



UNIVERSITI TEKNOLOGI MARA

AGR668: PLANTATION CROP MECHANIZATION

Course Name (English)	PLANTATION CROP MECHANIZATION APPROVED
Course Code	AGR668
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, Case Study, Discussion, Presentation
CLO	<p>CLO1 Use the concepts, laws, and theories in selecting the number, size and type of machine and implements and calculate machinery cost, performing a machinery recording and maintenance for the operation in plantation.</p> <p>CLO2 Conduct study on mechanization practice in plantation and solve any issue related to machinery management and mechanization practice in plantation.</p> <p>CLO3 Debate the various concept and theories of machinery management and plantation 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	Online Assignment	20%	CLO3
	Quiz	Online Quiz	10%	CLO3
	Test	Online Test	30%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> • American Society of Agricultural and biological Engineers (ASABE), 2006, <i>ASABE Standards. 2006. Agricultural Machinery Management Data.</i>, American Society of Agricultural and biological Engineers (ASABE) St. Joseph, Michigan, USA. • Culpin, C 1992, <i>Farm Machinery.</i>, Black Publishers. • Landers, A. 200, <i>Resource Management; Farm Machinery.</i>, Farming Press.UK.
	Reference Book Resources	<ul style="list-style-type: none"> • Hunt, D. 2001, <i>Farm Power and Machinery Management</i>, John Wiley and Sons
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	