



## UNIVERSITI TEKNOLOGI MARA

### AGR558: Agriculture Mechanization and Automation

<b>Course Name (English)</b>	Agriculture Mechanization and Automation <b>APPROVED</b>
<b>Course Code</b>	AGR558
<b>MQF Credit</b>	4
<b>Course Description</b>	This course introduces the function and operation of mechanisation and automation system that involve in the agriculture field. Besides introducing the function and its operations, the designated lecture session is also used to discuss the principles of existing technologies/automated systems that are used in agriculture. Lecture sessions employ a mixture of lectures and active learning (self and peer discussions). The outcomes shall be assessed through a variety of tools which include the traditional paper examination, project planning and implementation and classroom engagement.
<b>Transferable Skills</b>	Knowledge on suitable mechanization system and automation in plantation
<b>Teaching Methodologies</b>	Lectures, Case Study, Discussion
<b>CLO</b>	CLO1 Describe the function and operation of agricultural machinery and system automation in agricultural activities CLO2 Identify and adapting the appropriate agricultural system to suit with the specific conditions of farm CLO3 Valuing the roles of agricultural machinery and system automation in agriculture sector
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Introduction</b> 1.1) Definition of agricultural mechanization and automation 1.2) The advantages of using machinery and automation in agriculture	
<b>2. Farm Tractors</b> 2.1) Types of tractors and implements 2.2) Function and operation of the tractors and implements (from land preparation until harvesting)	
<b>3. Irrigation and pump system</b> 3.1) Purpose of irrigation 3.2) Types of irrigation system and their uses 3.3) Pumps and irrigation equipment	
<b>4. Mechanisation in crop production</b> 4.1) Land preparation equipment 4.2) Planting machine 4.3) Chemical application machines 4.4) Harvesting machines 4.5) Greenhouse crop production	
<b>5. Mechanisation system and aquaculture</b> 5.1) Types of aquaculture systems 5.2) Equipment involved in aquaculture system (from water management to harvesting)	
<b>6. Animal husbandry and automation</b> 6.1) Equipment involved in animal husbandry 6.2) Control environment for livestock housing	
<b>7. Farm transport and materials handling</b> 7.1) Importance of transport in agriculture 7.2) Function and operation of materials handling systems	

<b>8. Introduction to precision farming</b> 8.1) Geographical information system 8.2) Global satellites positioning system 8.3) Remote sensing 8.4) Precision farming in agriculture
<b>9. Nanotechnology in agriculture</b> 9.1) n/a
<b>10. Role and importance of information technology in agriculture</b> 10.1) n/a

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Lab based assignment	20%	CLO3
	Case Study	Case study on Integrated Livestock System / Aquaculture System	20%	CLO2
	Test	Test 1	20%	CLO1

Reading List	Reference Book Resources
	<ul style="list-style-type: none"> <li>• Naoshi Kondo, K. C. Ting 1998, <i>Robotics for bioproduction systems</i>, Amer Society of Agricultural [ISBN: 0929355946]</li> <li>• Ajit K. Srivastava 2006, <i>Engineering Principles of Agricultural Machines</i>, Amer Society of Agricultural [ISBN: 1-892769-50-6]</li> <li>• Odd-Ivar Lekang 2013, <i>Aquaculture Engineering</i>, Wiley [ISBN: 978-0-470-670]</li> <li>• Andres Aland, Thomas Banhazi 2013, <i>Livestock Housing</i>, Wageningen Academic Pub [ISBN: 9789086862177]</li> <li>• Ess, Daniel R., Morgan, Mark T., <i>Stock Image Precision-Farming Guide for Agriculturalists</i>, Deere &amp; Co [ISBN: 9780866913584]</li> </ul>
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources