Food Analysis

(707P)

PhD COURSE SPECIFICATION

A. BASIC INFORMATION

University:	**University of 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:	**707P**
Course title:	**Food Analysis (specific courses in dairy products, eggs, fats and oils.**
Lecture (hr/week):	**2**
Practical (hr/week):	**2**
Course coordinator:	**Dr. Heba Hussein**

B. PROFESSIONAL INFORMATION

1)Overall aims of course

Upon successful completion of the course, the student will be able to recognize

- Use advanced methods for chemical and microbial analysis of milk, eggs, fat, oils and their products,
- Recognize different types of adulteration of milk and dairy products.
- Apply the modern techniques used for analysis of milk and 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. Recognize the different forms of adulteration of milk, dairy products, oils and fats.

a.2. Explain the organoleptic examination of milk, egg, oils, fat and their products.

Describe the advanced analytical technique used for determination the chemical composition and microbial examination of milk, egg, oils, fat and their products.

a.3. Know the toxins and antibiotic residues that could be detected in milk and egg.

a.4. Know the different types of heavy metals and pesticides that can contaminate milk and milk products.

a.5. Recognize the different type of preservative that adulterate milk.

a.6. Identify the microbiological standards for different dairy products.

b) INTELLECTUAL SKILLS

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

b.1. Detect adulterated milk sample with preservatives, spoiled egg and rancid oils & fats.

b.2. Judge the organoleptic examination of milk and different dairy products

b.3. Judge the results of chemical and microbial examination of milk, eggs and their products using Milk scan, PCR &ELISA.

b.4. Interpret the results of examination in comparison with the Egyptian and International standards.

b.5. Judge the adulteration of milk by watering and skimming.

b.6. Interpret the results of the organoleptic examination of eggs , egg products ,fat &oils

C) PROFESSIONAL AND PRACTICAL SKILLS

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

c.1. Take a represented samples of milk, egg, oils, fat and their products for analysis and prepare them for chemical and microbial examination.

c.2. Perform chemical examination of milk and milk products using

advanced methods as milk scan

c.3. Detect some biological hazards in egg and egg products through their microbiological examination

c.4. Assess the results of the chemical and microbiological examination of milk, egg, oils, fat and their products, Write reports and give the interpretation.

c.5. Write reports of milk adulteration with watering , skimming , other fats and preservatives

c.6. Detection the toxin and residue of heavy metals, antibiotics and pesticides in milk, egg, and dairy products.

D) GENERAL AND TRANSFERABLE SKILL

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

d.1. How to take the decision.

d.2. Utilize the electronic and digital instruments for analysis, monitoring and reporting data in the modern dairy farms and factories.

d.3. Work in a team.

d.4. Communicate with others effectively.

d.5. Present of the results and writing reports.

3)Topics and contents

Topic	No. of hours		
	Lect.	Pract.	Total
Different forms of Adulteration of milk and dairy products	**20**	**-**	
Organoleptic examination of milk , eggs and dairy products	**20**	**-**	
Detection of antibiotic residues in milk, egg, and dairy products	**10**	**-**	
Detection of bacterial toxin in milk, egg, oils and fat	**8**	**-**	
Detection the residue of heavy metals and pesticides in milk, egg, and dairy products	**10**	**-**	
The basic concepts of the advanced techniques used for chemical and microbiological examination of some milk products , egg and its products PCR ELISA Milk scan	**16**	**-**	
Microbiological Standards for Different Dairy Products	**4**	**-**	
Sampling of milk, egg and its products	**-**	**4**	
Preparation of collected samples for chemical and microbial examination		**8**	
organoleptic examination of milk and dairy products		**8**	

samples			
organoleptic examination of egg and its products	-	**8**	
Chemical examination of milk, and its products by Milk scan		**14**	
Testing of milk, egg, oils and fat for presence of residues		**8**	
Testing of milk, egg, oils and fat for presence of toxins		**6**	
sanitary evaluation of milk and its products using advanced analytical techniques as PCR and ELISA: - concentrated milk - evaporated milk - milk powder - whey - UHT milk - yoghurt		**14**	
Detection of some biological hazards in egg and its products		**8**	
Testing of milk for presence of preservative		**4**	
Detect adulteration of milk fat with other fat and oils.		**6**	
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)
Practical exam	-	-	1, 2, 3, 4, 5,6	
Written exam	1,2, 3, 4, 5, 6	1, 2, 3**,** 4,6	-	
Oral term exam		1, 4,6	-	
Student activities	3, 4, 5, 6	-	-	1-5

c. WEIGHT OF ASSESSMENTS:

Assessment	Allocated Mark	Evidence
Final written exam	**50%**	Marked and signed written paper
Practical exam	**20%**	Marked and signed practical exam paper
Oral exam	**20%**	Signed list of oral exam marks
Student assignments	**10%**	Representative samples of presented materials

6)List of references

- **6.1. Essential textbook**Varnam, A., Sutherland, Jane P. (2001): Milk and Milk Products. Technology, chemistry and microbiology Series: Food Products Series, Vol. 1

6.2. Recommended books

- James M Jay. 2005. Modern Food Microbiology. IVth Edition. CBS publishers and Distributors, New Delhi.
- WC Frazier & DC Westhoff. 2006. Food Microbiology. IVth edition. Tata McGraw Hill Publishing Co.
- Bibek Ray. 2000. Fundamental Food Microbiology. CRC Press, New York.
- H. Michael Wehr, Joseph F. Frank.2004. APHA Standard Methods for the Examination of Dairy Products. 17Th Edition. American Public Health Association.
- F. P. Downes, Keith Ito. 2001. Compendium of Methods for the Microbiological Examination of Foods. IVth Edition. American Public Health Association.
- Leo M. L. Nollet, Fidel Toldra, Y. H. Hui ,Advances in Food Diagnostics, 2007, Blackwell Publishing

- Y Nys, M Bain, F Van Immerseel, Improving the Safety and Quality of Eggs and Egg Products ,2011
- Frank Gunstone ,Oils and Fats in the Food Industry,2014

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

- J. of food science
- J. of milk and food technology.
- J. of Food Protection
- J. Food Microbiology
- J. of Dairy Science
- Bulletin of the international Dairy Federation
- www.dairy science.com
- www.who.org
- www.idf.org
- www.fao.org
- www.fda.org

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. Dr. Heba Hussien	Prof. Dr. A. M. Elbagory
Signature		

Matrix alignment of course topics and ILOs

Lecture (Chapters/subchapters)	No. of hours /week		Total hours	ILOs			
	Lect.	Pract.		K & U (a)	I. S. (b)	P.P. S. (c)	G.& T.S. (d)
Different forms of Adulteration of milk and dairy products	20	-	20	1,6	1,5		1-5
Organoleptic examination of milk , eggs and dairy products	20	-	20	2	2,6		1-5
Detection of antibiotic residues in milk, egg, and dairy products	10	-	10	4			1-5
Detection of toxin in milk, egg, oils and fat	8	-	8	4			1-5
Detection the residue of heavy metals and pesticide in milk, egg, and dairy products	10	-	10	5			1-5
The basic concepts of the advanced techniques used for chemical and microbiological examination of some milk products , egg and its products PCR ELISA Milk scan	16	-	16	3	3		1-5
Microbiological Standards for Different Dairy Products	4	-	4				1-5

Sampling of milk, egg and its products	**-**	**4**	**4**	**4**		**1**	**1-5**
Preparation of collected samples for chemical and microbial examination	**-**	**8**	**8**			**1**	**1-5**
organoleptic examination of milk and dairy products samples	**-**	**8**	**8**		**2,6**		**1-5**
organoleptic examination of egg and its products	**-**	**8**	**8**		**2,6**		**1-5**
Testing of milk, egg, oils and fat for presence of residues	**-**	**8**	**8**			**6**	**1-5**
Testing of milk, egg, oils and fat for presence of toxins	**-**	**6**	**6**	**6**		**6**	**1-5**
sanitary evaluation of milk and its products using advanced analytical techniques as PCR and ELISA: - concentrated milk - evaporated milk - milk powder - whey - UHT milk - yoghurt	**-**	**14**	**14**		**3,4**	**4**	**1-5**
Detection of some biological hazard in egg and its products	**-**	**8**	**8**		**3,4**	**3**	**1-5**
Chemical examination of milk and milk products using milk scan	**-**	**14**	**14**		**3,4**	**2**	**1-5**
Testing of milk for presence of preservative	**-**	**4**	**4**	**4**	**1,5**	**5**	**1-5**
Detect adulteration of milk fat with other oils and fats.	**-**	**6**	**6**	**6**	**1,5**	**5**	**1-5**
Total	**88**	**88**	**176**				