



University of Sadat City
Faculty of Veterinary Medicine
Dept. of Food Hygiene and Control
(2014-2015)



Dairy Technology

(706P)

PhD COURSE SPECIFICATION

A. BASIC INFORMATION

University:	Sadat City
Faculty:	Veterinary Medicine
Program on which the course is given:	PhD in Veterinary Medical Sciences (Dairy Hygiene and Control)
Department offering the Course:	Food Hygiene and Control
Course code:	706P
Course title:	Dairy Technology
Lecture (hr/week):	2
Practical (hr/week):	2
Course coordinator:	Dr. Heba Hussien

B. PROFESSIONAL INFORMATION

1) Overall aims of course

Upon successful completion of the course, the student should gain the knowledge about

modern techniques for manufacturing of milk and dairy products and application of Hazard Analysis and Critical Control Point (HACCP) system in the dairy industry to produce high quality dairy products.

2) Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

By the end of this course, the graduate should be able to:

- a.1. Define the modern theories and concepts about dairy technology.
- a.2. Explain the steps for pre-treatment of the milk before being processed.
- a.3. Describe modern technologies used in the dairy farms and dairy factories to produce high quality clean milk.
- a.4. Identify the manufacturing defects of dairy products.
- a.5. List the principles for application of Hazard Analysis and Critical Control Point System.
- a.6. Recognize labeling and different techniques in packaging of dairy products.

b) INTELLECTUAL SKILLS

By the end of this course, the student should be able to:

- b.1. Determine different Critical Control Points (CCP) in the steps of manufacturing or processing of different dairy products and classifying them according to their importance.
- b.2. Correlate between pre-constructed HACCP plan and the applied steps of this plan.
- b.3. Evaluate efficient heat treatment of milk and dairy products.
- b.4. Grade milk and dairy products in accordance to national and international standards.

c) PROFESSIONAL AND PRACTICAL SKILLS

By the end of this course, the student should be able to:

- c.1. Apply plate form testing of the milk to determine its suitability for further processing.
- c.2. Fulfillment of HACCP plan in the dairy plant and applying different corrective action for the deviated CCP.
- c.3. Recognize and control the cause of any manufacturing defects during processing of dairy products.
- c.4. Evaluate the starter culture viability.
- c.5. Apply tests for cleaning and disinfection of milk plants and procedures for

evaluation of their efficiency.

D) GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1.** Utilize the electronic and digital instruments for analysis, monitoring and reporting data in the factories.
- d.2.** Cooperate with the team work in the factory or in the laboratory.
- d.3.** Express clearly and confidently his/her decision when receive milk, meat, eggs, fat and oils.
- d.4.** Communicate with others in polite manner.

3) Topics and contents

Topic	No. of hours		
	Lect.	Pract.	Total
Introduction of dairy technology Milk: chemical and physical aspects	12	-	12
Modern technologies in food processing.	10	-	10
Evaluation and Preparation of milk before processing	8	-	8
Pre-treatment of milk: reception, centrifugation, standardization, homogenization, membrane filtration	18	-	18
Manufacture of milk products: cream, butter, yoghurt, cheese, whey, condensed milk, milk powder, ice cream and dairy desserts	22	-	22
Manufacturing defects of milk and milk products	8	-	8
Determination of CCPs during manufacture of dairy products	4	-	4
Labeling and legalization of dairy products	2	-	2
Packaging and canning of dairy products	4	-	4
Determination of chemical and physical aspects of milk	-	18	18
Determination of keeping quality raw milk	-	14	14
Determination of pH and acidity tests	-	12	12
Detection of homogenization efficiency	-	8	8
Detection of cleaning efficiency in dairy equipment	-	12	12
Detection of the various factors affecting the coagulation of milk	-	12	12
Evaluation of starter culture for cheese and fermented milk	-	8	8
Detection the efficiency of heat treatment	-	4	4
Total	88	88	176

4) Teaching and learning methods

- 4.1. Lectures.

4.2. Practical.

4.3. Self-learning activities.

5) Student assessment

a. METHODS:

1- Written examination	For assessment of knowledge, back calling and Intellectual skills
2- Practical examination	For assessment of practical and professional skill.
3- Oral examination	For assessment of knowledge and Intellectual skills
4- Student activities	For assessment of knowledge and general and transferable skills

b. MATRIX ALIGNMENT OF THE MEASURED ILOs/ ASSESSMENTS METHODS:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U (a)	I.S (b)	P&P.S (c)	G.S (d)
Written exam	1-6	1, 2, 3, 4	-	
Oral term exam	1,3,4	1, 2, 3	-	
Practical exam	-	2, 4	1, 2, 3, 4, 5	
Student activities	2,6	-	-	1-4

c. WEIGHT OF ASSESSMENTS:

Assessment	Allocated Mark	Evidence
Final written exam	50%	Marked and signed written paper
Practical exam	50%	Marked and signed practical exam paper
Oral exam		Signed list of oral exam marks
Student activities		Assay, presentations, review

6) List of references

6.1. Essential textbooks

-) Walstra, P., Walstra, P., Wouters, J.T., Geurts, T.J., 2010. Dairy science and technology. CRC press.
-) Datta., N, Tomasula, P., 2015. Emerging Dairy Processing Technologies: Opportunities for the Dairy Industry

6.2. Recommended books

) Dairy Science and Technology, Second Edition (Food Science and Technology) , 2005 P. Walstra, Jan T. M. Wouters, Tom J. Geurts

) Food Processing Technology: Principles and Practice (Woodhead Publishing in Food

Science, Technology and Nutrition), P J Fellows , 2009

6.3. Journals, Websites, Periodicals.....etc

-) J. of food science
-) J. of milk and food technology.
-) J. of Food Protection
-) J. of Dairy Science
-) Bulletin of the international Dairy Federation
-) www.dairy science.com

7) Facilities required for teaching and learning

- 7.1 Data-show.
- 7.2 Basic laboratory equipment and devices for microbiological procedures
- 7.3 Network for technology transfer.
- 7.4 Computer.

	Course coordinators	Head of department
Name	Dr. Heba Hussien	Prof. Dr. A. M. Elbagory
Signature		

Matrix alignment of course topics and ILOs

Topic Lecture (Chapters/subchapters)	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Introduction of dairy technology Milk: chemical and physical aspects	12	-	12	12	-	1	-	-	1-4
Modern technologies in food processing.	10	-	10	10	-	1	-	-	1-4
Preparation of milk for processing	8	-	8	8	-	2	-	-	1-4
Treatment of milk for processing :Milk processing: reception, centrifugation, standardization, homogenization, membrane filtration	18	-	18	18	-	2	-	-	1-4
Manufacture of milk products: cream, butter, yoghurt, cheese, whey, condensed milk, milk powder, ice cream and dairy desserts	22	-	22	22	-	3	-	-	1-4
Manufacturing defects of milk and milk products	8	-	8	8	-	4			1-4
Application of HACCP and determination of CCPs during manufacture of dairy products	4	-	4	4	-	5	1,2		1-4
Labeling of dairy products	2	-	2	2	-	6			1-4
Packaging and canning of dairy products	4	-	4	4	-	6			1-4
Determination of chemical and physical aspects of milk		18	18		18	-			1-4

Topic Lecture (Chapters/subchapters)	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Determination of keeping quality raw milk	-	14	14		14	-	4	1,2	1-4
Determination of pH and acidity tests	-	12	12		12	-	4	1	1-4
Detection of homogenization efficiency	-	8	8		8	-	-	1,3	1-4
Detection of cleaning efficiency in dairy equipment	-	12	12		12	-	-	5	1-4
Detection of the various factors affecting the coagulation of milk	-	12	12		12	-		1	1-4
Evaluation of starter culture for cheese and fermented milk	-	8	8		8	-	4	4	1-4
Detection the efficiency of heat treatment		4	4		4		3	5	1-4
Total			176	88	8				