REPUBLIC OF YEMEN
SANA'A UNIVERSITY
Faculty Of Veterinary Medicine
Veterinary Medicine Program

Course Specification of Dairy and Dairy product Hygiene

I. Course Identification and General Information:							
1	**Course Title:**	Dairy and Dairy product Hygiene					
2	**Course Number & Code:**	PA576					
3	**Credit hours:**	**C.H**				**Total**	
		Theoretical	**Practical**	**Training**	**Seminar**		
		2	**1**	**0**	**0**	**3**	
4	**Study level/ semester at which this course is offered:**	Fifth Year: Second Semester					
5	**Pre –requisite (if any):**	MI352, MI355, MI353, MI357					
6	**Co –requisite (if any):**	None					
7	**Program (s) in which the course is offered:**	Bachelor's degree (B. Sc.) Veterinary medicine					
8	**Language of teaching the course:**	English					
9	**Location of teaching the course:**	Faculty of veterinary medicine					
10	**Prepared by:**	Faris Mohammed Ahmed Al-zailay					
11	**Date of approval:**						

II. Course description:

To provide students with basic knowledge of hygienic milk and dairy products; to gain the skills to analyze milk samples, dairy products.

To gain knowledge: about Composition of milk, Milk production and biosynthesis of milk, Nutritive value of milk, physical properties, milk constituents, Effect of diseases on Milk constituents, Dairy microbiology, Milk-borne diseases, clean milk production, heat treatment of milk, Quality assurance and production control, Criteria for evaluation of milk and dairy products.

To gain Skills: about assisted detection of adulteration of milk and dairy products, detection of abnormal milk, detection of physical properties, tests for hygienic quality, chemical analysis of milk and dairy

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Prof. Dr. Al-Qassim Mohammed Abbas

products.

III. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Knowledge and Understanding.

	Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding
	After completing this program, students will be able to:		**After completing this course, students will be able to:**
A1-	Demonstrate a sound knowledge and understanding of concepts and principles of general culture, basic science, and that support veterinary medicine.	**a1-**	Outline the chemical composition and microbiology of dairy products.
A2-	Clarifies basic concepts, principles, and theories related to animal production, animal health and nutrition, behavior management, breeding and care that is related to animal ethical codes.	**a2-**	Shows knowledge and understanding about milk-borne pathogens and spoilage organisms

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

	Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding	Teaching strategies/methods to be used	Methods of assessment
	completing this course, students will be able to:	▪ Lecture ▪ Dialogue and discuss ▪ Practical practice ▪ Scientific visits	▪ Written examination ▪ Quiz ▪ Oral examination ▪ Practical examination
a1-	Outline the chemical composition and microbiology of dairy products.		
a2-	Shows knowledge and understanding about milk-borne pathogens and spoilage organisms		

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		▪ Field clinical training ▪ brain storming ▪ self-learning	▪ Activities ▪ Reports evaluation

(B) Intellectual Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Intellectual skills

Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
B2-	Predicts an appropriate medical diagnosis for the most common disease states through analysis of clinical story data and the results of medical examinations of a sick animal.	**b1-**	Judge the different defects which present the milk & milk products
B3-	Design appropriate nursing and treatment care plans for different diseases that affect animals, prioritizing treatment.	**b2-**	Discuss the chemical pollutants & suitable control measures.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		▪ Dialogue and discuss ▪ Lecture ▪ Practical practice ▪ Problem solving ▪ Working in groups ▪ Scientific visits ▪ Field clinical training ▪ Simulation and demos	▪ Written examination ▪ Oral examination ▪ Practical examination ▪ Performance notice ▪ Achievement file ▪ Reports evaluation ▪ Proposal evaluation
b1-	Judge the different defects which present the milk & milk products		
b2-	Discuss the chemical pollutants & suitable control measures.		

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		▪ Researches and projects	

(C) Professional and Practical Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Professional and Practical Skills

Program Intended Learning Outcomes (Sub-PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
C1-	Accurately records a comprehensive pathological story of a sick animal including information on healthy behavior and the necessary checks.	**c1-**	Apply ideal methods to collect and transfer the samples for physical and chemical examination of milk & milk products.
C4-	Treat animal patients safely and effectively taking into account the evaluation of the results, the appropriate modification of the treatment plan and the accurate description of the appropriate medications.	**c2-**	Perform full microbiological examination of milk and milk products.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		▪ Practical practice ▪ Problem solving ▪ Working in groups ▪ Problem solving ▪ Scientific visits ▪ Case study ▪ Field clinical training	- Written examinations - Oral examinations - Practical examination - Performance notice - Achievement file - Reports evaluation - Proposal evaluation
c1-	Apply ideal methods to collect and transfer the samples for physical and chemical examination of milk & milk products.		
c2-	Perform full microbiological examination of milk and milk products.		

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		▪ Simulation & demos ▪ Researches and projects	

(D) General / Transferable Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: General and Transferable skills

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in General / Transferable skills	
After completing this program, students will be able to:		**After completing this course, students will be able to:**	
D2-	Develops his scientific, professional and research capabilities and follow what is emerging in his field of specialization and using computer applications and information and communication technology.	**d1-**	Demonstrate appropriate professional attitudes and behaviors in different practice situations.
D4-	Works in normal conditions, crises and epidemics, alone and effectively within a medical team.	**d2-**	Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		▪ Dialogue and discuss ▪ Working in groups ▪ Scientific visits ▪ Researches and projects ▪ Self learning	▪ Achievement file ▪ Reports evaluation ▪ Proposal evaluation ▪ Performance notice ▪ Practical examinations
d1-	Demonstrate appropriate professional attitudes and behaviors in different practice situations..		
d2-	Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.		

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		▪ Simulation and demos ▪ Problem solving	

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Introduction, Milk production	a1, a2, b1, b2, c1, c2	Nutritive value of milk, Biosynthesis	1	2
2	Physical properties of milk	a1, a2, b1, b2, c1, c2		1	2
3	milk constituents	a1, a2, b1, b2, c1, c2	Major Components	1	2
4	Chemical composition	a1, a2, b1, b2, c1, c2	Minor Components	1	2
5	Heat treatment of milk	a1, a2, b1, b2, c1, c2	Boiling, pasteurization & sterilization	2	4
6	Milk-borne diseases	a1, a2, b1, b2, c1, c2		1	2
7	Sources of contamination	a1, a2, b1, b2, c1, c2	Interior & Exterior of udder	1	2
8	Mastitis and milk quality	a1, a2, b1, b2, c1, c2		1	2
9	Residues and contaminants	a1, a2, b1, b2, c1, c2	Antibiotic Residues	2	4

10	Drying of milk	a1, a2, b1, b2, c1, c2	Spray and Roller drying	1	2
11	Concentrated milk	a1, a2, b1, b2, c1, c2	Sweetened & Unsweetened	1	2
12	Clean milk production, HACCP system in dairy plants	a1, a2, b1, b2, c1, c2	detergent and sanitizer	1	2
Number of Weeks /and Units Per Semester				**14**	**28**

b- Training Aspect:

Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Introduction, Sampling	a1, a2, b1, b2, c1, c2	1	2
2	Physical & chemical examination	a1, a2, b1, b2, c1, c2	1	2
3	Determination of keeping quality raw milk	a1, a2, b1, b2, c1, c2	2	4
4	Detection the efficiency of heat treatment	a1, a2, b1, b2, c1, c2	1	2
5	Standard plate count	a1, a2, b1, b2, c1, c2	1	2
6	Mastitis and milk quality	a1, a2, b1, b2, c1, c2	1	2
7	Isolation of pathogenic M.Os, fecal pollution and indicators M.Os	a1, a2, b1, b2, c1, c2	1	2
8	Residues in milk	a1, a2, b1, b2, c1, c2	1	2
9	Milk production examination	a1, a2, b1, b2, c1, c2	2	4
10	Detection of preservatives in milk	a1, a2, b1, b2, c1, c2	1	2
11	Detection of adulteration in milk	a1, a2, b1, b2, c1, c2	1	2
12	Student activities: Dairy plants visits	a1, a2, b1, b2, c1, c2	1	2
Number of Weeks /and Units Per Semester			**14**	**28**

V. Teaching strategies of the course:

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- Lectures depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- Training visits to dairy farms as well as milk processing plants.
- Practical sections: Laboratory examination of milk, milk products, by chemical and microbiological methods.
- Self-learning (Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library).
- Summer training course.
- Assays and reviews.
- Discussion groups.

3-Assessment Methods:

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

I. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1	Participation, quizzes and assignments	2-14	10	10%	a1, a2, b1, b2, c1, c2
2	Mid-Term Exam	8	10	10%	a1, a2, b1, b2, c1, c2
3	Mid-Term Practical Exam	8	10	10%	a1, a2, b1, b2, c1, c2
4	Final Practical Exam	15	10	10%	a1, a2, b1, b2, c1, c2
5	Oral Exam	16	5	5%	a1, a2, b1, b2, c1, c2
	Final Exam	16	55	55%	a1, a2, b1, b2, c1, c2
	Total		100	100%	

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II. Students' Support:

Office Hours/week	Other Procedures (if any)
From Saturday to Wednesday at 8:00 a.m. till 2 p.m.	Student can contact with me via *e*-mail

III. Learning Resource (MLA style or APA style)S:

1- Required Textbook(s) (maximum two)

- Dairy Science and Technology, Second Edition (Food Science and Technology), 2005 P. Walstra, Jan T. M. Wouters, Tom J. Geurts
- Alan, H. Varnam, Jane P. and Sutherland: Milk and milk products. Chapman & Hall.

2- Recommended Readings and Reference Materials

1- A.H.Varnam: Food borne pathogens. Wolfe publishing Ltd.
2- RK. Robinson: Modern dairy technology. Library of congress.
3- Sara Martimore and Carole Wallace: HACCP A practical approach.
4- Wilkie F. Harrigan: Laboratory methods in food microbiology. Academic press limited.

3- Essential References

- Dairy microbiology Vol. I and II, 2nd , 1990edition, (Robinson, R.K)
- Marth and Steel (Applied dairy microbiology)
- Milk and milk products, 1997 (Sutherland & Varnam)

4- Electronic Materials and Web Sites *etc*.

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of food protection
- Science Direct web site

5- Other Learning Material:

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	- **Department notes:** available for students to purchase from the department. - White board, overhead projector and data show presentations used during teaching. - Laboratory , apparatus, Chemicals, glasses reagents and media, Kits

X.	**Course Policies:**
1	**Class Attendance:** Mandatory to attend all course lectures
2	**Tardiness:** Not allowed at all. Students must be in class or in the practical session 10 minutes prior to the beginning of lectures or practical session
3	**Exam Attendance/Punctuality:** Attendance is mandatory; absence is accepted with valid excuse
4	**Assignments & Projects:** All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse
5	**Cheating:** Not tolerated and may lead to **EXPELLING** the student from the program
6	**Plagiarism:** Not tolerated **AT ALL** and may lead to **EXPELLING** the student from the program
7	**Other policies:** **1.** All devices must be on silent or at least on vibration during lectures/labs **2.** Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. **3.** Any of type/ form of cheating is not allowed no matter what. **4.** Maintain silence during lectures/exam and disturbance is not allowed. For any questions students should raise their hand and wait for permission to talk.

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Course Plan of Dairy and Dairy product Hygiene

X. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Faris M. A. Al-zailay	**Office Hours**					
Location & Telephone No.	Dhamar Governorate 770667223	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail	Farisvet4@gmail.com	8am 2pm	8am 2pm	8am 2pm	8am 2pm	8am 2pm	-

XI. Course Identification and General Information:						
1-	**Course Title:**	Dairy and Dairy product Hygiene				
2-	**Course Number & Code:**	PA576				
3-	**Credit hours:**	**C.H**				**Total**
		Th.	**Seminar**	**Pr.**	**F. Tr.**	
		2	-	1		3
4-	**Study level/year at which this course is offered:**	Fifth Year: Second Semester				
5-	**Pre –requisite (if any):**	MI352, MI355, MI353, MI357				
6-	**Co –requisite (if any):**	None				
7-	**Program (s) in which the course is offered**	Bachelor's degree (B. Sc.) Veterinary medicine				
8-	**Language of teaching the course:**	English				
9-	**System of Study:**	Regular / Semester				
10-	**Mode of delivery:**	Lecturers, practical				
11-	**Location of teaching the course:**	Faculty of veterinary medicine				

II. Course Description:

To provide students with basic knowledge of hygienic production of milk and dairy products; to gain the skills to analyze milk samples, dairy products.

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To gain knowledge: about Composition of milk, Milk production and biosynthesis of milk, Nutritive value of milk, physical properties, milk constituents, Effect of diseases on Milk constituents, Dairy microbiology, Milk-borne diseases, clean milk production, heat treatment of milk, Quality assurance and production control, Criteria for evaluation of milk and dairy products.

II. Intended learning outcomes (ILOs) of the course:

After completing this course, students will be able to:

a1- Outline the chemical composition and microbiology of dairy products.

a2- Shows knowledge and understanding about milk-borne pathogens and spoilage organisms.

b1- Judge the different defects which present the milk & milk products

b2- Discuss the chemical pollutants & suitable control measures.

c1- Apply ideal methods to collect and transfer the samples for physical and chemical examination of milk & milk products.

c2- Perform full microbiological examination of milk and milk products.

d1- Demonstrate appropriate professional attitudes and behaviors in different practice situations.

d2- Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.

V. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction, Milk production	1	2
2	Physical properties of milk	2	2

3	milk constituents	3	2
4	Chemical composition	4	2
5	Heat treatment of milk	5,6	4
6	Milk-borne diseases	7	2
7	Mid-Term Exam	8	2
8	Sources of contamination	9	2
9	Mastitis and milk quality	10	2
10	Residues and contaminants	11,12	4
11	Drying of milk	13	2
12	Concentrated milk	14	2
13	Clean milk production, HACCP system in dairy plants	15	2
14	Final Exam	16	2
Number of Weeks /and Units Per Semester		**16**	**32**

b- Training Aspect:

Order	Training Tasks	Week Due	Contact hours
1	Introduction, Sampling	1	2
2	Physical & chemical examination	2	2
3	Determination of keeping quality raw milk	3,4	4
4	Detection the efficiency of heat treatment	5	2
5	Standard plate count	6	2
6	Mastitis and milk quality	7	2
7	Mid-Term Exam	8	2
8	Isolation of pathogenic M.Os, fecal pollution and indicators M.Os	9	2
9	Residues in milk	10	2

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10	Milk production examination	11,12	4
11	Detection of preservatives in milk	13	2
12	Detection of adulteration in milk	14	2
13	Student activities: Dairy plants visits	15	2
14	Final Exam	16	2
Number of Weeks /and Units Per Semester		**16**	**32**

V. Teaching strategies of the course:

- Lectures depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- Training visits to dairy farms as well as milk processing plants.
- Practical sections: Laboratory examination of milk, milk products, by chemical and microbiological methods.
- Self-learning (Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library).
- Summer training course.
- Assays and reviews.

Discussion groups.

VI. Assessment Methods:

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

No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	**Participation, quizzes and assignments**	**2-14**	**10**	**10%**

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2	**Mid-Term Exam**	**8**	**10**	**10%**
3	**Mid-Term Practical Exam**	**8**	**10**	**10%**
4	**Final Practical Exam**	**15**	**10**	**10%**
5	**Oral Exam**	**16**	**5**	**5%**
	Final Exam	**16**	**55**	**55%**
	Total		**100**	**100%**

II. Learning Resources:

-

1- Required Textbook(s) (maximum two).

- Alan, H. Varnam, Jane P. and Sutherland: Milk and milk products. Chapman & Hall.
- Dairy Science and Technology, Second Edition (Food Science and Technology), 2005 P. Walstra, Jan T. M. Wouters, Tom J. Geurts

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- Marth and Steel (Applied dairy microbiology)
- Milk and milk products, 1997 (Sutherland & Varnam)

3- Electronic Materials and Web Sites *etc*.

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of food protection
- Science Direct web site

XI. Course Policies:

1	**Class Attendance:** Mandatory to attend all course lectures

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2	**Tardiness:** Not allowed at all. Students must be in class or in the practical session 10 minutes prior to the beginning of lectures or practical session
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4	**Assignments & Projects:** All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse
5	**Cheating:** Not tolerated and may lead to **EXPELLING** the student from the program
6	**Plagiarism:** Not tolerated **AT ALL** and may lead to **EXPELLING** the student from the program
7	**Other policies:** **5.** All devices must be on silent or at least on vibration during lectures/labs **6.** Before any exam (written, oral) we must check student's identity (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. **7.** Any of type/ form of cheating is not allowed no matter what. **8.** Maintain silence during lectures/exam and disturbance is not allowed. For any questions students should raise their hand and wait for permission to talk.