Food Microbiology

DIPLOMA COURSE SPECIFICATION

A. BASIC INFORMATION

University:	**Sadat City**
Faculty:	**Veterinary Medicine**
Program on which the course is given:	**Diploma of Food Hygiene**
Department offering the Course:	**Diploma of Food Hygiene and Control**
Course code:	**904**
Course title:	**Food microbiology**
Lecture (hr/week):	**1**
Practical (hr/week):	**2**
Course coordinator:	**Prof. Dr. Abdel Rahman El Bagoury**

B. PROFESSIONAL INFORMATION

١) Overall aims of course

Upon successful completion of the course, the student should obtain the Specific knowledge about food microbiology including the sources of microbial food contamination, the roles of M.O in food and the governing factors of their growth and microbial assessment of food for quality and safety.

٢) Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

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

a.1. List of the Sources of food contamination with microorganisms.
a.2. Explain the intrinsic and extrinsic parameters affecting growth of spoilage and pathogenic microorganisms in milk, dairy products and egg.
a.3. Recognize the basic information of food poisoning, spoilage and indicator microorganisms associated with milk, dairy products, meat, meat products and egg.
a.4. Define food microbial quality and safety.
a.5. Describe the basic concepts of Pathogens transmitted through food and their related diseases.
a.6. Recognize the laboratory diagnosis of mastitis and realize their effect on the human and animal health.
a.7. Describe the indicator organisms in details and their significance in milk and dairy products.
a.8. Define the basic information about microbial criteria of different types of food.
a.9. Define the basic information about microbial defects of different types of food.

b) INTELLECTUAL SKILLS

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

b.1. Analyze the sources of microbial contamination during production and processing of food.
b.2. Compare between microbial and manufacturing defects of food.
b.3. Identify factors affecting microbial growth in food.
b.4. Apply the factors affecting microbial growth to control the growth of microorganisms in food.
b.5. Evaluate the hygienic status of food.
b.6. Carry out laboratory diagnosis of mastitis.

c) PROFESSIONAL AND PRACTICAL SKILLS

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

c.1. Carry out the preparation of food samples (milk, dairy products, meat, meat products, egg, fat and oil) for microbiological analysis.
c.2. Employ the tests required for sanitary examination of food.

c.3. Apply the conventional microbiological tests and modern molecular techniques to determine the safety and hygienic quality of milk, dairy products, meat, meat products, egg, fat and oil.

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 modern dairy farms and factories.
d.2. Cooperate with the team work in the laboratory.
d.3. Express clearly and confidently his/her decision when analyze food.
d.4. Describe his/her duties and responsibilities for food handlers, in a gentle and polite manner, when working as an official food inspector.
d.5. Tell the general public about the risk of consumption of raw egg, milk and dairy products.

٣) Topics and contents

Topic	No. of hours		
	Lect.	**Pract.**	**Total**
Introduction of Food microbiology Dairy microbiology Meat microbiology	**10**	**-**	**10**
Sources of food contamination	**4**	**-**	**4**
Microorganisms associated with food	**4**	**-**	
Factors affecting microbial growth in foods. Extrinsic factors Intrinsic factors	**6**	**-**	**6**
Pathogens and their related diseases Milk and milk products Meat and meat products Fish and fish products Poultry and their products	**14**	**-**	**14**
Indicator organisms	**3**	**-**	**3**
Food poisoning.	**3**	**-**	**3**
Mastitis laboratory diagnosis	**-**	**28**	**28**
Microbial criteria of food - Milk and milk products - Meat ,Fish, Poultry and their products	**-**	**30**	**30**
Microbial defects of: - Milk - Milk products - Meat - Meat products	**-**	**30**	**30**
Total	**44**	**88**	**132**

٤) Teaching and learning methods

4.1. Lectures.
4.2. Practical.
4.3. Self-learning activities.

٥) 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:

	K.U (a)	I.S (b)	P.P.S (c)	G.S (d)
Written exam	1-9	3, 5		
Practical exam		2, 4, 6	1-3	
Oral exam	1-9	1, 3, 5		
Student activities (assay, seminar, etc.)	1, 2, 3	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

٦) List of references

6.1. Essential books

- Applied dairy microbiology (Elmer H. Marth ,2001)
- Modern Food Microbiology (James M .JAY ,1992)
- Chemistry, Microbiology &Technology of milk and its products (Varnam & Threshould, 1984).
- Basic Food Microbiology.

- Food Safety and Quality Assurance.

- Dairy Microbiology and Biochemistry: recent Developments, Barbaros Ozer, Gülsün Akdemir-Evrendilek, 2014.
- Microbiology handbook dairy products Edited by Rhea Fernandes,2008
- Study Guide for Microbiology, an Introduction. Funke, B. R., Benjamin Cummings Pub., 6th ed., 2005.
- Hand book of Food Preservation (M. Shafiur Rahman 1999)

6.2. Journals, websites ……..etc

Journals:

- 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

٧) Facilities required for teaching and learning

٧,١ Data-show.
٧,٢ Laboratory animals for experimental toxicology.
٧,٣ Network for technology transfer.
٧,٤ Laboratory kits for experimental toxicology.
٧,٥ Computer.

	Course coordinators	Head of department
Name	Prof. Dr. Abdel Rahman M. Elbagory	Prof. Dr. Abdel Rahman M. Elbagory
Signature		

Matrix alignment of course topics and ILOs

Topic	No. of hours /week		No. of hours /week	Hours for Pract.	ILOs			
	Lect.	Lect.			Knowledge and Understanding K & U (a)	Intellectual Skills I. S. (b)	Practical and Professional Skills P.P. S. (c)	General and transferable skills G.& T.S. (d)
Introduction of Food microbiology Dairy microbiology Meat microbiology	**1**		**10**		a.1			**1-5**
Sources of food contamination	**1**		**4**		a.1	b.1		**1-5**
Microorganisms associated with food	**1**		**4**		a.1, a.3	b.5		**1-5**
Factors affecting microbial growth in foods. Extrinsic factors Intrinsic factors	**1**		**6**		a.2	b.3, b.4		**1-5**
Pathogens and their related diseases Milk and milk products Meat and meat products Fish and fish products Poultry and their products	**1**	**2**	**14**		a.4, a.5	b.4, b.5	c.1, c.2, c.3	**1-5**
Indicator organisms	**1**	**2**	**3**		a.3, a7	b.1,b.5	c.1, c.2, c.3	**1-5**
Food poisoning	**1**	**2**	**3**		a.3	b.5	c.1, c.2, c.3	**1-5**
Practical application	**1**	**2**						**1-5**
Mastitis laboratory diagnosis	**1**	**2**		**28**	a.6	b.6	c.1, c.2, c.3	**1-5**
Microbial criteria of food Milk and milk products	**1**	**2**		**30**	a.3, a4, a.8	b.1	c.2	**1-5**

Topic	No. of hours /week		No. of hours /week	Hours for Pract.	ILOs			
	Lect.	Lect.			Knowledge and Understanding K & U (a)	Intellectual Skills I. S. (b)	Practical and Professional Skills P.P. S. (c)	General and transferable skills G.& T.S. (d)
Meat ,Fish, Poultry and their products								
Microbial defects of: Milk, Milk products, Meat, Meat products	**1**	**2**		**30**	a.4, a.9	b.2	c.2, c.3	**1-5**