Course Description Form

1. Course Name:

Harvesting Equipment

2. Course Code:

HAEQ481

3. Semester / Year:

The second spring semester/fourth stage/2025-2026

4. Description Preparation Date:

1/2/2026

5. Available Attendance Forms:

in-person + online

6. Number of Credit Hours (Total) / Number of Units (Total)

90 hours (2 theoretical + 4 practical / 4 units

7. Course administrator's name (mention all, if more than one name)

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8. Course Objectives

• Identify the types of harvesters and combine harvesters and their uses
• Identify the advantages and disadvantages of agricultural harvesters of different types
• Identify the correct operational methods for each type of harvester
• Identify the basic parts of agricultural harvesters and their main functions
• Estimating the qualitative and quantitative losses resulting from the incorrect use of harvesters
• Identifying harvester malfunctions and how to calibrate them
• Operate harvesters in a scientific and correct manner

9. Teaching and Learning Strategies

- Interactive lecture
-Brainstorming
- Dialogue and discussion
-Field Training
- Practical exercises
- Field project
-Self-education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2 Theoretical	a1: The student explains the importance and development of harvesting equipment and the classification of harvesters. The student acquires knowledge and concepts related to the importance and development of harvesting equipment.	The importance and development of harvesting equipment.	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	4 Practical	b5: Checks and organizes procedures for calibrating the cutting unit. The student must be able to operate the harvesters in a scientifically correct manner	Regulations for the cutting unit	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
2	2 Theoretical	c1: Shows the main and auxiliary parts that make up the cutting unit and the function of each part. Shows the main parts that make up the threshing unit and the function of each part. The student acquires knowledge and concepts	Main and auxiliary parts of the grain harvester	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam

		related to the main and auxiliary parts of the grain harvester			
	4 Practical	b6: Checks and organizes the procedures for calibrating the feeding unit. The student should be able to identify problems that reduce the efficiency of the harvesting process	Regulations for the feeding unit	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
3	2 Theoretical	b1: Determines the types of loss and its sources. The student acquires knowledge and concepts related to grain loss and its sources in combine harvesters	Grain loss and its sources in combine harvesters	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	4 Practical	b7: Checks and organizes procedures for calibrating the threshing unit. The student should be able to choose the appropriate harvesting method according to the conditions and nature of the field to be harvested	Class unit regulations	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
4	2 Theoretical	a2: Yellow corn	Corn harvesting	Interactive lecture, brainstorming,	Semester exam 1,

		harvesting equipment is classified based on the technological processes of harvesting the yellow corn crop. The student acquires knowledge and concepts related to corn harvesting equipment	equipment	dialogue and discussion, self-learning	final exam
	4 Practical	b8: Checks and organizes procedures for calibrating the separating unit. The student should be able to estimate the qualitative and quantitative losses resulting from the incorrect use of harvesters	separating unit regulations	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1

5	2 Theoretical	C2: Shows the procedures, modifications and regulations that are performed on the grain harvester (Combine) to harvest the sunflower crop. It identifies the mechanical means used in harvesting the soybean crop. The student acquires knowledge and concepts related to oil crop harvesting equipment	Oil crop harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	4 Practical	b9: Checks and organizes procedures for calibrating the cleaning unit The student should be able to identify harvester malfunctions	Regulations for the cleaning unit	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
6	2 Theoretical	b2: Determines the types of potato harvesting equipment. The student acquires knowledge and concepts related to equipment for harvesting tuber crops (potatoes).	Tuber crop (potato) harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam

	4 Practical	b10: Checks and organizes procedures for calibrating the filling and unpacking unit. The student should be able to monitor safety conditions when working on the harvester	Regulations for the packing and unpacking unit	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
7	2 Theoretical	c3: Compares sugar beet extracts from 1-3 lines The student acquires knowledge and concepts related to equipment for harvesting root crops (sugar beets)	Root crops harvesting equipment (beets, carrots)	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Semester exam 1, final exam
	4 Practical	b11: Loss before harvest, loss after harvest, and loss during harvest are calculated. The student should be able to monitor safety conditions when working on the harvester	Methods of calculating the components of harvest loss	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Short practical test1
8	2 Theoretical	c4: Shows the main and auxiliary parts of the integrated sugarcane harvester and the function of	Fiber crop harvesting equipment (sugarcane)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions

		each part. The student acquires knowledge and concepts related to equipment for harvesting fiber crops (sugarcane)			
	4 Practical	c7: Distinguishes harvesting methods with the Combine harvester. The student should be able to evaluate the functions of the units operating in the harvesters	Threshing harvesting methods for Combine grains	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
9	2 Theoretical	c5: Explains the three methods used in harvesting the flax crop in two separate stages. The student acquires knowledge and concepts related to equipment for harvesting fiber crops (flax)	Fiber crop harvesting equipment (flax)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	4 Practical	b12: Explains the three methods used in harvesting the flax crop in two separate stages. The student acquires knowledge and concepts	Fiber crop harvesting equipment (flax)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions

		related to equipment for harvesting fiber crops (flax)			
10	2 Theoretical	b3: Explains the equipment for harvesting cotton by picking fibers from the nuts, The student acquires knowledge and concepts related to equipment for harvesting fiber crops (cotton).	Fiber crop harvesting equipment (cotton)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	4 Practical	b13: Calculates the losses and their sources in yellow corn harvesting equipment. The student should be able to determine the date of uprooting the potato crop and the appropriate equipment for that	Loss and its sources in yellow corn harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
11	2 Theoretical	c6: Draws the equipment for harvesting cotton that has fallen to the ground. The student acquires knowledge and concepts related to the obstacles to the spread of low-lying	Scientific visit	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions

		crops			
	4 Practical	c8: Determines the principles used in maintaining the specialized corn harvester (Combine Corn) The student should be able to apply maintenance and storage rules for harvesters	Foundations used to maintain corn harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
12	2 Theoretical	a3: Knows the obstacles to the spread of low-crop harvest + types of low-crop harvest. The student acquires knowledge and concepts related to the types of harvest of low-lying crops	Obstacles to the spread of low-crop harvesting + Types of low-crops harvesting	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	4 Practical	b14: Specifies the special modifications on the front of the combine for harvesting sunflowers, modifications on the threshing unit, and the arrangements of the separator unit and the cleaning unit. The student should be able	Harvester regulations for harvesting sunflower crops	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions

		to determine the date of harvesting the cotton crop and the appropriate tools according to what is required of the harvest			
13	2 Theoretical	a4: Knows the most important equipment used in harvesting lentils The student should be able to know the equipment for harvesting low-lying legume crops (lentils).	Harvesting equipment for low-lying legume crops (lentils)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	4 Practical	c9: Explains the field management and equipment involved in the automatic harvesting of the potato crop The student should be able to determine the appropriate time for uprooting sugar beets and harvesting sugar cane, and the appropriate mechanisms and plows for that.	Management and maintenance of tuber crop harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
14	2 Theoretical	a5: Knows the most important equipment used in harvesting	Harvesting equipment for low-lying leguminous crops (peas)	Interactive lecture, brainstorming, dialogue and discussion, field	short exams, assignment of duty, discussions

		beans. The student should be able to know the equipment for harvesting low-lying leguminous crops (peas).		training, practical exercises, and self-learning	
	4 Practical	b15: Regulates the operating regulations and management of harvesting operations for the integrated sugarcane harvester The student will be able to organize and make appropriate adjustments to the Combine grain harvester to harvest the yellow corn crop.	Harvesting methods with equipment for harvesting and sustaining sugar crops	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
15	2 Theoretical	b4: Shows the most important modifications and regulations that are made to the grain thresher harvesters in harvesting the chickpea crop. The student should be able to know the equipment for harvesting low-lying legume crops (chickpeas).	Harvesting equipment for low-lying legume crops (chickpea)	Interactive lecture, brainstorming, dialogue and discussion, field training, practical exercises, and self-learning	short exams, assignment of duty, discussions
	4 Practical	b16: Sustaining cotton harvesting	Sustaining fiber crop harvesting equipment	Interactive lecture, brainstorming, dialogue and discussion, field	short exams, assignment of duty, discussions

		equipment is implemented The student should be able to determine the most appropriate mechanical methods for harvesting flax		training, practical exercises, and self-learning	

11. Course Evaluation

	Evaluation methods	Evaluation date (week)	Grade	Relative weight %
1	Report 1	Week Four	2.5	2.5
2	Report 2	Week Five 2.5	2.5	2.5
3	Short test (1) Quiz	Week Six	2	2
4	Short Test (2) Quiz	Week Fourteen	2	2
5	Short Test (3) Quiz	Week Fifteen	1	1
6	Semester test (1)	sixth week	7.5	7.5
7	Semester test (2	the eleventh week	7.5	7.5
8	final theoretical exam final semester exams 40 40	final semester exams	40	40
9	Practical field project	week fifteen	5	5
10	Field evaluation	weeks three and five	2	2
11	short practical tests (1) Quiz	the first week	1	1
12	short practical tests (2) Quiz	Week Four	0.5	0.5
13	Short practical test (3) Quiz	Week Fourteen	1	1
14	Direct drawings and homework	weeks 6, 8, 9, 10, 11, 12, and 13	5.5	5.5
15	Final practical exams	Final semester exams	20	20
Total	100		100%	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Harvesting Equipment, Dr. A. R. Banna, 1st Addition, Dar Alkutub Publisher, Mosu Univ. Press, 1998
Main references (sources)	1- Harvesting Equipment, Dr. A. R. Banna, 1st Addition, Dar Alkutub Publisher, Mosu Univ. Press, 1998 2- Introduction to Agricultural Mechanization, R. N. Kaul, 1st Addition, Macmillan Publisher, Hong Konr Press, 1985
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

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