SULTAN QABOOS UNIVERSITY

COURSE OUTLINE

PROGRAM: Food Science and Nutrition

1. Course Code	FSHN4107	
2. Course Title	Milk and Milk Products (Dairy Products)	
3. Credits	3 CR, 12 CP, 6 ECTS	
4. Pre-requisite Course(s)	- FSHN3104 (Food Chemistry I) - FSHN3105 (Food Microbiology I) - FSHN3106 (Food Processing I)	
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: FSN
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
17. Language of Instruction	English	

18. Course Description

A study of milk chemistry in relation to handling, processing, and keeping quality. Topics include: principles and techniques used in the manufacture of dairy products; quality evaluation of the raw milk and milk products using chemical, physical, microbiological and organoleptic methods.

19. Teaching/Learning Strategies

The following learning and teaching strategies will be implemented to enhance the students thinking and learning:

- Lecture: The instructor will deliver the lecture materials covering many areas of dairy sciences.

- Reading: Students will be requested to read several sections from the reference text book.

- Field trips: Filed trips to dairy industry processors will help to demonstrate the real working life (i.e. commercial scale) in the field of dairy processing.

- Assignment: Students will be grouped and will be asked to write term paper on selected topics in field of dairy sciences. The instructor will explain in details the entire assignment requirements and the date of submission. The selected topics will not be covered in the course materials. Therefore, the students will be also asked to present their topics in the front of the class. This will help to cover wide spectrum on dairy sciences.

- Experiments: Several experiments will be conducted in this course in order to give the students the skills and knowledge on milk quality testes. Theses testes will include chemical, physical and microbial analysis. The students also will be able to translate the theoretical knowledge gained from the course into several dairy products like cheese, yoghurt and ice cream. The expert technical staff in CAMS dairy plant will help the students to make the above products as well as demonstrating the pasteurization process.

20. Assessment Components and Weight [%]		
☒ Quizzes 5%	☒ Practical 10%	☒ Other (specify): Lab Exam 10%
☒ Homework assignments 10%	☐ Project	
☒ In-term examination(s) 20%	☒ Final examination 45%	

21. Grading Method	
☒ A-F Scale	☐ Pass/Not passed

22. Textbook(s) and Supplemental Material

- Dairy Science and Technology, Second Edition, Pieter Walstra , Jan T . M . Wouters , and Tom J . Geurts, CRC Press 2005

- Dairy Technology (Principles of Milk Properties and Processes) by P. Walstra et al Online (free access from SQU library): (http://www.crcnetbase.com/isbn/978-0-8247-2763-5)

23. 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.	Identify the chemical composition of milk and how these components are affected by the processing conditions.	Show a depth of knowledge of food science concepts that reflects an appropriate degree of specialization	A1
2.	Differentiate between the processing/preservation methods including pasteurization and ultra-high treatment	- Show a depth of knowledge of food science concepts that reflects an appropriate degree of specialization	A3
3.	Conduct and process different dairy products including cheese, yoghurt and ice cream.	Show a depth of knowledge of food science concepts that reflects an appropriate degree of specialization	B4& B2
4.	Determine the quality of milk by applying several analysis methods.	- Apply critical thinking and problem solving skills assess information at hand - Show a depth of knowledge of food science concepts that reflects an appropriate degree of specialization	A3
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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:

- Students are responsible for all materials covered in the class whether presented orally during lectures or assigned from the text.

- Make-up examination will be given if students provide a medical certificate.

- All course assignments (exams, quizzes, reports, term paper, etc.) must be completed in pen, and should not use any other color of ink than blue or black

COURSE INFORMATION			
Course Code	FSHN4107	**Course Title**	Milk and Milk Products
Semester/ Year	Fall/2017	**Section(s)**	10/11
Day, Time, and Place	THU 08:00-09:50 CMT/A02 TUE 10:00-11:50 AGR/1034		

Course Coordinator	Dr.Zahir Al-Attabi		
Office Location	2ed floor/2002	**Office Hours**	Mon. 10:00-10:50 / Tue. 2:15-3:05
Office Tel. Ext.	1252	**Email**	zaherr@squ.edu.om

Tentative Schedule

Week	Lecture #	Topic/Material to be covered	Assessment
1	1	Introduction to Dairy	
2	1 & 2	Introduction & Milk microbiology	
3	3 & 4	Chemical Contaminants and Adulteration & Lactose	
4	5 & 6	Milk lipids & Milk proteins	
5	7	Milk enzymes	
6	8	Thermal processing	Quiz (1) October 18
7	8 & 9	Thermal processing & Non-Thermal processing	
8		Test (1)	November 1
9	10	Starter culture	
10	11	Fermented Milk	
11	11	Fermented Milk	Quiz 2, Nov. 22
12	12 & 13	Probiotic microorganisms & Cheese	
13		Test (2)	December 6
14	13	Cheese	
15	14 & 15	Ice cream & Butter and Lab Exam	Lab Exam Decm.18
16		Final Exam 25/12/2018	
17			

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

APPENDIX B: ADDITIONAL INFORMATION

Lab Rules

1. Students should strictly follow to the safety rules that will be dis.
2. Lab coats should be worn at all times.
3. Because of the limited space and materials in the lab, students will be asked to work in groups hence they should show high coordination with their group mates while they perform the experiments.
4. Because you will be working in a group, the work in the lab should be distributed among all students in the group – it should be team work.
5. The group reports should be typed.
6. The due date for the reports is two weeks from the time of experiment completion.
7. No assignment/report of any group will be graded after the due date.
8. Returning seats to their original place and cleaning the working area and any related glassware to the experiment are considered part of the experiment.

List of Experiments

- Fluid Milk Evaluation
- Raw Milk Testing
- Determination of Lactose
- Phosphatase Test
- Estimation of bacterial Numbers
- Pasteurization (Dairy Plant)
- Processing of

a. Yoghurt
b. Ice cream
c. Cheese
d. Labna
e. Laban
f. Cream and Butter