1	**Course title**	Dairy Science and Technology
2	**Course number**	0603728
3	**Credit hours (theory, practical)**	3
	Contact hours (theory, practical)	3
4	**Prerequisites/corequisites**	
5	**Program title**	MSc. Food Science and Technology
6	**Program code**	037
7	**Awarding institution**	The University of Jordan
8	**School**	Agriculture
9	**Department**	Nutrition and Food Technology
10	**Level of course**	MSc, Graduate
11	**Year of study and semester (s)**	First semester 2020-2021
12	**Final Qualification**	Grade based
13	**Other department (s) involved in teaching the course**	Non
14	**Language of Instruction**	English
15	**Date of production/revision**	Each year

16. Course Coordinator:

Name: Malik Hadaddin
Office number: 160-Ground Floor
Phone number: 0795245862
Email: m.haddadin@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Non

18. Course Description:

This is an advanced study of modern heat treatments and their effects on the physical and chemical properties of milk, modification of milk composition and utilization of casein and whey; studying the physical properties of milk and dairy products and different types of changes that take place during processing; the application of modern techniques such as ultra-filtration, reverse osmosis, and electro dialysis in dairy technology, topics such as automation, recombined technology and the production of baby milk powder.

19. Course aims and outcomes:

A- Aims:

1- Outline the most recent advances in milk and dairy products.

2- Understanding and practice recent modification in milk and dairy products and the effect on quality and safety.

3- Understanding effect of processing on physical and chemical and sensory propertied of dairy products.

4- Outline the utilization of whey protein and other wastes of dairy industry.

5- Introduced to new technological aspects in dairy industry and processing of specialized products.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to

A. Knowledge and Understanding: Student is expected to

A1- Identify the most recent advantages in the dairy products.

A2- Recognize the most important modifications in dairy products.

A3- In case study for effect of processing on properties of different dairy products.

A4- Understand factors for optimal usability of whey proteins and other wastes from dairy industry.

A5- Understand and practise new technologies in dairy products and production

A6- Understand different aspects for production of new dairy products.

B. Intellectual Analytical and Cognitive Skills: Student is expected to

B1-Learn to know the most recent advantages in dairy products.

B2- How to benefit from different aspect of modification dairy products in food industry.

B3- How to deal technical aspects in processing of different dairy products.

C. Subject-Specific Skills: Student is expected to

C1- Identify methods optimization the usability of whey protein and other wastes in dairy products.

C2- Identify key issues in application of new technologies in selected dairy products.

C3- In case study of different dairy products and quality and safety aspects.

D. Transferable Key Skills: Students is expected to

D1- Acquire skills needed in processing, analysis and problem solving of different dairy products.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Overview on dairy Science and Technology.	1	Dr. Malik Hadaddin	A1-A3	Quiz + exam + assignment	Robinson and Moss. 2002
Overview on dairy Science and Technology	1	Dr. Malik Hadaddin	A1-A3	Quiz + exam + assignment	Robinson and Moss. 2002
Recent advantages in the dairy industry	2	Dr. Malik Hadaddin	A4-A6	Quiz + exam + assignment	Conto et al., 2018.
Recent advantages in the dairy industry	2	Dr. Malik Hadaddin	A4-A6	Quiz + exam + assignment	Conto et al., 2018.
Recent advantages in the dairy industry	3	Dr. Malik Hadaddin	A3-A5	Quiz + exam + assignment	Conto et al., 2018.
Recent advantages in the dairy industry	3	Dr. Malik Hadaddin	A3-A5	Quiz + exam + assignment	Conto et al., 2018.
Effect of processing on properties of dairy products	4	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	Robinson and Moss. 2002
Effect of processing on properties of dairy products	5	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	Robinson and Moss. 2002
Effect of processing on properties of dairy products	5	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	Robinson and Moss. 2002
Midterm exam	6				
Whey and waste management	6	Dr. Malik Hadaddin	A4-A6	Quiz + exam + assignment	Nout. and Sarkar, 2016
Whey and waste management	7	Dr. Malik Hadaddin	A4-A6, D1	Quiz + exam + assignment	Nout. and Sarkar, 2016
New technological aspects	7	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Fuquay et al., 2011

New technological aspects	8	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Fuquay et al., 2011
New technological aspects	8	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Fuquay et al., 2011
Microbiology of fermented products	9	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Nout. and Sarkar, 2016
Microbiology of fermented products	9	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Nout. and Sarkar, 2016
Microbiology of fermented products	10	Dr. Malik Hadaddin	A4-A6, C2-C3	Quiz + exam + assignment	Nout. and Sarkar, 2016
Project presentations	10	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	--
Project presentations	11	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	--
Project presentations	11	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	--
Project presentations	12	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	--
Project presentations	12	Dr. Malik Hadaddin	C1-C3	Quiz + exam + assignment	--

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz…etc.

ILO/s	**Learning Method**
A. Knowledge and Understanding (A1-A..)	Quiz + exam + assignment
B. Intellectual Analytical and Cognitive Skills (B1-B..)	Quiz + exam + assignment
C. Subject Specific Skills (C1-C….)	Quiz + exam + assignment
D. Transferable Key Skills (D1-D3…)	Quiz + exam + assignment

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

ILO/s	**Evaluation Method**
A. Knowledge and Understanding (A1-A..)	Quiz + exam + assignment
B. Intellectual Analytical and Cognitive Skills (B1-B..)	Quiz + exam + assignment
C. Subject Specific Skills (C1-C….)	Quiz + exam + assignment
D. Transferable Key Skills (D1-D3…)	Quiz + exam + assignment

23. Course Policies:

A- Attendance policies:
In case if the absence exceeded 15%, the student will automatically will fail the course.

B- Absences from exams and handing in assignments on time:
Makeup exam will be assigned. Postponing the assignment delivery time could not be provided.

C- Health and safety procedures:
Are instructed from the beginning of the course.

D- Honesty policy regarding cheating, plagiarism, misbehaviour:
Withdrawal of the exam

E- Grading policy:
It is given to the students from the beginning of the course.

F- Available university services that support achievement in the course:
Labs are well equipped for this purpose.

24. Required equipment: (Facilities, Tools, Labs, Training….)

Dairy laboratory equipment.

25. References:

Required book (s), assigned reading and audio-visuals:

1- Conto, F., Del Nobile, M. A., Faccia, M. Zambrini A. V., and Conte, A. 2018. Advances in Dairy Products. Wiley Blackwell.

2- Nout, M.J.R. and Sarkar, P. K. 2016. Fermented Milk and dairy products. CRC Press. Taylor & Francis Group, NW.

3- Robinson, R. and Moss, M. O. 2002. Dairy Microbiology Handbook. John Wiley & Sons Inc, NY.

Recommended books, materials, and media:

1. Fuquay, J. W., Fox, P. F. and McSweeney, P. L. H. 2011. Encyclopaedia of Dairy Sciences. Academic Press. London, UK

2. Spreer, E. 1998. Milk and Dairy Products Technology. Marcel Dekker Inc. NY

26. Additional information:

None

Name of Course Coordinator: ------- Dr. Malik Hadaddin --Signature: ---------- Date: 11th Oct 2020

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------