SULTAN QABOOS UNIVERSITY

COURSE OUTLINE

PROGRAM: Agricultural Engineering

1. Course Code	SWAE3203	
2. Course Title	Postharvest Technology and Quality Management	
3. Credits	3 CR, 12 CP, 6 ECTS	
4. Pre-requisite Course(s)	MATH2107, PHYS(2101 or 2107), SWAE2001	
5. Co-requisite Course(s)		
6. Equivalent Course(s)		
7. Incompatible Course(s)		
8. Course Category	☐ University Requirement	☐ University Elective
	☐ College Requirement	☐ College Elective
	☒ Department Requirement	☐ Department Elective
	☐ Specialization Requirement	☐ Specialization Elective
	☐ Other (specify):	
9. Course Owner	College: CAMS	Department: SWAE
10. Course Type	☐ Lecture	☒ Lecture/Lab
	☐ Lecture/Seminar	☐ Lecture/Studio
	☐ Lecture/Tutorial	☐ Lecture/Lab/Tutorial or Seminar
	☐ Tutorial	☐ Laboratory (Practical)
	☐ Field or Work Placement	☐ Studio
	☐ Seminar	☐ Internship
	☐ Workshop	☐ Project
11. Language of Instruction	English	

12. Course Description

The overall aim of this course is to expose students in the areas of postharvest technology to reduce food losses, optimize product quality, add-value, and thereby increase profitability of Agri-food business. Principle, technology and management systems used during harvesting, handling, packaging, storage, marketing, and traceability of fresh food products and other biological materials will be covered in this course. Emphasis will be given on technical and environmental factors affecting fresh product quality and storage life, including harvesting systems, handling damage, refrigerated storage, packaging technology, and drying for reducing losses and maintaining quality.

13. Teaching/Learning Strategies

Apart from normal lectures, videos and 4-5 laboratory sessions are also part of this course. Field trip provides students with a broad, practical overview of present postharvest practices and management. Students will have to do a review project which will enable each student to carry out in-depth examination of selected topic in postharvest technology on fresh horticultyral produce. Review topic outcomes have to be presented in oral sessions to the class as well as through a written report. There will be 1 midterm test, 1 comprehensive final and 2 announced quizzes to assess student achievements.

14. Assessment Components and Weight [%]

☐ Quizzes 10	☒ Practical 30	☐ Other (specify):
☐ Homework assignments	☐ Project 10	
☐ In-term examination(s) 10	☐ Final examination 40	

15. Grading Method

☒ A-F Scale ☐ Pass/Not passed

16. Textbook(s) and Supplemental Material

Adel Kader (ed). 2002. Post Harvest Technology of Horticultural Crops. University of California, Agricultural and Natural Resources, USA

17. Matching Course Objectives with Program Outcomes and SQU Graduate Attributes

SQU Graduate Attributes

A. SQU graduates should be able to:	**B. SQU graduates possess**	**C. SQU graduates should**
1. apply the knowledge and skills relevant to the specialization 2. communicate effectively and use information and communication technologies 3. critically analyze complex information and present it in simple clear manner	1. interpersonal communication skills and alignment with culture of international labour market to assist them in practical life and in living successfully 2. skills and motivation for independent learning and engagement in lifelong learning and research 3. work ethics and positive values, and intellectual independence and autonomy 4. teamwork skills and display potential leadership qualities	relish good citizenship qualities, be conscious of their national identity and be socially responsible, engage in community affairs and be mindful of contemporary issues.

#	Intended Student Learning Outcome /Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)
1.	Knowing the basic concept of postharvest managemnet and appreciate the contribution of the postharvest practices to maintain fresh produce quality and reduce losses	Demonstrate proficiency in application of postharvest practices in real world food problems	A1
2.	Learn established and emerging technologies to reduce postharvest losses	• Work independently and in team environments at national and international levels. • Learn emerging technologies and implement them for personal and employer's success. • Contribute to the welfare of the society at regional and global levels. • Maintain the standards of health, safety, environment and professional ethics at work and society	A1,A2
3.	Apply the theoretical and practical skills gained from this course in topics relate to fresh horticultural produce	Demonstrate proficiency in application of postharvest management practices in real world problems	A3
4.	Be able to evaluate and analyis the importance of fresh horticultural produce in global food security	Contribute to the welfare of the society at regional and global level	A2,A3
5.	The ability to work in teams and explain experimental data relevant to postharvest technology	Contribute to the team in a meaningful manner to achieve the team's output	B4
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16. Student Responsibilities

It is the student's responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirement and students` academic code of conduct.

For attendance, it is the student's responsibility to be punctual and to attend all classes.

Students are expected to perform their work with honesty and avoid any academic misconduct, which is defined as the use of any dishonest or deceitful means to gain some academic advantage or benefit. This can take many forms, including but not limited to, the following: copying, plagiarism, collusion and forging documents. For full details, please refer to the Undergraduate Academic Regulations and to the Student Academic Misconduct Policy.

Additionally, this course requires that you:

COURSE INFORMATION			
Course Code	SWAE3203	**Course Title**	Postharvest Technology and Quality Management
Semester/ Year	Spring 2019	**Section(s)**	10
Day, Time, and Place			

Course Coordinator	Dr Pankaj Pathare		
Office Location	245 Anx	**Office Hours**	
Office Tel. Ext.	1222	**Email**	pankaj@squ.edu.om

Tentative Schedule

Week	Lecture #	Topic/Material to be covered	Assessment
1	Topic 1	Introduction and Basic Concepts in Postharvest Technology & Management	
2	Topic 2	a.The 'Systems Approach' to postharvest management, b.The concept of 'Postharvest losses, c. Principal causes of postharvest losses & quality degradation	
3	Topic 3	General Introduction to Postharvest Physiology of Biomaterials Field visit 1 : Fruits and vegetables wholesale market	
4	Topic 3	a.Basic structure and function in biomaterials b.Physiological development c.Water loss Field visit 2: Postharvest cleaning, grading and handling (Farm level)	
5	Topic 4	Maturity and Harvesting Systems a. Dimensions of maturity b. Measurement and prediction of 'readiness to harvest'/maturity Lab 1: Determination and expression of moisture content Quiz 1	5%
6	Topic 4	c.Alternative harvesting systems d.Advantages and disadvantages of alternative harvesting systems Lab 2: Assessment of handling damages in fruits and vegetables	
7	Topic 5	Postharvest Handling, Packaging and Transportation a. The concept of postharvest handling chains b. Mechanical damage of fresh produce: measurement and control materials Lab 3: Firmness and maturity evaluation	
8	Topic 5	c. Ergonomics and design of handling systems d. Functions of packaging e. Modified atmosphere packaging f. Transport systems for Agri-food material Midterm examaination	10%
9	Topic 6	Refrigerated Air Storage (RAS) and Controlled Atmosphere Storage (CAS) Systems Field visit 3: Refrigerated store house	
10	Topic 6	a. The concept of 'field heat' b. Principles of refrigerated storage c. Precooling techniques and procedures d. Determination of 'heat load' for refrigerated storage Field visit 4: Food processing industry (focus: packaging)	
11	Topic 6	e. Controlled atmosphere storage principles of gas exchange in fresh food techniques and applications of CAS Quiz 2	5%
12	Topic 7	Drying Principles of Food Products and other Biomaterials	
13	Topic 7	a. Drying-air properties b. Concept of EMC (equilibrium moisture content) Lab 4: Drying characteristic curves for agricultural commodities	
14	Topic 8	Measurement and Management of Agri- Food Quality	

		a. Dimension of quality in Agri-food business b. Meaning and measurement of quality c. Quality management systems in Agri-food business Lab 5: Overview of quality assessment methods	
15	Topic 9	Traceability and other emerging issues in Agri-food quality Project rerport	10%
16		Final Exam	40%
17			

APPENDIX A: INSTRUCTORS OF MULTIPLE SECTIONS					
Section	**Instructor**	**Day, Time, and Place**	**Office Location and Extension**	**Email**	**Office Hours**

APPENDIX B: ADDITIONAL INFORMATION