



UNIVERSITI TEKNOLOGI MARA

AGR658: FARM MACHINERY MANAGEMENT

Course Name (English)	FARM MACHINERY MANAGEMENT APPROVED
Course Code	AGR658
MQF Credit	3
Course Description	This course will provide an understanding on essential technical and management aspects of plantation crop mechanization
Transferable Skills	The student will be able to determine the number, size and types of machines that will be used in estate, estimate and analyze costs for any machines and fields operations, improve the field efficiency of machine operation, apply management principles in long-range plan of machinery and equipment ownership, explain the various machines and equipment for plantation field operations, and set up maintenance units for the machines and equipment.
Teaching Methodologies	Lectures, Blended Learning, Field Trip, Simulation Activity, Presentation
CLO	<p>CLO1 Recognize and identify the concept of machinery management for plantation crop mechanization</p> <p>CLO2 Relate and explain concepts, laws and theories in machinery management to select the number, size and type of machine and implements that will be used for plantation crop mechanization</p> <p>CLO3 Justify, plan and implement machines costing, machine recording, machinery maintenance for the operations in the plantation</p> <p>CLO4 Communicate to peers verbally and to the facilitator in writing through critical and systematic thinking about the various concepts and theories of machinery management related to plantation crop mechanization</p>
Pre-Requisite Courses	No course recommendations
Topics	
1. 1.0 Plantation mechanization	
1.1) 1.1 Introductions	
1.2) 1.2 Issues and challenges in plantation mechanization	
1.3) 1.3 Benefits of mechanization	
2. 2.0 Basic machinery management	
2.1) 2.1 Typical problems	
2.2) 2.2 Importance of machinery management for plantation mechanization	
3. 3.0 Measuring machine capacity and improving field efficiency	
3.1) 3.1 Measuring machine capacity	
3.2) 3.2 Calculating machine field efficiency	
3.3) 3.3 Typical factors affecting lost field efficiency	
4. 4.0 Matching machine size and capacity	
4.1) 4.1 Introduction	
4.2) 4.2 Estimating machine effective field capacity	
4.3) 4.3 Matching machine size to fit the time available	
5. 5.0 Estimating power requirements	
5.1) 5.1 Power ratings	
5.2) 5.2 Calculating machine-soil resistance	
5.3) 5.3 Determining tractor size needed	
5.4) 5.4 Matching tractor and implements	

6. 6.0 Machine costing- fixed cost

- 6.1) 6.1 Depreciation
- 6.2) 6.2 Taxes, shelter, insurance, interest
- 6.3) 6.3 Estimating fixed costs
- 6.4) 6.4 Effect of inflation on equipment purchase

7. 7.0 Machine costing- operating cost

- 7.1) 7.1 Estimating average fuel consumption for tractors and self-propelled machines
- 7.2) 7.2 Estimating average fuel and lubricant costs
- 7.3) 7.3 Fuel saving tips
- 7.4) 7.4 Estimating repair costs

8. 8.0 Machine costing- total costs for machinery and operations

- 8.1) 8.1 Estimating total costs for single machines
- 8.2) 8.2 Estimating total costs for a complete plantation operation

9. 9.0 Managing machinery

- 9.1) 9.1 Deciding when to trade
- 9.2) 9.2 Considering future capacity needs
- 9.3) 9.3 Calculating custom work costs and break-even point
- 9.4) 9.4 Comparing ownerships, leasing, renting costs

10. 10.0 Setting up machinery recording system

- 10.1) 10.1 Importance of machinery records
- 10.2) 10.2 Type of machinery records
- 10.3) 10.3 Structures for a simple machinery recording system

11. 11.0 Setting up maintenance unit

- 11.1) 11.1 Importance of machinery maintenance
- 11.2) 11.2 Periods of machinery maintenance
- 11.3) 11.3 Setting up an estate workshop

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	n/a	10%	CLO2 , CLO3
	Practical	Field visit	10%	CLO1 , CLO2
	Presentation	Project presentation	10%	CLO1 , CLO2 , CLO3 , CLO4
	Quiz	Quiz 1	5%	CLO1
	Quiz	Quiz 2	5%	CLO4
	Test	Test 1	10%	CLO1 , CLO2
	Test	Test 2	10%	CLO3 , CLO4

Reading List	Recommended Text	<ul style="list-style-type: none"> Wendell Bowers 2008, <i>Machinery Management</i>, Ed., , John Deere Publishing Moline, IL
	Reference Book Resources	<ul style="list-style-type: none"> American Society of Agricultural Biological E 2011, <i>ASAE EP496.3 (R2011) Agricultural Machine</i>, FEB 2006 Ed., ASABE American Society of Agricultural Biological E 2011, <i>ASAE D497.7 MAR2011 Agricultural Machinery Ma</i>, ASABE Claude Culpin 1992, <i>Farm Machinery</i>, Granada Publisher Donnel Hunt 2001, <i>Farm Power and Machinery Management</i>, Ed., , Iowa State University [ISBN:]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	