2024

Table 1: Schedule of activities related to teaching and learning of 02027423

Tuesday: Lecture 10:00-12:00 Laboratory 13:00-16:00 at Seminar room AMM Building, Mechanical workshop and Field lab.

No.	Lessons	LLOs	L-level	Teaching/Learning method	Assessment	Instructor	CLOs	PLO
1-3	Chapter I:	-Able to explain the principles, standards,	K: An	-Lecture on:	- Examination of	Pongsak	CLO1	PLO3
	-Principles, standards,	testing and evaluation of agricultural machinery	S: Precise	"Principles, Standards, Testing and	each lesson	Vitavas	CLO2	PLO4
	testing and evaluation	testing.	A:	Evaluation of Agricultural Machinery	- Evaluate student	Chuti	CLO3	PLO5
	of agricultural	- Able to use Excel program to calculate the	Valuing	Testing" and "Calculation of the Cost of	performance	Sombat	CLO4	PLO6
	machinery testing	machinery performance and cost of agricultural		Agricultural Machinery Operation"	skills and provide	Nonthawat	CLO5	PLO7
	-Calculation of	machinery operation.		-Laboratory:	guidance during	Thawatchai		
	performance and cost	-Able to perform preliminary tests by dividing		D ividing students into groups to perform	the practice	Ratana		
	of agricultural	students into small groups and operate as:		4 tasks in rotation until all 4 tasks are	- Present test			
	machinery operation	-Each group of students helped each other		completed, and all students must perform	results and			
	-Perform preliminary	-plan the test,		them by themselves, namely:	Discussion			
	tests in the field,	-divided the responsible persons into tasks,		1) Calculating operation speed	- Submit			
	analyze the results,	-conducted the test,		2) Calculating the slip rate	individual			
	summarize the results	-collected the test results,		3) Measuring the rotating speed of	practice reports			
	and prepare a report	-helped analyze the initial test results,		agricultural machinery	on schedule on			
		-presented the test results in front of the		4) Calculating the draft force of	EduFarm			
4.5		class.	-	agricultural machinery				
4-5	Chapter II:	-Able to explain the field test method of the		-Lecture on:				
	Principles of testing	plowing and harrowing equipment		Principles of testing and evaluation of				
	and evaluation of	-Able to test the soil preparation tools, including		testing for soil preparation machinery				
	testing for soil	2 types of plowing equipment and 2 types of		(plowing and harrowing)				
	preparation machinery	harrowing equipment which students were		-Laboratory:				
	(plowing and	divided into 4 groups and test operating as:		1) To manage teaching and learning				
	narrowing)	-Each group of students helped each other		effectively, students are divided into				
	-Laboratory of field	-plan the test,		smaner groups so that everyone can				
	neroparation machinery	-divided the responsible persons into tasks,		2 types of ploying tools and 2 types of				
	analyza results	collected the test,		2 types of plowing tools and 2 types of harrowing tools) Students will practice				
	- allalyze results,	-conceled the lest results,		all 4 operations in rotation				
	and prepare reports	-presented the test results in front of the class		2) Students are practicing preparing				
	and prepare reports.	presented the test results in none of the class.		various tools and equipment and bring				
				them to the test plot by themselves to				
				practice planning and doing the work				
				3) The collection of data for the test will				
				have students divide the work to practice				
				working together and have responsibility.				
				4) Each students group analyzes data				
				before presenting				
				5) During the presentation of the results of				
				data analysis from the operation, there				

No.	Lessons	LLOs	L-level	Teaching/Learning method	Assessment	Instructor	CLOs	PLO
				will be a discussion to train students to				
				analyze causes and effects in answering				
				questions and to make students				
				understand more.				
6-7	Chapter III:	-Able to explain the field test method of		-Lecture on:				
		planting machine		Principles of testing and evaluation of				
	Principles of testing	-Able to test the planting machine, including 2		testing for planting machine				
	and evaluation of	types of grain planters and 2 types of special		-Laboratory:				
	testing for planting	planters which students were divided into 4		1) In order to manage teaching and				
	machinery	groups and test operating as:		learning effectively, students are divided				
	-Laboratory of field	-Each group of students helped each other		into smaller groups so that everyone can				
	tests of planting	-plan the test,		practice. There are 4 groups according to				
	machinery, analyze	-divided the responsible persons into tasks,		the 4 types of planting equipment.				
	results, summarize	-conducted the test,		Students will practice all 4 operations in				
	results, and prepare	-collected the test results,		rotation.				
	reports.	-helped analyze the initial test results,		Itoms 2 to 5 os follows				
	-2 Types of Grain	-presented the test results in front of the		Teaching/Learning method of Chapter				
	Planters	class.		reaching/Learning method of Chapter				
	-2 Types of Special			11				
	Planters							
8-	Chapter IV:	-Able to explain the field test method of		-Lecture on:				
10	Principles of testing	Weeding equipment, Fertilizer applicator, and		Principles of testing and evaluation of				
	and evaluation of	Sprayer.		testing for plant care equipment				
	testing for plant care	-Able to test the plant care machine, including		-Laboratory:				
	equipment	Weeding equipment, Fertilizer applicator, and		1)To manage teaching and learning				
	-Laboratory of field	Sprayer which students were divided into 3		effectively, students are divided into				
	tests of plant care	groups and test operating as:		smaller groups so that everyone can				
	equipment, analyze	-Each group of students helped each other		practice. There are 3 groups (according to				
	results, summarize	-plan the test, divided the responsible persons into tasks		s types of weeding equipment, fertilizer				
	results, and prepare	-divided the responsible persons into tasks,		practice all 3 operations in rotation				
	Weeding equipment	-collected the test results		Items 2 to 5 as follows				
	Fartilizar applicator	belowd analyze the initial test results		Teaching/Learning method of Chapter				
	-Spraver	-presented the test results in front of the class		II				
11-	Chapter V:	-Able to explain the testing method of Rice		-Lecture on:				
12	Principles of testing	combine harvester and sugarcane harvester		Principles of testing and evaluation of				
	and evaluation of	-Able to test of Rice combine harvester and		testing for harvesting machine				
	testing for harvesting	sugarcane harvester which students were		-Laboratory:				
	machine	divided into 4 groups and test operating as:		- Sugarcane harvester Laboratory				
	-Laboratory of field	-Each group of students helped each other		Since the AMM does not have sugarcane				
	tests of harvesting	-plan the test,		harvester and sugarcane fields ready for				
	machine, analyze	-divided the responsible persons into tasks,		cutting, and sugarcane cutting is the				

No.	Lessons	LLOs	L-level	Teaching/Learning method	Assessment	Instructor	CLOs	PLO
	results, summarize	-conducted the test,		opening season for crushing, in order to				
	results, and prepare	-collected the test results,		manage teaching and learning effectively,				
	reports.	-helped analyze the initial test results,		AMM coordinated with alumni who work				
	-Rice combine	-presented the test results in front of the class.		in sugar factories Provided support for				
	harvester			students to conduct data collection tests in				
	-Sugarcane harvester			sugarcane fields where the factory is				
				cutting sugarcane, which has received				
				continuous support from alumni.				
				- Rice combine harvester				
				The AMM has rice harvesting machines				
				that can be studied in components and				
				adjustments, but testing in real rice				
				harvesting in the field requires planning 4				
				months in advance. To manage teaching				
				and learning effectively, the program has				
				contacted alumni or parents of students				
				who have rice fields ready for harvesting				
				to ask students to come and test the				
				operation of the rice combine harvester,				
				which has received continuous assistance				
				from alumni or parents of students.				
				1) Students are divided into smaller				
				groups so that everyone can practice.				
				There are 3 groups of test activities as				
				data for plant yield analysis, data for				
				machine performance analysis and				
				product loss analysis)				
				Items 2 to 5 as follows				
				Teaching/Learning method of Chapter				
-				II				
13-	Students present their	-Able to present academic work		-Train students to present their research				
15	research and answer	-Have presentation skills		and answer questions for 10 minutes each.				
	questions.	-Able to create presentation media		-Train students to ask questions to the				
		-Have question-answering skills		presenter.				
				-Train students to dress appropriately and				
1				use appropriate words and manners during				
				the presentation.				
				(assessment by using rubric scoring which				
1				same from of seminar subject))				