



## UNIVERSITI TEKNOLOGI MARA

### AGR652: POST HARVEST TECHNOLOGY

<b>Course Name (English)</b>	POST HARVEST TECHNOLOGY <b>APPROVED</b>
<b>Course Code</b>	AGR652
<b>MQF Credit</b>	3
<b>Course Description</b>	This course is designed to develop and understanding of how crops are handed from post of harvesting to the point of sales or consumption. this included harvesting methods. packaging, storage and primary processing. upon completion of the course, student should be able to evaluate losses in quantity during post harvest handling, storage and marketing. this course also aimed to develop and apply appropriates innovative technologies to solve specific problems in post harvest operation.
<b>Transferable Skills</b>	knowledge, leadership, communication, teamwork
<b>Teaching Methodologies</b>	Lectures, Discussion, Presentation
<b>CLO</b>	<p>CLO1 Define the basic principles of post-harvest, physiology, maturity and technology of storage.</p> <p>CLO2 Verbally, visually, describe, and relate the post-harvest physiology with maturity, harvesting, packaging and transportation.</p> <p>CLO3 Verify, assess, illustrate, and employ the concept of the storage with temperature management and quality of post-harvest.</p> <p>CLO4 Discuss the possibility packaging materials and techniques in relation to the quality and marketing of the post-harvest.</p>
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Introduction of post-harvest</b> 1.1) 1.0 Importance of fruit and vegetables as food 1.2) 1.1 Changing pattern of world fruit and vegetables 1.3) 1.2 Production, markets and supply 1.4) 1.3 Why needed for post-harvest technology	
<b>2. Post-harvest Physiology</b> 2.1) 2.1 Structure and composition 2.2) 2.2 Composition and nutritional value 2.3) 2.3 Physiological development 2.4) 2.4 Chemical changes during maturation 2.5) 2.5 Changes during ripening and senescence	
<b>3. Technology of Harvesting</b> 3.1) 3.1 Harvesting Methods for fruit 3.2) 3.2 Harvesting Methods for vegetables	
<b>4. Quality and maturity</b> 4.1) 4.1 Quality Standard 4.2) 4.2 Quality Criteria, appearance, defects, texture and flavour, nutritional values. 4.3) 4.3 Factors influenced quality of post-harvest 4.4) 4.4 Determination of physiological and commercial maturity	
<b>5. Technology of storage</b> 5.1) 5.1 Methods of storage 5.2) 5.2 Design and construction of cool stores and control atmosphere 5.3) 5.3 Management of storage 5.4) 5.4 Refrigerated transport	

**6. Temperature Management**

- 6.1) 6.1 Physiological Response
- 6.2) 6.2 Storage life
- 6.3) 6.3 Cooling of produce
- 6.4) 6.4 Water loss and humidity management
- 6.5) 6.5 Factors affecting water loss
- 6.6) 6.6 Control of water loss

**7. Storage Atmosphere**

- 7.1) 7.1 Carbon Dioxide CO<sub>2</sub> and Oxygen O<sub>2</sub>
- 7.2) 7.2 Factors influenced the adoption of CAS
- 7.3) 7.3 Metabolic effects
- 7.4) 7.4 Effects in microbial growth
- 7.5) 7.5 Methods for modifying CO<sub>2</sub> and O<sub>2</sub> levels
- 7.6) 7.6 Storage in plastic films
- 7.7) 7.7 Hypobaric storage
- 7.8) 7.8 Definition of the Ethylene
- 7.9) 7.9 Effects on fruits and vegetables
- 7.10) 7.10 Methods for reducing ethylene concentration

**8. Packhouse Operations**

- 8.1) 8.1 Cleaning the post-harvest
- 8.2) 8.2 Post-harvest treatments
- 8.3) 8.3 Sorting and sizing
- 8.4) 8.4 Standardization and inspection

**9. Packaging**

- 9.1) 9.1 Shipping containers
- 9.2) 9.2 Characteristics of good packaging
- 9.3) 9.3 Effect of packaging on the produce quality
- 9.4) 9.4 Different types of containers
- 9.5) 9.5 Packaging and storage
- 9.6) 9.6 What is consumers packaging
- 9.7) 9.7 Different packaging at the supermarket
- 9.8) 9.8 Packaging materials
- 9.9) 9.9 Appearance of the packaging

**10. Transportation**

- 10.1) 10.1 Transportation by road
- 10.2) 10.2 Transportation by air
- 10.3) 10.3 Transportation by sea

**11. Physiological, pathological and entomological disorders**

- 11.1) 11.1 Definition of physiological disorders
- 11.2) 11.2 Low temperature disorders
- 11.3) 11.3 Mineral deficiency disorders
- 11.4) 11.4 Definition pathology disorders
- 11.5) 11.5 Microorganism causing wastage
- 11.6) 11.6 Infection process
- 11.7) 11.7 Control of post-harvest wastage
- 11.8) 11.8 Definition of entomological disorders
- 11.9) 11.9 Major insect pests
- 11.10) 11.10 Management of damage

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Presentation	Presentation	10%	CLO2
	Test	Online test	20%	CLO1
	Written Report	Written report/ information management skills 1	15%	CLO3
	Written Report	Written report/ information management skills 1	15%	CLO4

Reading List	Recommended Text	<ul style="list-style-type: none"> <li>• Phirke, P.S. 2007, <i>Postharvest Engineering of Fruits and Vegetables</i>, CBS Publisher and Distributors.</li> <li>• Bertz, J.A., and Brecht, J.K. 2003, <i>Postharvest Physiology and Pathology of Vegetables</i>, 2nd. Eds Ed., Marcel Dekker Inc. 270 Madison Avenue, New York</li> <li>• Robert. L.S., and Stanley, E.P. 1995, <i>Postharvest Handling: A System Approach</i>, Mc Millan Inc New York.</li> </ul>
Article/Paper List	Reference Article/Paper Resources	<ul style="list-style-type: none"> <li>• Pantastico. E.R.B. 1982, <i>Postharvest Physiology, Handling and Utilization of Tropical and Subtropical Fruits and Vegetables</i>, . Longman, Essex, England</li> <li>• Ryall. A.L. 1985, <i>Transportation and Storage of Fruits and Vegetables.</i>, Aiden Press, Oxford., 2nd Edition.</li> </ul>
Other References	This Course does not have any other resources	